

Technical Notes and Sources for the National Indicators

General Information

Statistical Significance

In this report, the term “significance” refers to statistical significance and indicates that change over time is not likely to have occurred by chance. The majority of indicators in this report are based on samples and not entire populations. For example, mathematics achievement results were obtained by sampling a portion of the nation’s 4th, 8th, and 12th graders. This enables the nation and the states to use smaller, cost-efficient samples to predict how the entire student population would have performed on an assessment without testing all of them. This is similar to a public opinion poll that predicts, with a certain degree of confidence, how all individuals would have responded to a set of questions had they all been polled.

It is important to note that any estimate based on a sample contains a small amount of imprecision, or sampling error. The estimate would be slightly higher or slightly lower if a different sample were chosen. Public opinion polls account for this error when they caution that their results are “accurate within plus or minus three percentage points.”

If we want to determine whether the nation and the states have made progress over time, we must apply a statistical test to tell us whether there are likely to be differences in actual performance over time in the entire population. The statistical test takes into account not only the difference between the measures, but also the precision of the estimate for each measure. If the test indicates that there are likely to be differences in performance between groups in the entire population, we say that the difference is statistically significant. This means that the differences are not likely to have occurred by chance, and we can be confident that performance has changed over time.

All differences in this report that are termed “statistically significant” are measured at the 0.05 level. For formulas and more detailed technical information, see the following sections on “accuracy of data,” “sampling errors,” and “non-sampling errors.”

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 somewhat from the figures that would have been obtained if a complete census had been taken using the same survey instruments, instructions, and procedures. In addition to such sampling errors, all surveys, both universe and sample, are subject to design, reporting, and processing errors and errors due to nonresponse. To the extent possible, these nonsampling errors are kept to a minimum by methods built into the survey procedures. In general, however, the effects of nonsampling errors are more difficult to gauge than those produced by sampling variability.

Sampling Errors

The samples used in surveys are selected from a large number of possible samples of the same size that could have been selected using the same sample design. Estimates derived from the different samples would differ from each other. The difference between a sample estimate and the average of all possible samples is called the sampling deviation. The standard or sampling error of a survey estimate is a measure of the variation among the estimates from all possible samples and, thus, is a measure of the precision with which an estimate from a particular sample approximates the average result of all possible samples.

The sample estimate and an estimate of its standard error permit us to construct interval estimates with prescribed confidence that the interval

includes the average result of all possible samples. If all possible samples were selected under essentially the same conditions and an estimate and its estimated standard error were calculated from each sample, then: 1) approximately 2/3 of the intervals from one standard error below the estimate to one standard error above the estimate would include the average value of the possible samples and 2) approximately 19/20 of the intervals from two standard errors above the estimate to two standard errors below the estimate would include the average value of all possible samples. We call an interval from two standard errors below the estimate to two standard errors above the estimate a 95 percent confidence interval.

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

$$se_{a,b} = \sqrt{se_a^2 + se_b^2}$$

To compare changes in between-group differences (groups "a" and "b") over time (years "1" and "2"), we approximate the standard error of the difference as:

$$se = \sqrt{se_{a1}^2 + se_{b1}^2 + se_{a2}^2 + se_{b2}^2}$$

This method overestimates the standard error because it does not account for covariance (the covariance figures were not available).

Because of this overestimation, the approach is conservative; that is, one is less likely to obtain significant results.

Nonsampling Errors

Universe and sample surveys are subject to nonsampling errors. Nonsampling errors may arise when respondents or interviewers interpret questions differently; when respondents must estimate values; when coders, keyers, and other processors handle answers differently; when persons who should be included in the universe are not; or when persons fail to respond (completely or partially). Nonsampling errors usually, but not always, result in an understatement of total survey error and, thus, an overstatement of the precision of survey estimates. Since estimating the magnitude of nonsampling errors often would require special experiments or access to independent data, these magnitudes are seldom available.

Goal 1: Ready to Learn

1. Children's Health Index

The percentages of infants at risk are based on the number of births used to calculate the health index, not the actual number of births. The percentage of complete and usable birth records used to calculate the 1997 health index varied from a high of 99.9% to a low of 75.3%. Four states (California, Indiana, New York, and South Dakota) did not collect information on all four risks in 1997; five states (California, Indiana, New York, Oklahoma, and South Dakota) did not collect information on all four risks in 1990. These states and the outlying areas are not included in the U.S. total.

Risks are late (in third trimester) or no prenatal care, low maternal weight gain (less than 21 pounds), mother smoked during pregnancy, or mother drank alcohol during pregnancy.

The National Center for Health Statistics notes that alcohol use during pregnancy is likely to be underreported on the birth certificate.

Source: Nicholas Zill and Christine Winquist Nord of Westat developed the concept of the Children's Health Index. Stephanie Ventura and Sally Curtin of the National Center for Health Statistics provided the special tabulations of the 1990 and 1997 birth certificate data needed to produce the index, July 1999.

2. Immunizations

The Goals Panel reports data from 1994 as the baseline year for immunizations. This was the first year for which data were collected using the National Immunization Survey (NIS). In prior years, the Centers for Disease Control and Prevention collected data on immunizations using the National Health Interview Survey (NHIS). The Goals Panel does not compare data from NIS and NHIS, due to methodological differences between the two instruments.

"Two-year-olds" are defined as children 19 to 35 months of age. "Fully immunized" is defined as four doses of diphtheria-tetanus-pertussis vaccine, three doses of polio vaccine, and one dose of measles or measles-mumps-rubella vaccine.

Sources: 1994 National Immunization Survey, Centers for Disease Control and Prevention. *Morbidity and Mortality Weekly Report*, August 25, 1995, 619; unpublished tabulations from Abt Associates, July 1997.

1997 National Immunization Survey, Centers for Disease Control and Prevention. *Morbidity and Mortality Weekly Report*, July 10, 1998, 547; unpublished tabulations from Abt Associates, August 1998.

3. Family-Child Reading and Storytelling

The population estimates for the National Household Education Survey (NHES) cover 3- to 5-year-old children who are not yet enrolled in

kindergarten. Age from the NHES:93 was established as of January 1, 1993; age from the NHES:99 was established as of December 31, 1998.

In the NHES:93, information on daily reading was collected using two approaches with split-half samples. The two approaches did not result in significantly different estimates for daily reading to 3- to 5-year-old preschoolers. A combined measure using both items for NHES:93 is included in this report.

"Parents" includes parents or other family members. Figures combine responses of "read to every day" and "told a story three or more times a week."

Sources: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey: 1993 School Readiness Interview, unpublished tabulations prepared by Westat, August 1994.

U.S. Department of Education, National Center for Education Statistics, National Household Education Survey: 1999 Parent Interview, unpublished tabulations prepared by Westat, August 1999.

4. Preschool Participation

The population estimates for the NHES cover 3- to 5-year-old children who are not yet enrolled in kindergarten. Age from the NHES:91 was established as of January 1, 1991; age from the NHES:99 was established as of December 31, 1998. Preschool participation includes children enrolled in any center-based program, including nursery schools, prekindergarten programs, preschools, day care centers, and Head Start.

"High income" is defined as a family income of \$50,000 or more. "Low income" is defined as a family income of \$10,000 or less.

Sources: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey: 1991 Early Childhood Component, unpublished tabulations prepared by Westat, August 1994.

U.S. Department of Education, National Center for Education Statistics, National Household Education Survey: 1999 Parent Interview, unpublished tabulations prepared by Westat, August 1999.

Goal 2: School Completion

5. High School Completion

The high school completion rates for 18- to 24-year-olds are computed as a percentage of the non-high school enrolled population at these ages who hold a high school credential (either a high school diploma or an alternative credential, such as a General Educational Development (GED) certificate, Individualized Education Program (IEP) credential, or certificate of attendance).

Source: U.S. Department of Commerce, Bureau of the Census, 1990 and 1998 October Current Population Surveys, unpublished tabulations prepared by the National Center for Education Statistics and MPR Associates, Inc., October 1999.

Goal 3: Student Achievement and Citizenship

General

National Assessment of Educational Progress (NAEP)

NAEP is a survey of the educational achievement of American students and changes in that achievement across time. Since 1969, NAEP has assessed the achievement of national samples of 9-, 13-, and 17-year-old students in public and private schools. In 1983, it expanded the samples so that grade-level results could be reported.

