

Reader's Guide

The Condition of Education is available in two forms: this print volume for the year 2001 and a Web version on the NCES Web site (<http://nces.ed.gov>). Starting in summer 2001, the Web version will be expanded to include all the indicators from both the 2000 and 2001 print volumes of *The Condition of Education*. This will provide one convenient place where readers can view all the indicators and essays that have been published in *The Condition of Education* over the past 2 years. In succeeding years, new indicators will be added to the Web version of *The Condition of Education*, and those already there will be updated.

Each section of this print volume of *The Condition of Education* begins with an overview essay that summarizes the key points in the indicators to follow. All indicators contain a discussion, a single graph or table on the main indicator page, and one or more supplemental tables. All use the most recent national data available from the National Center for Education Statistics (NCES) or other sources. The icon to the side of the graph or table directs readers to supplemental tables, supplemental notes, or another source for more information. When the source is an NCES publication, such as NCES 2000-469, that publication can be viewed at the NCES Web site (<http://nces.ed.gov>).

Supplemental notes provide information on the sources of data used, describe how an analysis was conducted, or provide explanations of categories used in an indicator. For example, *Supplemental Note 1* summarizes the categories used for race/ethnicity and explains how the Consumer Price Index (CPI) is used to compute dollar amounts that can be compared over time.

Supplemental tables provide more detailed breakouts for an indicator, such as household income, students' race/ethnicity, or parents' education. Tables of standard errors (see below) are also included for applicable indica-

tors. A glossary of terms and a comprehensive bibliography of items cited in *The Condition of Education* appear at the end of the volume.

DATA SOURCES

Data reported in this volume are primarily from two types of sources. Some indicators report data from entire populations, such as *Indicator 30* (bachelor's degrees earned by women). With these kinds of data, information is collected from every member of the population surveyed. This "universe" could be all colleges and universities in the country, every school district, or all secondary school teachers. Other indicators report data from a statistical sample of the entire population. When a sample is used, the effects of having information from a portion of the entire population must be considered in reporting estimates and making comparisons.

When data on the entire population are available, comparisons among different groups within that population can be made by calculating a total for each group and comparing the group totals. It is not necessary to consider the effects of collecting information on a sample of the population when comparing estimates from a universe survey. Although estimates derived from universe surveys are not affected by sampling, they are affected by a wide range of data collection errors such as coverage errors, response errors, coding errors, and data entry errors. These errors may be larger than the error due to collecting data on a sample rather than the entire population.

A universe survey is typically expensive and time consuming, so researchers often collect data from a small sample of the population of interest. Through random sampling and other methods, researchers seek to ensure that this sample accurately represents the larger population to which they wish to generalize. NCES's National Education Longitudinal Study, for example,

Reader's Guide

Continued

surveyed a representative sample of nearly 25,000 8th-graders from among all 8th-graders across the country. Based on this sample, conclusions can be drawn about all 8th-graders, such as their family background, characteristics of the schools they attend, their mathematical achievement (as measured with a test administered as part of the survey), and their activities outside of school (NCES 90-458).

Most indicators in *The Condition of Education* summarize data from sample surveys conducted by NCES or the Bureau of the Census with support from NCES. Detailed explanations of NCES surveys can be obtained at the Web site noted above, under "Survey and Program Areas." Information about the Current Population Survey, another frequent source of survey data used in *The Condition of Education*, can be obtained at <http://www.bls.census.gov/cps/cpsmain.htm> (and also in *Supplemental Note 2*).

DATA ANALYSIS AND INTERPRETATION

Once data from a census or a sample survey are collected, it is necessary to summarize them in a meaningful way. Estimating the true population average, or mean, is a common way of summarizing data. The mean is obtained by adding together the values for all members of the sample population and dividing the sum by the sample size. An example of this is the annual mean salaries of professors at private 4-year universities. A second kind of estimate is the median, which is simply the "middle" value among all members of the population. Half of all values in the population are above the median, and half are below. The percentage of the population having a certain characteristic, such as the percentage of graduates who are female, provides still another kind of estimate.