The assessments, conducted annually until the 1979-1980 school year and biennially since then, have included periodic measures of student

performance in reading, mathematics, science, writing, U.S. history, civics, geography, and other subject areas. NAEP also collects demographic, curricular, and instructional background information from students, teachers, and school administrators.

National Assessment Governing Board (NAGB) Achievement Levels

The NAEP data shown under Goal 3 should be interpreted with caution. The Goals Panel's performance standard classifies student performance according to achievement levels devised by the National Assessment Governing Board. These achievement level data have been previously reported by the National Center for Education Statistics (NCES). Students with NAEP scores falling below the Goals Panel's performance standard have been classified as "Basic" or below; those above have been classified as "Proficient" or "Advanced."

The NAGB achievement levels represent a useful way of categorizing overall performance on the NAEP. They are also consistent with the Panel's efforts to report such performance against a high-criterion standard. However, both NAGB and NCES regard the achievement levels as developmental; the reader of this report is advised to interpret the achievement levels with caution.

NAGB has established standards for reporting the results of the National Assessment of Educational Progress. This effort has resulted in three achievement levels: Basic, Proficient, and Advanced. The NAGB achievement levels are reasoned judgments of what students should know and be able to do. They are attempts to characterize overall student performance in particular subject matters. Readers should exercise caution, however, in making particular inferences about what students at each level actually know and can do. A NAEP assessment is a complex picture of student achievement, and applying external standards for performance is a difficult task. Evaluation studies have raised questions about the degree to which the standards in the NAGB

achievement levels are actually reflected in an assessment and, hence, the degree to which inferences about actual performance can be made from these achievement levels. The Goals Panel acknowledges these limitations but believes that, used with caution, these levels convey important information about how American students are faring in reaching Goal 3.

Basic: *This level, below Proficient, denotes partial mastery of knowledge and skills that are fundamental for proficient work at each grade — 4, 8, and 12. For 12th grade, this is higher-than-minimum competency skills (which are normally taught in elementary and junior high school) and covers significant elements of standard high-school-level work.*

Proficient: *This central level represents solid academic performance for each grade tested — 4, 8, and 12. It reflects a consensus that students reaching this level have demonstrated competency over challenging subject matter and are well prepared for the next level of schooling. At Grade 12, the Proficient level encompasses a body of subject-matter knowledge and analytical skills, and of cultural literacy and insight, that all high school graduates should have for democratic citizenship, responsible adulthood, and productive work.*

Advanced: *This higher level signifies superior performance beyond Proficient grade-level mastery at grades 4, 8, and 12. For 12th grade, the Advanced level shows readiness for rigorous college courses, advanced training, or employment requiring advanced academic achievement.*

Seven academic subjects are presented at the national level. Thus far, student achievement levels at the national level have been established by NAGB in reading, writing, mathematics, science, civics, U.S. history, and geography.

6. Reading Achievement

The National Education Goals Panel has set its performance standard at the two highest levels of achievement — Proficient or Advanced — on the National Assessment of Educational Progress (NAEP). These levels were established by the National Assessment Governing Board.

Source: Donahue, P., Voelkl, K., Campbell, J., & Mazzeo, J. (1999). *NAEP 1998 reading report card for the nation and the states*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

7. Writing Achievement

During 1999, student achievement levels were established for writing by the National Assessment Governing Board. The percentages of U.S. 4th, 8th, and 12th graders who performed at the two highest levels of achievement — Proficient or Advanced — on the 1998 NAEP writing assessment are presented for the first time in this year's *Goals Report* and *Data Volume*. This information replaces data that were previously reported from the 1992 NAEP Writing Portfolio Study before the student achievement levels were available.

Source: Greenwald, E., Persky, H., Campbell, J., & Mazzeo, J. (1999). *NAEP 1998 writing report card for the nation and the states*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

8. Mathematics Achievement

See technical note under indicator 6 and general technical notes regarding NAEP and the NAGB achievement levels.

Source: Reese, C.M., Miller, K.E., Mazzeo, J., & Dossey, J.A. (1997). *NAEP 1996 mathematics report card for the nation and the states*. Washington, DC: National Center for Education Statistics.

9. Science Achievement

See technical note under indicator 6 and general technical notes regarding NAEP and the NAGB achievement levels.

Source: Bourque, M.L., Champagne, A., & Crissman, S. (1997). *1996 science performance standards: Achievement results for the nation and states, a first look*. Washington, DC: National Assessment Governing Board.

10. Civics Achievement

See technical note under indicator 6 and general technical notes regarding NAEP and the NAGB achievement levels.

Source: National Center for Education Statistics, National Assessment of Educational Progress (NAEP), *1998 civics assessment*. [Table 1.2]

11. History Achievement

See technical note under indicator 6 and general technical notes regarding NAEP and the NAGB achievement levels.

According to NCES, the U.S. history results presented here for Grades 4, 8, and 12 illustrate one of the difficulties in setting achievement levels. NAGB is concerned about the discrepancy between actual student performance and the expectations for performance that are contained in the achievement levels. Simply stated, students are not performing as well on the NAEP U.S. history assessment, particularly at Grade 12, as NAGB and the many panelists and reviewers think that these students should perform. For example, most students take at least one high school course in U.S. history by the end of the 11th grade. Yet the achievement levels indicate that more than half (57%) of 12th graders are performing below the Basic level, with 1% scoring at the Advanced level. In contrast, data from The College Board show that about 2.4% of all graduating seniors score well enough on the

Advanced Placement examination in U.S. history to be considered qualified for college credit.

Since NAEP is a cross-sectional survey of student achievement, it cannot readily identify cause-and-effect relationships to explain why students scored high or low. Although one hypothesis is that students' performance was found to be too low because the achievement levels are set too high, NAGB does not believe that this is the case. At present, validity studies on these achievement levels, conducted by American College Testing (ACT), have pointed in opposite directions — one suggested that the levels were too high, the other that they were too low. NAGB intends to look carefully at this gap between expected and actual performance and encourages others to do so as well.

There are several other hypotheses that might account for this gap between actual student scores and the achievement levels. Motivation, particularly at Grade 12, is a perennial problem in an assessment like NAEP for which there are no stakes or rewards for students to do well. (However, it is not clear why students should be less motivated in taking this history assessment than other NAEP assessments in which higher percentages of students reached the various "cutpoints.") There may be differences between what is taught in the broad array of U.S. history classes and the content of this NAEP assessment. A lack of consistency between the grade levels at which the subject is taught and the NAEP assessment of Grades 4, 8, and 12 could account for some of this discrepancy. The judges for the 12th grade levels may have had relatively higher expectations than judges for the other grades. Finally, the difference between more conventional testing practices in some classrooms and the NAEP assessment questions may be another factor. NAEP includes a variety of questions, from multiple-choice items to open-ended tasks that require students to apply knowledge and demonstrate skills by writing their answers.

Many of these factors, or a combination of all of them, could explain the gap between standards for student performance contained in the NAGB achievement levels and the actual performance on the 1994 NAEP history assessment.

Source: Williams, P.L., Lazer, S., Reese, C.M., & Carr, P. (1995). *1994 NAEP U.S. history: A first look*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

12. Geography Achievement

See technical note under indicator 6.

Source: Williams, P.L., Reese, C.M., Lazer, S., & Shakrani, S. (1995). *1994 NAEP world geography: A first look*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Goal 4: Teacher Education and Professional Development

13. Teacher Preparation

Only secondary school teachers whose main assignment was in mathematics, science, English, social studies, fine arts, foreign language, and special education were included in the analysis of whether a teacher had a degree in his/her main assignment. Information is not reported for bilingual education or English as a Second Language (ESL) degrees, since relatively few higher education institutions grant degrees in those fields.

The subject areas used for teacher's main assignment were defined using the following assignment categories:

Mathematics: mathematics

Science: biology/life science, chemistry, geology/earth science/space science, physics, and general and all other science

English: English/language arts and reading

Social studies: social studies/social science

Fine arts: art, dance, drama/theater, and music

Foreign language: French, German, Latin, Russian, Spanish, and other foreign language

Special education: general special education, emotionally disturbed, mentally retarded, speech/language impaired, deaf and hard-of-hearing, orthopedically impaired, severely handicapped, specific learning disabilities, and other special education

The subject areas used for teacher's degree were defined using the following training categories:

Mathematics: mathematics and mathematics education

Science: biology/life science, chemistry, geology/earth science/space science, physics, general and all other science, and science education

English: English, English education, and reading education

Social studies: social studies/social sciences education, economics, history, political science, psychology, public affairs and services, sociology, and other social sciences

Fine arts: art education, art (fine and applied), drama/theater, music, and music education

Foreign language: French, German, Latin, Russian, Spanish, other foreign language, and foreign language education

Special education: general special education, emotionally disturbed, mentally retarded, speech/language impaired, deaf and hard-of-hearing, orthopedically impaired, severely handicapped, specific learning disabilities, and other special education

"Undergraduate or graduate degree" includes academic or education majors, but does not include minors or second majors.