Analysis of data from a sample of a population requires consideration of several factors before

the analysis becomes meaningful. For example, however conscientious an organization may be in collecting data from a sample of a population, there will always be some margin of error in estimating the population mean, median, or any other such statistic from the data. Consequently, data from samples can provide only an estimate of the true or actual value. The margin of error or the range of the estimate depends on several factors, such as the amount of variation in the responses, the size and representativeness of the sample, and the size of the subgroup for which the estimate is computed.*

When data from samples are reported, as is the case with most of the indicators in *The Condition of Education*, the magnitude of this margin of error is measured by what statisticians call the "standard error" of an estimate. The standard errors for all the estimated means, medians, or percentages reported in the graphs and text tables of *The Condition of Education* can be found in appendix 3, Standard Error Tables. The corresponding standard errors for the supplemental tables can be viewed at the NCES Web site (<http://nces.ed.gov>).

As an illustration, *Indicator 4* reports on the educational level of the parents of 6- to 18-year-old students using data from the Current Population Survey of the Bureau of the Census. In 1999, this survey found that 35.2 percent of white and 37.1 percent of black students in this age range had mothers whose highest level of education was a high school diploma or the equivalent (e.g., a GED) (see supplemental table 4-1). In contrast to the similarity in these percentages, the standard errors were considerably different: 0.6 for whites and 1.6 for blacks.

The percentage or mean score with the smaller standard error provides a more reliable estimate of the true value than does the percentage or mean score with a higher standard error. Standard errors tend to diminish in size as the size

Reader's Guide

Continued

of the sample (or subsample) increases. Consequently, for the same kinds of data, such as enrollment rates in postsecondary education sample surveys (like the National Postsecondary Student Aid Study) or scores on the National Assessment of Educational Progress, standard errors will almost always be larger for blacks and Hispanics than for whites, who represent a larger proportion of the population.

When data from samples are reported, some caution is warranted in making comparisons. Although one mean or percentage may be larger than another, a statistical test may find that there is no difference between estimates due to the precision of the estimates.

Whether differences in means or percentages are statistically significant can be determined using the standard errors of the estimates. When differences are statistically significant, the probability that the difference occurred by chance is usually small, occurring about 5 times out of 100. The method primarily used here for determining whether the difference between two means is statistically significant is described in the introduction to appendix 3, Standard Error Tables.

For all indicators in *The Condition of Education* based on samples, differences between means or percentages (including increases or decreases) are stated only when they are statistically significant. To determine whether differences reported are statistically significant, two-tailed *t*-tests, at the .05 level, are used. Bonferroni adjustments are made when more than two groups are compared simultaneously (e.g., blacks, whites, and Hispanics). The formula for determining statistical significance is also adjusted when the samples being compared are dependent.

Discussion of several indicators illustrates the consequences of these considerations. *Indicator 44*, for example, notes that the percentage of

high school students who were involved in a physical fight on school property in the past 12 months decreased between 1993 and 1999 (from 16 to 14 percent). Although the decrease of 2 percent is relatively small, as are the standard errors associated with each estimate (0.6 and 0.3, respectively), the difference is statistically significant and supports the statement made.

In contrast, *Indicator 45* discusses severely overcrowded schools among regions of the United States. The data in supplemental table 45-1 indicate that 15 percent of schools in the West but only 8 percent of schools in the South were severely overcrowded (with enrollment exceeding capacity by more than 25 percent) in 1999. The difference of 7 percentage points is larger than that in the previous example, but the standard errors are also larger (2.7 and 1.6, respectively). The difference is not statistically significant; the data do not support a conclusion that schools in the West are more severely crowded than are those in the South.