A secondary teacher is one who, when asked about grades taught, checked:

- “Ungraded” and was designated as a secondary teacher on the list of teachers provided by the school; or
- 6th grade or lower and 7th grade or higher, and reported a primary assignment other than prekindergarten, kindergarten, or general elementary; or
- 9th grade or higher, or 9th grade or higher and “ungraded;” or
- 7th and 8th grades only, and reported a primary assignment other than kindergarten, general elementary, or special education; or
- 7th and 8th grades only, and reported a primary assignment of special education and was designated as a secondary teacher on the list of teachers provided by the school; or
- 6th grade or lower and 7th grade or higher, or 7th and 8th grades only, and was not categorized above as either elementary or secondary.

Source: U.S. Department of Education, National Center for Education Statistics, Teacher Surveys of the Schools and Staffing Survey, 1990-1991 and 1993-1994, unpublished tabulations prepared by Westat, August 1995.

14. Teacher Professional Development

Selected topics for professional development include uses of educational technology, methods of teaching subject field, in-depth study in subject field, and student assessment.

Source: U.S. Department of Education, National Center for Education Statistics, Teacher Survey of the Schools and Staffing Survey, 1993-1994, unpublished tabulations prepared by Westat, August 1995.

Goal 5: Mathematics and Science

15. International Mathematics Achievement

For the Third International Mathematics and Science Study (TIMSS), the following countries did not meet international guidelines at Grade 4: Australia, Austria, Hungary, Israel, Kuwait, Latvia (LSS), Netherlands, Slovenia, and Thailand. In England, more than 10% of the population was excluded from testing at Grade 4. In England and Scotland, a participation rate of 75% of the schools and students combined for Grade 4 was achieved only after replacements for refusals were substituted.

The following countries did not meet international guidelines at Grade 8: Australia, Austria, Belgium (French), Bulgaria, Colombia, Denmark, Germany, Greece, Israel, Kuwait, Netherlands, Romania, Scotland, Slovenia, South Africa, and Thailand.

In four countries, more than 10% of the population was excluded from testing at Grade 8: England, Germany, Israel, and Lithuania. In Belgium (Flemish), England, Germany, Latvia (LSS), Switzerland, and the United States, a participation rate of 75% of the schools and students combined for Grade 8 was achieved only after replacements for refusals were substituted.

Sources: U.S. Department of Education, National Center for Education Statistics. (1996). *Pursuing excellence: A study of U.S. eighth-grade mathematics and science teaching, learning, curriculum, and achievement in international context*. NCES 97-198. Washington, DC: U.S. Government Printing Office.

U.S. Department of Education, National Center for Education Statistics. (1997). *Pursuing excellence: A study of U.S. fourth-grade mathematics and science achievement in international context*. NCES 97-255. Washington, DC: U.S. Government Printing Office.

U.S. Department of Education, National Center for Education Statistics. (1998). *Pursuing excellence: A study of U.S. twelfth-grade mathematics and science achievement in international context*. NCES 98-049. Washington, DC: U.S. Government Printing Office.

16. International Science Achievement

See technical note under indicator 15.

Sources: *Ibid.*

17. Mathematics and Science Degrees

Data include only U.S. citizens and resident aliens on permanent visas. Degrees awarded by institutions in the outlying areas are included in the U.S. percentages.

Mathematical sciences is the only field of study included in the mathematics category for this report.

Fields of study in the science category for this report include: engineering; physical sciences; geosciences; computer science; life sciences (includes medical and agricultural sciences); social sciences; and science and engineering technologies (includes health technologies).

Source: Integrated Postsecondary Education Data System (IPEDS 1991 and 1996), which is conducted by the National Center for Education Statistics. The data were analyzed by Westat, using the National Science Foundation's WebCASPAR Database System, August 1999.

Goal 6: Adult Literacy and Lifelong Learning

18. Adult Literacy

The U.S. Department of Education and the Educational Testing Service (ETS) characterized the literacy of America's adults in terms of three "literacy scales" representing distinct and important aspects of literacy: prose, document, and quantitative literacy. Each of the literacy scales

has five levels, with Level 1 being least proficient and Level 5 being most proficient.

Prose literacy, selected as a national indicator for this report, is defined as the knowledge and skills needed to understand and use information from texts that include editorials, news stories, poems, and fiction — for example, finding a piece of information in a newspaper article, interpreting instructions from a warranty, inferring a theme from a poem, or contrasting views expressed in an editorial. The five levels are:

Level 1 – Most of the tasks in this level require the reader to read relatively short text to locate a single piece of information which is identical to or synonymous with the information given in the question or directive. If plausible but incorrect information is present in the text, it tends not to be located near the correct information.

Level 2 – Some tasks in this level require readers to locate a single piece of information in the text; however, several distractors or plausible-but incorrect pieces of information may be present, or low-level inferences may be required. Other tasks require the reader to integrate two or more pieces of information or to compare and contrast easily identifiable information based on a criterion provided in the question or directive.

Level 3 – Tasks in this level tend to require readers to make literal or synonymous matches between the text and information given in the task, or to make matches that require low-level inferences. Other tasks ask readers to integrate information from dense or lengthy text that contains no organizational aids such as headings. Readers may also be asked to generate a response based on information that can be easily identified in the text. Distracting information is present, but is not located near the correct information.

Level 4 – These tasks require readers to perform multiple-feature matches and to integrate or synthesize information from complex or lengthy passages. More complex inferences are needed to perform successfully. Conditional information is frequently present in tasks at this level and must be taken into consideration by the reader.

Level 5 – Some tasks in this level require the reader to search for information in dense text which contains a number of plausible distractors. Others ask readers to make high-level inferences or use specialized background knowledge. Some tasks ask readers to contrast complex information.

Source: Kirsch, I.S., Jungeblut, A., Jenkins, L., & Kolstad, A. (1993, September). *Adult literacy in America: A first look at the results of the National Adult Literacy Survey*, p. 17. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

19. Participation in Adult Education

Adults 17 years old and older who participated in one or more adult education activities on a full-time, but not on a part-time, basis in the previous 12 months are excluded from both the numerator and denominator in the calculations of adult education participation.

Sources: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey: 1991 Adult Education Component, unpublished tabulations prepared by Westat, August 1994.

U.S. Department of Education, National Center for Education Statistics, National Household Education Survey: 1999 Adult Education Interview, unpublished tabulations prepared by Westat, August 1999.

20. Participation in Higher Education

Disparities in college entrance rates between White and minority high school graduates are based on three-year averages (1989-1991 for 1990; 1996-1998 for 1997). College completion rates are based on adults

aged 25 to 29. "College" includes junior colleges, community colleges, and universities. "College degree" includes Associate's degrees, Bachelor's degrees, and graduate/professional degrees.

Sources: U.S. Department of Commerce, Bureau of the Census, October Current Population surveys, 1989-1991 and 1996-1998; unpublished tabulations from the National Center for Education Statistics, prepared by Pinkerton Computer Consultants, Inc., July 1999.

U.S. Department of Commerce, Bureau of the Census, 1992 and 1998 March Current Population Surveys; unpublished tabulations from the National Center for Education Statistics, prepared by Pinkerton Computer Consultants, Inc., July 1999.

Goal 7: Safe, Disciplined, and Alcohol- and Drug-free Schools

21. Overall Student Drug and Alcohol Use

Use of any illicit drug includes any use of marijuana, hallucinogens, cocaine, heroin, inhalants, or any use of stimulants or tranquilizers not under a doctor's orders.

Source: Johnston, L.D., O'Malley, P.M., & Bachman, J.G. (1999, July). *Selected outcome measures from the Monitoring the Future Study for Goal 7 of the National Education Goals: A special report for the National Education Goals Panel*. Ann Arbor: University of Michigan, Institute for Social Research.

22. Sale of Drugs at School

Source: *Ibid.*

23. Student and Teacher Victimization

- Student Victimization

Threats and injuries to students include those made with or without a weapon.

Source: *Ibid.*

- Teacher Victimization

Sources: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Teacher Survey on Safe, Disciplined, and Drug-free Schools, FRSS 42, unpublished tabulations prepared by Westat, August 1994.

U.S. Department of Education, National Center for Education Statistics, Teacher Survey of the Schools and Staffing Survey, 1993-1994, unpublished tabulations prepared by Westat, August 1995.

24. Disruptions in Class by Students

- Student Reports

Percentage represents responses from students who reported that during an average week, misbehavior by other students interfered with their own learning six times a week or more.

Source: Johnston, L.D., O'Malley, P.M., & Bachman, J.G. (1998, July). *Selected outcome measures from the Monitoring the Future Study for Goal 7 of the National Education Goals: A special report for the National Education Goals Panel.* Ann Arbor: University of Michigan, Institute for Social Research.

- Teacher Reports

Percentage represents responses from secondary school teachers who "agreed" or "strongly agreed" that student misbehavior interferes with their teaching.

See technical note for Goal 4, indicator 13 regarding the definition of a secondary teacher.

Source: U.S. Department of Education, National Center for Education Statistics, Teacher Surveys of the Schools and Staffing Survey, 1990-1991 and 1993-1994, unpublished tabulations prepared by Westat, August 1995.

Goal 8: Parental Participation

25. Schools' Reports of Parent Attendance at Parent-Teacher Conferences

Survey respondents were principals or their designees. "More than half" included responses of "more than half" and "most or all" combined. Data included only those public schools in which the school reported that it held regularly scheduled schoolwide parent-teacher conferences during the year.

An elementary school was any school where the highest grade identified on the survey questionnaire was 6 or lower. A middle school was any school where the highest grade identified was 7 or 8, and three or fewer grades were served. All other schools (for example, where the highest grade identified was 7 or 8, and more than three grades were served) were not included in the analysis.

Source: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on Family and School Partnerships in Public Schools, K-8, FRSS 58, 1996, unpublished tabulations prepared by Westat, August 1996.

26. Schools' Reports of Parent Involvement in School Policy Decisions

Survey respondents were principals or their designees. Data include responses of "moderate extent" and "great extent" combined. Policy areas include: allocation of funds; curriculum or overall instructional program; the design of special programs; library books and materials; discipline policies and procedures; health-related topics or policies; monitoring or evaluating teachers; or developing parent involvement activities.

An elementary school was any school where the highest grade identified on the survey questionnaire was 6 or lower. A middle school was any school where the highest grade identified was 7 or 8, and three or fewer grades were served. All other schools (for example, where the highest grade identified was 7 or 8, and more than three grades were served) were not included in the analysis.

Source: *Ibid.*

27. Parents' Reports of Their Involvement in School Activities

In the NHES:99, data for the three variables included in this report (attendance at a general school meeting, attendance at a school or class event, and acting as a volunteer at the school or serving on a school committee) were collected for a split-half of the sample. The other split-half of the sample included items that were worded slightly differently.

Sources: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey: 1993 School Safety and Discipline Component, unpublished tabulations, National Center for Education Statistics, August 1995.

U.S. Department of Education, National Center for Education Statistics, National Household Education Survey: 1999 Parent Interview, unpublished tabulations prepared by Westat, August 1999.

Readers interested in further information from data sources for the national indicators presented in the *1999 Data Volume for the National Education Goals Report* can contact the sponsoring agencies, as follows:

Data Source	Sponsoring Agency	Contact
Children's Health Index (Indicator 1)	National Center for Health Statistics (NCHS)	Sally Curtin (301) 436-8500
Fast Response Survey System (FRSS) (Indicators 25 and 26)	National Center for Education Statistics (NCES)	Edith McArthur (202) 219-1442
Integrated Postsecondary Education Data System (IPEDS) (Indicator 17)	NCES	Susan Broyles (202) 219-1359
International Education Survey (Indicators 15 and 16)	NCES	Eugene Owen (202) 219-1746
Monitoring the Future (Indicators 21-24)	University of Michigan, Institute for Social Research	Lloyd Johnston (313) 763-5043
National Adult Literacy Survey (NALS) (Indicator 18)	NCES	Andrew Kolstad (202) 219-1773
National Assessment of Educational Progress (NAEP) (Indicators 6-12)	NCES	Peggy Carr (202) 219-1576
National Immunization Survey (Indicator 2)	Centers for Disease Control and Prevention	Victor Coronado (404) 639-8892
National Household Education Survey (NHES) (Indicators 3, 4, and 27)	NCES	Kathryn Chandler (202) 219-1767
NHES Adult Education Component (Indicator 19)	NCES	Peter Stowe (202) 219-2099
NCES items in the Current Population Survey (CPS) (Indicators 5 and 20)	NCES	Kathryn Chandler (202) 219-1767
Schools and Staffing Survey (SASS) (Indicators 13, 14, 23, and 24)	NCES	Daniel Kasprzyk (202) 219-1588



Technical Notes and Sources for the State Indicators

General Information

See general technical notes in Appendix A for information regarding statistical significance, accuracy of data, and sampling and nonsampling errors.

Baseline and Most Recent Update Years

State participation may vary by data collection year for reporting data from the Children's Health Index (indicator 1), dropout data using the National Center for Education Statistics' (NCES) uniform definition (indicator 7), state-level NAEP reading at Grade 4 (indicator 8), state-level NAEP mathematics at Grades 4 and 8 (indicator 10), and data from the Youth Risk Behavior Survey (YRBS) (indicators 24-30). The baseline year and the most recent update year for each state are reported in parentheses next to these indicators.

For these indicators, the range of state scores is calculated using the data for all states that participated in that year, whether or not that year represents all states' baseline year or most recent update year. For example, 11 states have 1992 as their baseline year for indicator 7 and five states have 1993 as their baseline year. For these five states, the range of state scores for indicator 7 includes data for the 15 states that reported dropout rates in 1993.

State and U.S. Comparisons

For the state-level indicators on student achievement (8-11) and the mathematics instructional practices (18-19), the state data include public school students only, while the U.S. data include public and nonpublic school students. For the indicators on teacher education and professional development (13-16), and teacher victimization and student disruptions (31-32), the state data include public school teachers only, while the U.S. data include both public and nonpublic school teachers.

Data for the U.S. that are reported on the state pages do not include the outlying areas. Ranges of state scores reported on the state pages do include the outlying areas.

Goal 1: Ready to Learn

1. Children's Health Index

The percentages of infants at risk are based on the number of births used to calculate the health index, not the actual number of births. The percentage of complete and usable birth records used to calculate the 1997 health index varied from a high of 99.9% to a low of 75.3%. Four states (California, Indiana, New York, and South Dakota) did not collect information on all four risks in 1997; five states (California, Indiana, New York, Oklahoma, and South Dakota) did not collect information on all four risks in 1990. These states and the outlying areas are not included in the U.S. total.

Risks are late (in third trimester) or no prenatal care, low maternal weight gain (less than 21 pounds), mother smoked during pregnancy, or mother drank alcohol during pregnancy.

The National Center for Health Statistics notes that alcohol use during pregnancy is likely to be underreported on the birth certificate.

Source: Nicholas Zill and Christine Winquist Nord of Westat developed the concept of the Children's Health Index. Stephanie Ventura and Sally Curtin of the National Center for Health Statistics provided the special tabulations of the 1990 and 1997 birth certificate data needed to produce the index, July 1999.

2. Immunizations

The Goals Panel reports data from 1994 as the baseline year for immunizations. This was the first year for which data were collected using the National Immunization Survey (NIS). In prior years, the Centers for Disease Control and Prevention collected data on immunizations using the National Health Interview Survey (NHIS). The Goals Panel does not compare data from NIS and NHIS, due to methodological differences between the two instruments.

"Two-year-olds" are defined as children 19 to 35 months of age. "Fully immunized" is defined as four doses of diphtheria-tetanus-pertussis vaccine, three doses of polio vaccine, and one dose of measles or measles-mumps-rubella vaccine.

Sources: 1994 National Immunization Survey, Centers for Disease Control and Prevention. *Morbidity and Mortality Weekly Report*, August 25, 1995, 619; unpublished tabulations from Abt Associates, July 1997.

1997 National Immunization Survey, Centers for Disease Control and Prevention. *Morbidity and Mortality Weekly Report*, July 10, 1998, 547; unpublished tabulations from Abt Associates, August 1998.