Although values reported in the supplemental tables are often rounded to one decimal place (e.g., 76.5 percent), values reported in each indicator are typically rounded to whole numbers (with any value of 0.5 or above rounded to the next highest whole number). Due to rounding, cumulative percentages may sometimes equal 99 or 101 percent, rather than 100.

STANDARD ERROR TABLES

The standard errors for each graph or table on the main indicator page can be found in appendix 3 of this volume. The standard errors for the supplemental tables can be found in the Web version of *The Condition of Education* on the NCES Web site (<http://nces.ed.gov>).

*If there are five racial/ethnic groups in a sample of 1,500, the researcher would have less confidence in the results for each group individually than in those for the entire sample because there are fewer people in the subgroup.

Acknowledgments

This volume of *The Condition of Education* was authored by a team of analysts under the general direction of John Wirt and Tom Snyder with technical review by Marilyn McMillen (Chief Statistician of NCES), Shelley Burns and William Hussar (Technical Advisors), and many others. Barbara Kridl of MPR Associates, Inc. (MPR) was the managing editor. Richard Tobin of the American Institutes for Research's (AIR) Education Services Statistics Institute (ESSI) and Mark Glander of Pinkerton Computer Consultants, Inc. (PCCI) helped in reviewing indicators as they were developed.

The key contributors to *The Condition of Education* are the authors of the individual indicators. As a matter of practice, the authorship of individual indicators is not given in the volume because each indicator reflects the joint effort of many analysts. Nonetheless, substantial expertise and analytical ability are required to craft an indicator from data to tell an important story in a compelling manner using text, graphs, and tables economically. Many indicators in this volume were originally conceived for *The Condition of Education* and involved extensive analyses of data. Others were adapted from existing NCES reports or analyses authored by others.

A section leader oversaw the content of each section and prepared the introductory essay: Debra Gerald (NCES) served as the section leader for Section 1, Patrick Rooney (NCES) for Section 2, Susan Choy (MPR) for Sections 3 and 5, Stephen Provasnik (AIR) for Section 4, and Satoshi Watanabe (AIR) for Section 6. Susan Choy of MPR authored the essay at the front of the volume that summarized the findings of NCES studies of the postsecondary access, persistence, and attainment of students whose parents did not attend college. Richard Tobin (ESSI) compiled and organized the supplemental notes and revised the Reader's Guide.

A large team of analysts authored individual indicators, including Debra Gerald, William Sonnenberg, and Patrick Rooney of NCES; Susan Choy, Ellen Bradburn, Xianglei Chen, Martha Alt, Laura Horn, Edward Warburton, Robert Fitzgerald, Karen Levesque, Peter Teitelbaum, and Lois-Lynn Deuel of MPR; Stephen Provasnik, Satoshi Watanabe, Naoko Kataoka, Jennifer R. Anderson, and Ben Young of AIR; Amanda Miller of ESSI; and Yupin Bae and Fujia Lu of PCCI.

Programming and other analytical assistance was provided by Ellen Liebman, Vicky Dinger, Kathryn Rooney, Chloe Huynh, and Kathleen Mullen of MPR; Bruce Daniel, Daniele Beahm, Yanfen Mu, Michelle Brown, Thuy Dam, I-Min Hung, and Dan Heffron of PCCI; and Yann-Yann Sheih of ESSI. Alexandra Tan and Hannah Globe of ESSI helped develop the production schedule and coordinate the indicator reviews, and Carol Rohr of PCCI helped track reviewers' comments. Wayne Shaffer and Supot Chumpapo of PCCI developed the computerized tracking system.

Barbara Kridl of MPR coordinated with the authors of the various indicators and sections, prepared the bibliography, and managed all tasks related to the editing and production of the volume. Andrea Livingston of MPR edited all the indicators, essays, and supporting materials. Harriette Judge of MPR proofread all the text and checked the numbers against their original sources. Wes Nations of MPR did the desktop publishing of the publication and prepared it for printing. Julia Marshall of ESSI prepared the index.

The design and format of the volume were developed last year for *The Condition of Education 2000* by Mark Ricks, Allison Pinckney, and Rebecca Pratt of PCCI, with suggestions by Leslie Retallick and Barbara Kridl of MPR and many others. This year's cover and title

Acknowledgments

Continued

page were designed by Francesca Tussing and Leslie Retallick of MPR.

The efforts of many people who reviewed individual indicators and the entire volume, often under tight deadlines, are greatly appreciated. Each indicator was assigned to at least two NCES staff members, who followed it through all phases of development from initial plans to final review. Jonaki Bose, Susan Broyles, Dennis Carroll, Christopher Chapman, Kathryn Chandler, William Fowler, Arnold Goldstein, Patrick Gonzales, Elvie Hausken, Lisa Hudson, Paula Knepper, Andrew Kolstad, Mariann Lemke, Laura Lippman, Drew Malizio, Edith McArthur, Marilyn McMillen, Karen O'Connor, Jeffrey Owings, Val Plisko,

John Sietsema, Tom Snyder, William Sonnenberg, Jerry West, and Linda Zimble of NCES provided detailed and helpful reviews of the indicators, the essay, or others parts of the volume.

Individuals outside of NCES but within the Department who provided reviews were Elaine Gilby, Jim Houser, Jack Klenk, Jeff Rodamar, Mary Schifferli, and Marsha Silverberg.

A number of individuals from academia and elsewhere served as external reviewers: Nabeel Alsalam, Cordula Artelt, James Guthrie, Eric Hanushek, Jack Jennings, Jacqueline King, Gary Lavergne, and W. Scott Swail.

Contents

Commissioner's Statement	iii
Reader's Guide	ix
Acknowledgments	xii
Essay—Students Whose Parents Did Not Go to College: Postsecondary Access, Persistence, and Attainment	xviii
Section 1—Participation in Education	
Summary: Participation in Education	4
<i>Preprimary Education</i>	
1 Enrollment in Preprimary Education	6
<i>Elementary/Secondary Education</i>	
2 Past and Projected Elementary and Secondary School Enrollment	7
3 Racial/Ethnic Distribution of Public School Students	8
4 Parental Education, by Race/Ethnicity	9
<i>Undergraduate Education</i>	
5 Past and Projected Undergraduate Enrollments	10
<i>Graduate and Professional Education</i>	
6 Graduate/Professional Enrollment and Employment	11
<i>Adult Learning</i>	
7 Participation in Adult Learning	12
Section 2—Learner Outcomes	
Summary: Learner Outcomes	16
<i>Early Childhood Outcomes</i>	
8 Students' Overall Reading and Mathematics Performance Through 1 st Grade	19
9 Children's Skills and Proficiency in Reading and Mathematics Through 1 st Grade	20
<i>Academic Outcomes</i>	
10 Trends in the Reading Performance of 9-, 13-, and 17-Year-Olds	21
11 Trends in the Achievement Gap in Reading Between White and Black Students	22
12 Trends in the Mathematics Performance of 9-, 13-, and 17-Year-Olds	24
13 Trends in the Science Performance of 9-, 13-, and 17-Year-Olds	25
14 International Comparisons of 8 th -Graders' Performance in Mathematics and Science	26
<i>Adult Literacy</i>	
15 Adult Literacy Habits and Media Use	29
<i>Social and Cultural Outcomes</i>	
16 Community Service Participation in Grades 6–12	30
17 Education and Health	31