3. Low Birthweight

Source: U.S. Department of Health and Human Services, unpublished tabulations from Division of Vital Statistics, National Center for Health Statistics; prepared by Westat, July 1999.

4. Early Prenatal Care

Prenatal care refers to the first visit for health care services during pregnancy.

Source: *Ibid.*

5. Preschool Programs for Children with Disabilities

The *Individuals with Disabilities Education Act* (IDEA) supports the improvement of services for very young children with disabilities through several programs, including the Program for Infants and Toddlers with Disabilities (Part C), the Preschool Grants Program (Section 619 of Part B), and the Early Education Program for Children with Disabilities (Section 623 of Part C). The Congressional mandate required states to have a mandate in place by school year 1991-1992 that ensures a free appropriate public education (FAPE) for all eligible 3- to 5-year-old children with disabilities.

Data are based on state information submitted to the U.S. Department of Education, Office of Special Education and Rehabilitative Services (OSERS) on the number of children with disabilities served under IDEA, Part B and Chapter 1 (ESEA State-Operated Programs [SOP]) programs. Data for the outlying areas are presented for the first time in this year's *Goals Report and Data Volume*.

Source: U.S. Department of Education, Office of Special Education Programs, Data Analysis System (DANS), unpublished tabulations prepared by Westat, July 1999. Percentage of children served is based on U.S. Census Bureau Estimated Resident Population, by state, for July 1997.

Goal 2: School Completion

6. High School Completion Rates

The high school completion rates for 18- to 24-year-olds are computed as a percentage of the non-high school enrolled population at these ages who hold a high school credential (either a high school diploma or an alternative credential, such as a General Educational Development (GED) certificate, Individualized Education Program (IEP) credential, or certificate of attendance).

Because of small sample sizes, the state-level completion data are calculated using three-year averages. For example, for the baseline year, state data for 1990 reflect an average of 1989, 1990, and 1991. The figure for the U.S. that is shown on the state pages is for 1990. For the most recent update year, state data for 1997 reflect an average of 1996, 1997, and 1998. The figure for the U.S. that is shown on the state pages is for 1998.

Source: U.S. Department of Commerce, Bureau of the Census, 1989-1991 and 1996-1998 October Current Population Surveys; unpublished tabulations prepared by the National Center for Education Statistics and MPR Associates, Inc., October 1999.

7. High School Dropout Rates

The Common Core of Data (CCD) defines a dropout as an individual who: (1) was enrolled in school at some time during the previous school year; (2) was not enrolled on October 1 of the current school year; (3) has not graduated from high school or completed a state- or district-approved educational program; and (4) does not meet any exclusionary conditions. The 1991-1992 school year was the first for which states reported school district-level data on the numbers and types of dropouts in the CCD Agency Universe Survey. For the 1991-1992 school year, 10 states and the District of Columbia reported data that were considered to meet the CCD standards to allow participation of their dropout data. For the 1996-1997 school year, 26 states reported data that met CCD standards.

Sources: Hoffman, L.M. (1995). *State dropout data collection practices: 1991-1992 school year*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

McMillen, M.M., & Kaufman, P. (1996). *Dropout rates in the United States: 1994*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

McMillen, M.M., Kaufman, P., & Klein, S. (1997). *Dropout rates in the United States: 1995*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

McMillen, M.M. (1998). *Dropout rates in the United States: 1996*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Hoffman, L. (1999). *Overview of public elementary and secondary schools and districts: School year 1996-1997*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Hoffman, L. (1999). *Overview of public elementary and secondary schools and districts: School year 1997-1998*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Goal 3: Student Achievement and Citizenship

General

National Assessment of Educational Progress (NAEP)

NAEP is a survey of the educational achievement of American students and changes in that achievement across time. Since 1969, NAEP has assessed the achievement of national samples of 9-, 13-, and 17-year-old students in public and private schools. In 1983, it expanded the samples so that grade-level results could be reported.

The assessments, conducted annually until the 1979-1980 school year and biennially since then, have included periodic measures of student performance in reading, mathematics, science, writing, U.S. history, civics, geography, and other subject areas. NAEP also collects

demographic, curricular, and instructional background information from students, teachers, and school administrators.

In 1988, Congress added a new dimension to NAEP by authorizing, on a trial basis, voluntary participation of public schools in state-level assessments.

National Assessment Governing Board (NAGB) Achievement Levels

The NAEP data shown under Goal 3 should be interpreted with caution. The Goals Panel's performance standard classifies student performance according to achievement levels devised by the National Assessment Governing Board. These achievement level data have been previously reported by the National Center for Education Statistics (NCES). Students with NAEP scores falling below the Goals Panel's performance standard have been classified as "Basic" or below; those above have been classified as "Proficient" or "Advanced."

The NAGB achievement levels represent a useful way of categorizing overall performance on the NAEP. They are also consistent with the Panel's efforts to report such performance against a high-criterion standard. However, both NAGB and NCES regard the achievement levels as developmental; the reader of this report is advised to interpret the achievement levels with caution.

NAGB has established standards for reporting the results of the National Assessment of Educational Progress. This effort has resulted in three achievement levels: Basic, Proficient, and Advanced. The NAGB achievement levels are reasoned judgments of what students should know and be able to do. They are attempts to characterize overall student performance in particular subject matters. Readers should exercise caution, however, in making particular inferences about what students at each level actually know and can do. A NAEP assessment is a complex picture of student achievement, and applying external

standards for performance is a difficult task. Evaluation studies have raised questions about the degree to which the standards in the NAGB achievement levels are actually reflected in an assessment and, hence, the degree to which inferences about actual performance can be made from these achievement levels. The Goals Panel acknowledges these limitations but believes that, used with caution, these levels convey important information about how American students are faring in reaching Goal 3.

Basic: *This level, below Proficient, denotes partial mastery of knowledge and skills that are fundamental for proficient work at each grade — 4, 8, and 12. For 12th grade, this is higher-than-minimum competency skills (which are normally taught in elementary and junior high school) and covers significant elements of standard high-school-level work.*

Proficient: *This central level represents solid academic performance for each grade tested — 4, 8, and 12. It reflects a consensus that students reaching this level have demonstrated competency over challenging subject matter and are well prepared for the next level of schooling. At Grade 12, the Proficient level encompasses a body of subject-matter knowledge and analytical skills, and of cultural literacy and insight, that all high school graduates should have for democratic citizenship, responsible adulthood, and productive work.*

Advanced: *This higher level signifies superior performance beyond proficient grade-level mastery at Grades 4, 8, and 12. For 12th grade, the Advanced level shows readiness for rigorous college courses, advanced training, or employment requiring advanced academic achievement.*

Four academic subjects are presented at the state level. Thus far, state-level assessments have been conducted in reading, writing, mathematics, and science, and student achievement levels have been established by NAGB in each subject area.

8. Reading Achievement

See general technical notes regarding NAEP and the NAGB achievement levels.

The National Education Goals Panel has set its performance standard at the two highest levels of achievement — Proficient or Advanced — on the National Assessment of Educational Progress (NAEP). These levels were established by the National Assessment Governing Board.

In 1992, 44 jurisdictions (states, the District of Columbia, and outlying areas) participated in the 4th grade state-level NAEP reading assessment.

In 1994, 43 jurisdictions participated in the voluntary assessment of 4th graders. However, two states, Idaho and Michigan, did not meet the minimum school participation guidelines for public schools; therefore, their results were not released. It should also be noted that Montana, Nebraska, New Hampshire, Pennsylvania, Rhode Island, Tennessee, and Wisconsin did not satisfy one of the guidelines for school sample participation rates in 1994.

In 1998, 42 jurisdictions participated in the state-level reading assessment of 4th graders, and 39 jurisdictions participated in the first state-level reading assessment of 8th graders. One state, Illinois, failed to meet the minimum school participation guidelines for public schools at both Grade 4 and Grade 8; therefore, no results for Illinois were released. Nine states did not satisfy one of the guidelines for school sample participation rates at Grade 4: California, Iowa, Kansas, Massachusetts, Minnesota, Montana, New Hampshire, New York, and Wisconsin. Seven states did not satisfy one of the guidelines for school sample participation rates at Grade 8: California, Kansas, Maryland, Minnesota, Montana, New York, and Wisconsin.

Students with disabilities and students with limited English proficiency are included in the samples of students who take NAEP assessments unless they meet well-defined criteria for exclusion. In some states, the exclusion rates for these groups of students changed between the 1994 and 1998 NAEP reading assessments. The National Center for Education Statistics is examining possible relationships between changes in state-level performance at Grade 4 between 1994 and 1998, and changes in exclusion rates for these groups of students. For further information, please contact Peggy Carr of the National Center for Education Statistics, at (202) 219-1576, peggy_carr@ed.gov.

Source: Donahue, P., Voelkl, K., Campbell, J., & Mazzeo, J. (1999). *NAEP 1998 reading report card for the nation and the states*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

9. Writing Achievement

During 1999, student achievement levels were established for writing by the National Assessment Governing Board. The percentages of 8th graders who performed at the two highest levels of achievement — Proficient or Advanced — on the state-level NAEP writing assessment in 1998 are presented in this year's *Goals Report* and *Data Volume*. This was the first time that NAEP assessed writing at the state level.

In 1998, 37 jurisdictions (states, the District of Columbia, and outlying areas) participated in the 8th grade state-level NAEP writing assessment.

Source: Greenwald, E., Persky, H., Campbell, J., & Mazzeo, J. (1999). *NAEP 1998 writing report card for the nation and the states*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

10. Mathematics Achievement

See general technical notes regarding NAEP and the NAGB achievement levels.

The National Education Goals Panel has set its performance standard at the two highest levels of achievement — Proficient or Advanced — on the National Assessment of Educational Progress. These levels were established by the National Assessment Governing Board.

Forty jurisdictions (states, the District of Columbia, and outlying areas) participated in the 1990 trial mathematics assessment of 8th graders, and 44 jurisdictions participated in the 1992 state mathematics assessments of 4th and 8th graders.

In 1996, 45 jurisdictions participated in the voluntary assessment of 4th and 8th graders. However, three states (Nevada, New Hampshire, and New Jersey) failed to meet the minimum school participation guidelines for public schools at Grade 8; therefore, their results were not released. The following states did not satisfy one of the guidelines for school sample participation rates at Grade 4: Alaska, Arkansas, Iowa, Michigan, Montana, Nevada, New Jersey, New York, Pennsylvania, South Carolina, and Vermont. The following states did not satisfy one of the guidelines for school sample participation rates at Grade 8: Alaska, Arkansas, Iowa, Maryland, Michigan, Montana, New York, South Carolina, Vermont, and Wisconsin.

Sources: Reese, C.M., Miller, K.E., Mazzeo, J., & Dossey, J.A. (1997). *NAEP 1996 mathematics report card for the nation and the states*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

National Center for Education Statistics, 1990 and 1992 NAEP Mathematics Data (revised), October 1996.

11. Science Achievement

See general technical notes regarding NAEP and the NAGB achievement levels.

The National Education Goals Panel has set its performance standard at the two highest levels of achievement — Proficient or Advanced — on the National Assessment of Educational Progress. These levels were established by the National Assessment Governing Board.

In 1996, 45 states participated in the voluntary program. However, three states (Nevada, New Hampshire, and New Jersey) failed to meet the minimum school participation guidelines for public schools; therefore, their results were not released. The following states did not satisfy one of the guidelines for school sample participation rates: Alaska, Arkansas, Iowa, Maryland, Michigan, Montana, New York, South Carolina, Vermont, and Wisconsin.

Source: Bourque, M.L., Champagne, A., & Crissman, S. (1997). *1996 science performance standards: Achievement results for the nation and states, a first look*. Washington, DC: National Assessment Governing Board.

12. Advanced Placement Performance

The Advanced Placement program, sponsored by the College Board, provides a way for high schools to offer college-level coursework to students. At present, one or more course descriptions, examinations, and sets of curricular materials are available in art, biology, chemistry, computer science, economics, English, French, German, government and politics, history, Latin, mathematics, music, physics, and Spanish. Advanced Placement examinations, which are given in May, are graded on a five-point scale: 5 — extremely well qualified; 4 — well qualified; 3 — qualified; 2 — possibly qualified; and 1 — no recommendation.

Grades of 3 and above generally are accepted for college credit and advanced placement at participating colleges and universities.

The subject areas used for this report include the following Advanced Placement examinations:

English: English Language & Composition and English Literature & Composition

Science: Biology, Chemistry, Physics B, Physics C — Mechanics, and Physics C — Electricity and Magnetism

Mathematics: Calculus AB and Calculus BC

History: U.S. History and European History

Foreign Language: French Language, French Literature, Spanish Language, Spanish Literature, and German

Fine Arts: Art History, Studio Art (Drawing and General), and Music Theory

Economics: Macro-economics and Micro-economics

Government: U.S. Government and Politics and Comparative Government and Politics

The number of Advanced Placement examinations graded 3 or above per 1,000 11th and 12th graders is presented in this report. The number of 11th and 12th graders includes public and private students. The enrollment figures were arrived at by multiplying the public enrollment by a private-enrollment adjustment factor.

Source: The College Board, Advanced Placement Program, Results from the 1991 and 1999 Advanced Placement Examinations, unpublished tabulations, August 1991 and August 1999.

Goal 4: Teacher Education and Professional Development

13. Teacher Preparation

Only secondary school teachers whose main assignment was in mathematics, science, English, social studies, fine arts, foreign language, and special education were included in the analysis of whether a teacher had a degree in his/her main assignment. Information is not reported for bilingual education or English as a Second Language (ESL) degrees, since relatively few higher education institutions grant degrees in those fields. "Undergraduate or graduate degrees" includes academic or education majors, but does not include minors or second majors.

The subject areas used for teacher's main assignment were defined using the following assignment categories:

Mathematics: mathematics

Science: biology/life science, chemistry, geology/earth science/space science, physics, and general and all other science

English: English/language arts and reading

Social studies: social studies/social science

Fine arts: art, dance, drama/theater, and music

Foreign language: French, German, Latin, Russian, Spanish, and other foreign language

Special education: general special education, emotionally disturbed, mentally retarded, speech/language impaired, deaf and hard-of-hearing, orthopedically impaired, severely handicapped, specific learning disabilities, and other special education

The subject areas used for teacher's degree were defined using the following training categories:

Mathematics: mathematics and mathematics education

Science: biology/life science, chemistry, geology/earth science/space science, physics, general and all other science, and science education

English: English, English education, and reading education

Social studies: social studies/social sciences education, economics, history, political science, psychology, public affairs and services, sociology, and other social sciences

Fine arts: art education, art (fine and applied), drama/theater, music, and music education

Foreign language: French, German, Latin, Russian, Spanish, other foreign language, and foreign language education

Special education: general special education, emotionally disturbed, mentally retarded, speech/language impaired, deaf and hard-of-hearing, orthopedically impaired, severely handicapped, specific learning disabilities, and other special education

A secondary teacher is one who, when asked about grades taught, checked:

- "Ungraded" and was designated as a secondary teacher on the list of teachers provided by the school; or
- 6th grade or lower and 7th grade or higher, and reported a primary assignment other than prekindergarten, kindergarten, or general elementary; or
- 9th grade or higher, or 9th grade or higher and "ungraded;" or
- 7th and 8th grades only, and reported a primary assignment other than kindergarten, general elementary, or special education; or

- 7th and 8th grades only, and reported a primary assignment of special education and was designated as a secondary teacher on the list of teachers provided by the school; or
- 6th grade or lower and 7th grade or higher, or 7th and 8th grades only, and was not categorized above as either elementary or secondary.

Source: U.S. Department of Education, National Center for Education Statistics, Public School Teacher Surveys of the Schools and Staffing Survey, 1990-1991 and 1993-1994, unpublished tabulations prepared by Westat, August 1995.

14. Teacher Professional Development

Selected topics for professional development include uses of educational technology, methods of teaching subject field, in-depth study in subject field, and student assessment.

Source: U.S. Department of Education, National Center for Education Statistics, Public School Teacher Survey of the Schools and Staffing Survey, 1993-1994, unpublished tabulations prepared by Westat, August 1995.

15. Preparation to Teach Limited English Proficient Students

Source: *Ibid.*

16. Teacher Support

Source: U.S. Department of Education, National Center for Education Statistics, Public School Teacher Surveys of the Schools and Staffing Survey, 1990-1991 and 1993-1994, unpublished tabulations prepared by Westat, August 1995.