Contents

Continued

<i>Economic Outcomes</i>	
18 Annual Earnings of Young Adults	32
Section 3—Student Effort and Academic Progress	
Summary: Student Effort and Academic Progress	36
<i>Student Attitudes and Aspirations</i>	
19 Educational Plans	39
20 Peer Culture of High School Seniors	40
<i>Student Effort</i>	
21 Time Spent on Homework and on the Job	41
22 Students' Use of Time	42
<i>Elementary/Secondary Persistence and Progress</i>	
23 Status Dropout Rates, by Race/Ethnicity	43
<i>Transition to College</i>	
24 Mathematics Curriculum and College Enrollment	44
25 Perceptions of College Costs	45
26 Immediate Transition to College	46
<i>Postsecondary Persistence and Progress</i>	
27 Persistence of Beginning Postsecondary Students	47
28 High School Academic Preparation and Postsecondary Progress	48
29 Remediation and Degree Completion	49
<i>Completions</i>	
30 Degrees Earned by Women	50
31 Educational Attainment	51
32 International Comparisons of Educational Attainment	52
Section 4—Quality of Elementary and Secondary School Environments	
Summary: Quality of Elementary and Secondary School Environments	56
<i>Coursetaking and Standards</i>	
33 Trends in English and Foreign Language Coursetaking	59
34 Coursetaking in English and Foreign Languages	60
35 Trends in High School Occupational Coursetaking	62
<i>Learning Opportunities</i>	
36 International Comparisons of Quality in 8 th -Grade Mathematics Lessons	63
37 Class Size of Kindergartens	64
38 Student/Teacher Ratios in Public Elementary and Secondary Schools	65
39 Teachers' Readiness to Use Computers and the Internet	66
<i>Special Programs</i>	
40 Inclusion of Students With Disabilities in Regular Education Classrooms	67

Contents

Continued

<i>School Choice</i>	
41 School Choice and Parental Satisfaction	68
<i>Teachers</i>	
42 Qualifications of College Graduates Who Enter Teaching	69
43 Teacher Preparation in 8 th -Grade Mathematics and Science	70
<i>School Climate and Discipline</i>	
44 School-Related Violence and Safety	71
45 Overcrowding in Schools	72
Section 5—The Context of Postsecondary Education	
Summary: The Context of Postsecondary Education	76
<i>Learning Opportunities</i>	
46 Instructional Methods of Postsecondary Faculty	79
47 Instructional Faculty and Staff Who Teach Undergraduates	80
48 Technology in Postsecondary Teaching	81
49 Distance Education by Postsecondary Faculty	82
<i>College Resources</i>	
50 Part-Time Instructional Faculty and Staff	83
51 Time Allocation of Full-Time Instructional Faculty	84
Section 6—Societal Support for Learning	
Summary: Societal Support for Learning	88
<i>Family Support</i>	
52 Early Reading Activities	91
53 Before and After School Care	92
54 Parental Involvement in Schools	93
<i>Community Support</i>	
55 Parents' Attitudes Toward Schools	94
<i>Public Financial Support</i>	
56 Public Elementary and Secondary Expenditures	95
57 International Comparisons of Expenditures for Education	96
<i>Private Financial Support</i>	
58 Net Price of College Attendance	97
59 Debt Burden 4 Years After College	98

Contents

Continued

Appendix 1—Supplemental Tables	100
Appendix 2—Supplemental Notes	180
Note 1: Commonly Used Variables	182
Note 2: The Current Population Survey (CPS)	187
Note 3: The National Household Education Surveys Program (NHES)	191
Note 4: The National Assessment of Educational Progress (NAEP)	194
Note 5: International Assessments, TIMSS, and TIMSS-R	195
Note 6: NAEP, NELS, and HS&B Transcript Studies	199
Note 7: The Baccalaureate and Beyond Longitudinal Study	207
Note 8: Other Surveys	210
Note 9: International Standard Classification of Education	213
Note 10: Classification of Postsecondary Education Institutions	215
Note 11: Fields of Study	219
Note 12: Students With Disabilities	220
Note 13: Allocation of Faculty Time	222
Note 14: Price of College Attendance	223
Appendix 3—Standard Error Tables	226
Glossary	264
Bibliography	280
NCES Publications (Complete citation)	282
NCES Publications (Chronologically, by NCES number)	286
Other Publications	290
NCES Surveys	295
Surveys From Other Agencies	297
Index	298