Goal 5: Mathematics and Science

17. International Mathematics and Science Achievement

International comparisons of student achievement in 8th grade mathematics and science are presented, using data from a 1998 research study. This study statistically links state results from the 1996 NAEP with country results from the 1995 Third International Mathematics and Science Study (TIMSS). TIMSS is the most comprehensive international study of mathematics and science achievement conducted to date. TIMSS tested half a million students in 41 countries in 30 different languages. Participating countries included the United States and some of the United States' chief economic competitors and trading partners, such as Japan, Germany, Canada, England, France, Korea, Singapore, Hong Kong, and the Russian Federation.

Linking the two assessments allows us to predict how each state would have performed on TIMSS, relative to the 41 countries that actually participated in the international assessment, on the basis of each state's NAEP performance. The authors of the linking study caution that the technique used to link the two tests can provide only limited information, since NAEP and TIMSS cover different content and were taken by different groups of students at different times. Nevertheless, the technique can provide broad comparisons that tell states which countries' students would be expected to score significantly higher than, similar to, or significantly lower than their own students in mathematics and science on this international assessment.

In 1995, representative samples of 8th graders in Illinois and Minnesota took the same mathematics and science assessments as the students in the 41 participating TIMSS nations. Results shown for Illinois and Minnesota, therefore, are based on actual scores, not estimated scores. Missouri and Oregon also took the same TIMSS assessments in 1997. Their results are also based on actual scores, not estimated scores.

Source: Johnson, E.G., & Siegendorf, A. (1998). *Linking the National Assessment of Educational Progress and the Third International Mathematics and Science Study: Eighth grade results*. Report prepared for the U.S. Department of Education, National Center for Education Statistics, NCES 98-500. Washington, DC: U.S. Government Printing Office.

Mullis, I., Martin, M., Beaton, A., Gonzalez, E., Kelly, D., & Smith, T. (1998). *Mathematics achievement in Missouri and Oregon in an international context: 1997 TIMSS benchmarking*. Chestnut Hill, MA: Center for the Study of Testing, Education, and Educational Policy, Boston College.

Martin, M., Mullis, I., Beaton, A., Gonzalez, E., Smith, T., & Kelly, D. (1998). *Science achievement in Missouri and Oregon in an international context: 1997 TIMSS benchmarking*. Chestnut Hill: Center for the Study of Testing, Evaluation, and Educational Policy, Boston College.

Illinois TIMSS Task Force. (1997, September). An initial analysis of the Illinois results from the Third International Mathematics and Science Study (TIMSS). Author.

18. Mathematics Instructional Practices

Source: NAEP 1996 Mathematics Cross-State Data Compendium for the Grade 4 and Grade 8 Assessment. Findings from the State Assessment in Mathematics of the National Assessment of Educational Progress, NCES 97-495; and unpublished tabulations from Educational Testing Service, August 1997.

19. Mathematics Resources

Source: *Ibid.*

20. Mathematics and Science Degrees

Data include only U.S. citizens and resident aliens on permanent visas. Degrees awarded by institutions in the outlying areas are included in the U.S. percentages.

Mathematical sciences is the only field of study included in the mathematics category for this report. Fields of study in the science category for this report include: engineering; physical sciences; geosciences; computer science; life sciences (includes medical and agricultural sciences); social sciences; and science and engineering technologies (includes health technologies).

No percentages are reported for mathematics and science degrees awarded to minority students in Guam due to insufficient population size.

Baseline data on mathematics and science degrees have been modified from previous *Goals Reports* for California and New Hampshire. Degree-granting institutions in these states that had been classified as "state unknown" in 1991 have since been reassigned to the appropriate states.

Source: Integrated Postsecondary Education Data System (IPEDS 1991 and 1996), which is conducted by the National Center for Education Statistics. The data were analyzed by Westat, using the National Science Foundation's WebCASPAR Database System, August 1999.

Goal 6: Adult Literacy and Lifelong Learning

21. Adult Literacy

The U.S. Department of Education and the Educational Testing Service (ETS) characterized the literacy of America's adults in terms of three "literacy scales" representing distinct and important aspects of literacy: prose, document, and quantitative literacy. Each of the literacy scales has five levels, with Level 1 being least proficient and Level 5 being most proficient. The five levels are:

Level 1 – Most of the tasks in this level require the reader to read relatively short text to locate a single piece of information which is identical to or synonymous with the information given in the question or directive. If plausible but incorrect information is present in the text, it tends not to be located near the correct information.

Level 2 – Some tasks in this level require readers to locate a single piece of information in the text; however, several distractors or plausible but incorrect pieces of information may be present, or low-level inferences may be required. Other tasks require the reader to integrate two or more pieces of information or to compare and contrast easily identifiable information based on a criterion provided in the question or directive.

Level 3 – Tasks in this level tend to require readers to make literal or synonymous matches between the text and information given in the task, or to make matches that require low-level inferences. Other tasks ask readers to integrate information from dense or lengthy text that contains no organizational aids such as headings. Readers may also be asked to generate a response based on information that can be easily identified in the text. Distracting information is present, but is not located near the correct information.

Level 4 – These tasks require readers to perform multiple-feature matches and to integrate or synthesize information from complex or lengthy passages. More complex inferences are needed to perform successfully. Conditional information is frequently present in tasks at this level and must be taken into consideration by the reader.

Level 5 – Some tasks in this level require the reader to search for information in dense text which contains a number of plausible distractors. Others ask readers to make high-level inferences or use specialized background knowledge. Some tasks ask readers to contrast complex information.

Prose literacy, presented in this report, is defined as the knowledge and skills needed to understand and use information from texts that include editorials, news stories, poems, and fiction — for example, finding a piece of information in a newspaper article, interpreting instructions from a warranty, inferring a theme from a poem, or contrasting views expressed in an editorial.

Twelve states (California, Florida, Illinois, Indiana, Iowa, Louisiana, New Jersey, New York, Ohio, Pennsylvania, Texas, and Washington) participated in the 1992 State Adult Literacy Survey. The Oregon Progress Board conducted an independent study in 1990, which was validated by the Educational Testing Service. Adults aged 16 to 65 participated in the 1990 Oregon study; in other states that participated in 1992, the sample included adults aged 16 and older.

Sources: Educational Testing Service, unpublished tabulations from the 1992 State Adult Literacy Survey, August 1993. The Oregon Progress Board conducted an independent study in 1990, which was validated by the Educational Testing Service.

22. Voter Registration and Voting

Sources: U.S. Department of Commerce, Bureau of the Census, Voting and Registration in the Election of November 1988, Current Population Reports, Series P-20, No. 440 (Washington, DC: U.S. Government Printing Office, 1989), and unpublished tabulations, calculations by Westat.

U.S. Department of Commerce, Bureau of the Census, Voting and Voter Registration in the Election of November 1996, Current Population Reports, Series P-20, No. 504 (Washington, DC: U.S. Government Printing Office, 1998), and unpublished tabulations, calculations by Westat.

23. Participation in Higher Education

The Residence and Migration portion of the Fall Enrollment Survey is administered every two years. Data on high school graduates are for the previous spring; however, public and private school data on high school graduates are for different years because the Common Core of Data (CCD) is collected annually and the Private School Universe Survey is administered every two years. The 1992-1993 CCD provides the number of public high school graduates in the 1991-1992 school year; the 1991-1992 Private School Universe Survey provides the number of private high school graduates in the 1990-1991 school year. Similarly, the 1994-1995 CCD provides the number of public high school graduates in the 1993-1994 school year; the 1993-1994 Private School Universe Survey provides the number of private high school graduates in the 1992-1993 school year.

Higher education participation rates for 1992 were computed by adding 1991-1992 high school graduates from public schools (reported in the Common Core of Data) and 1990-1991 high school graduates from nonpublic schools (reported in the Private School Universe Survey). Rates for 1998 were computed the same way, using 1997-1998 public school data and 1996-1997 nonpublic school data.

The Private School Universe Survey uses a combination of list frame and area frame samples to produce national estimates; the state estimates of private high school graduates are not considered representative. For 15 states, however, the area frame sample is large enough that standard errors can be calculated; for these states, change between 1992 (the baseline year) and 1996 (the most recent update) can be measured. For the remaining 36 states, the sample size is insufficient to permit a reliable estimate of change between 1992 and 1996.

The Private School Universe Survey does not collect data on private high school graduates in the outlying areas (American Samoa, Guam, the Northern Marianas, Puerto Rico, and the Virgin Islands). This report does not include data for the outlying areas.

Sources: U.S. Department of Education, National Center for Education Statistics, Residence and Migration of First-Time Freshmen Enrolled in Higher Education Institutions: Fall 1992; Common Core of Data 1992-1993; and Private School Universe Survey, 1991-1992.

U.S. Department of Education, National Center for Education Statistics, Residence and Migration of First-Time Freshmen Enrolled in Higher Education Institutions: Fall 1998; Common Core of Data 1997-1998; and Private School Universe Survey, 1996-1997.

Goal 7: Safe, Disciplined, and Alcohol- and Drug-free Schools

24. Student Marijuana Use

The information from the Youth Risk Behavior Survey (YRBS) includes only states with weighted data.

Sources: Centers for Disease Control and Prevention. (1992). *Current tobacco, alcohol, marijuana, and cocaine use among high school students — United States, 1991*. Atlanta, GA: Author.

Centers for Disease Control and Prevention. (1994). *Current tobacco, alcohol, marijuana, and cocaine use among high school students — United States, 1993*. Atlanta, GA: Author.

Centers for Disease Control and Prevention. (1996). *Current tobacco, alcohol, marijuana, and cocaine use among high school students — United States, 1995*. Atlanta, GA: Author.

Centers for Disease Control and Prevention. (1998). *Current tobacco, alcohol, marijuana, and cocaine use among high school students — United States, 1997*. Atlanta, GA: Author.

25. Student Alcohol Use

See technical note under indicator 24.

Sources: *Ibid.*

26. Availability of Drugs on School Property

See technical note under indicator 24.

Sources: Centers for Disease Control and Prevention. (1994). *Current tobacco, alcohol, marijuana, and cocaine use among high school students — United States, 1993*. Atlanta, GA: Author.

Centers for Disease Control and Prevention. (1996). *Current tobacco, alcohol, marijuana, and cocaine use among high school students — United States, 1995*. Atlanta, GA: Author.

Centers for Disease Control and Prevention. (1998). *Current tobacco, alcohol, marijuana, and cocaine use among high school students — United States, 1997*. Atlanta, GA: Author.

27. Student Victimization

See technical note under indicator 24.

Sources: *Ibid.*

28. Physical Fights

See technical note under indicator 24.

Sources: *Ibid.*

29. Carrying a Weapon

See technical note under indicator 24.

Sources: *Ibid.*

30. Student Safety

See technical note under indicator 24.

Sources: *Ibid.*

31. Teacher Victimization

Source: U.S. Department of Education, National Center for Education Statistics, Public School Teacher Survey of the Schools and Staffing Survey, 1993-1994, unpublished tabulations prepared by Westat, August 1995.

32. Disruptions in Class by Students

See technical note for Goal 4, indicator 13, regarding the definition of a secondary teacher.

Source: U.S. Department of Education, National Center for Education Statistics, Public School Teacher Surveys of the Schools and Staffing Survey, 1990-1991 and 1993-1994, unpublished tabulations prepared by Westat, August 1995.

Goal 8: Parental Participation

33. Parental Involvement in Schools

Sources: U.S. Department of Education, National Center for Education Statistics, Public School Teacher Surveys of the Schools and Staffing Survey, 1990-1991 and 1993-1994, unpublished tabulations prepared by Westat, August 1995.

U.S. Department of Education, National Center for Education Statistics, Public School Principal Surveys of the Schools and Staffing Survey, 1990-1991 and 1993-1994, unpublished tabulations prepared by Westat, August 1995.

34. Influence of Parent Associations

Areas of school policy include establishing curricula, hiring new full-time teachers, and setting discipline policy.

In 1990-1991, data from principals reporting that the parent association in their school has substantial influence on hiring new teachers were not reported for the following states due to small sample size: Arkansas, Georgia, Idaho, Kansas, Maine, Massachusetts, Montana, Nevada, New Mexico, North Dakota, Pennsylvania, Rhode Island, Vermont, West Virginia, and Wyoming.

In 1993-1994, data from principals reporting that the parent association in their school has substantial influence on hiring new teachers were not reported for the following states due to small sample size: South Carolina and West Virginia.

In 1990-1991, data from principals reporting that the parent association in their school has substantial influence on setting discipline policy were not reported for the state of Maine due to small sample size.

Source: U.S. Department of Education, National Center for Education Statistics, Public School Principal Surveys of the Schools and Staffing Survey, 1990-1991 and 1993-1994, unpublished tabulations prepared by Westat, August 1995.

Readers interested in further information from data sources for the state indicators presented in the *1999 Data Volume for the National Education Goals Report* can contact the sponsoring agencies, as follows:

Data Source	Sponsoring Agency	Contact
Advanced Placement (Indicator 12)	The College Board	Wade Curry (212) 713-8066
Birth Certificate Data (Indicators 1, 3, and 4)	National Center for Health Statistics (NCHS)	Sally Curtin (301) 436-8500 Stephanie Ventura (301) 436-8954
Common Core of Data (CCD) (Indicators 7 and 23)	National Center for Education Statistics (NCES)	Lee Hoffman (202) 219-1621
Current Population Survey (Indicator 22)	Bureau of the Census	Lynn Casper (301) 457-2445
Data Analysis System (Indicator 5)	Office of Special Education	Judith Holt (202) 358-3059
Integrated Postsecondary Education Data System (Indicators 20 and 23)	NCES	Susan Broyles (202) 219-1359
International Education Surveys (Indicator 17)	NCES	Eugene Owen (202) 219-1746
National Adult Literacy Survey (NALS) (Indicator 21)	NCES Educational Testing Service (ETS)	Andrew Kolstad (202) 219-1773 Doug Rhodes (800) 551-1230
National Assessment of Educational Progress (NAEP) (Indicators 8-11, 18, and 19)	NCES	Peggy Carr (202) 219-1576
National Immunization Survey (Indicator 2)	Centers for Disease Control and Prevention (CDC)	Victor Coronado (404) 639-8892

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NCES items in the Current
Population Survey (CPS)
(Indicator 6)

NCES

Kathryn Chandler
(202) 219-1767

Private School Survey
(Indicator 23)

NCES

Steve Broughman
(202) 219-1744

Schools and Staffing Survey (SASS)
(Indicators 13-16, and 31-34)

NCES

Daniel Kasprzyk
(202) 219-1588

Youth Risk Behavior Survey (YRBS)
(Indicators 24-30)

CDC

Laura Kann
(770) 488-3251



Acknowledgements

The *1999 National Education Goals Report* was designed and written by Cynthia Prince. It was produced with the assistance of Babette Gutmann and Jennifer Hamilton of Westat, who supplied invaluable technical assistance and statistical support services. The Graphics Department of Westat contributed expertise in graphic design, layout, and report production. Editorial support was provided by the Westat Editorial Department. Many thanks are due to the members of the National Education Goals Panel's Working Group for feedback on earlier drafts of this report, especially Ed Ford, advisor to the 1999 Chair of the Panel, Governor Paul E. Patton of Kentucky. We also wish to thank Stephanie Drea and Brian Turmail of Hager Sharp for their input and helpful recommendations. Occasional departures from advice received and any errors of fact or interpretation are the responsibility of the author. Special thanks go to the individuals listed below who assisted with report production and data acquisition.

Report Production

Julie Daft, Westat
 Babette Gutmann, Westat
 Jennifer Hamilton, Westat
 Richard Hamilton, Westat
 Christopher Harrington, National Education Goals Panel
 Cathy Lease, Westat
 Westat Editorial Department
 Westat Graphics Department
 John Woods, U.S. Department of Education

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Tracy Carr, Office of the Governor of West Virginia
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Representative Cowlshaw

Other Working Group Contributors

Julie Bell, National Conference of State Legislatures
Dane Linn, National Governors' Association
David Shreve, National Conference of State Legislatures
Patty Sullivan, National Governors' Association

Data Acquisition

Steve Agbayani, Pinkerton Computer Consultants, Inc.
Sam Barbett, U.S. Department of Education
Loretta Bass, U.S. Department of Commerce
Mike Battaglia, Abt Associates
Michael Brick, Westat
Steven Broughman, U.S. Department of Education
Janis Brown, U.S. Department of Education
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Executive Director

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John W. Barth

Senior Education Associate

Burt A. Glassman

Education Program Specialist

Christopher R. Harrington

Education Associate

Cynthia D. Prince

Associate Director for Analysis and Reporting

Emily O. Wurtz

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