

# Chapter 27: Fast Response Surveys

NCES has established two survey systems to collect time-sensitive, issue-oriented data quickly and with minimum response burden. The Fast Response Survey System (FRSS) focuses on collecting data at the elementary and secondary school level. The Postsecondary Education Quick Information System (PEQIS) collects data at the postsecondary level. These systems are used to meet the data needs of Department of Education analysts, planners, and decision makers when information cannot be obtained quickly through traditional NCES surveys.

## 1. FAST RESPONSE SURVEY SYSTEM (FRSS)

### Overview

The Fast Response Survey System (FRSS) was established in 1975 to collect small amounts of data on key education issues within a relatively short time frame. From 1975 to 1990, FRSS collected data at all educational levels. Since the Postsecondary Education Quick Information System (PEQIS) was established in 1991, FRSS surveys have been limited to elementary and secondary school issues. To date, nearly 80 surveys have been conducted under FRSS. Topics have ranged from racial and ethnic classifications at state and school levels to the availability and use of resources such as advanced telecommunications and libraries. Additionally, data have been collected on education reform, violence and discipline problems, parental involvement, curriculum placement and arts education, nutrition education, teacher training and professional development, vocational education, children's readiness for school, and the perspectives of school district superintendents, principals, and teachers on safe, disciplined, and drug-free schools.

Data from FRSS surveys are representative at the national level, drawing from a universe that is appropriate for each study. Since 1992, FRSS has generally collected data from public and private elementary and secondary schools, elementary and secondary school teachers and principals, and public and school libraries. In its earlier years, FRSS also collected data from state education agencies and other educational organizations and participants, including local education agencies.

### Sample Design

The sampling frame for FRSS surveys is typically the Common Core of Data (CCD) public school (or agency) universe. (See chapter 2.) The following variables are usually used for stratification or sorting within primary strata: instructional level (elementary school, middle school and high—secondary/combined—school); size of enrollment; locale (city, urban fringe, town, rural); geographical region (Northeast, Southeast, Central, West); percent minority enrollment; and/or poverty status (based on eligibility for free or reduced-price lunch). The allocation of the samples to the primary strata is intended to ensure that the sample sizes are large enough to permit analyses of the questionnaire for major subgroups. Within primary strata, the sample sizes are frequently allocated to the substrata in rough proportion to the aggregate square root of the size of enrollment of schools in the substratum. The use of the square root of enrollment to determine the sample allocation is considered reasonably efficient for estimating

### TWO FAST RESPONSE SYSTEMS:

- ▶ Fast Response Survey System (FRSS)—80 surveys since 1975
- ▶ Postsecondary Education Quick Information System (PEQIS)—12 surveys since 1991

both school-level characteristics and quantitative measures correlated with enrollment.

FRSS survey samples are sometimes constructed from the Private School Universe Survey (PSS). (See chapter 3.) The sample usually consists of *regular* private elementary, middle, secondary, and combined schools, with a private school being defined as a school not in the public system that provides instruction for any of grades 1–12 (or comparable ungraded levels) where the instruction was not provided in a private home. The following variables may be used for stratification or sorting within primary strata: instructional level (elementary, secondary, combined), affiliation (Catholic, other religious, and nonsectarian), school size, geographic region, locale, and percent minority enrollment. Schools are generally selected from each primary stratum with probabilities proportional to the weight reflecting the school's probability of inclusion in the area sample.

Other sources may serve as sampling frames, depending on the needs of the survey. For example, for *Participation of Migrant Students in Title I Migrant Education Program (MEP) Summer-Term Projects*, the districts and other entities serving migrant students were selected from the U.S. Department of Education's 1995–96 Migrant Education Program Universe file.

Some FRSS surveys use a two-stage sampling process. For example, the *Teacher Survey on Safe, Disciplined, and Drug-Free Schools* and the *Public School District Survey on Safe, Disciplined, and Drug-Free Schools* were administered concurrently with the *Principal Survey on Safe, Disciplined, and Drug-Free Schools*. Both the Teacher and Public School District surveys had a two-stage sampling process. The schools were selected during the first stage. The second stage of sampling for the Teacher Survey involved obtaining lists of teachers from the selected schools. The second stage of sampling for the Public School District Survey identified the districts to be included in the survey. Districts consisting of two or more schools had multiple chances of selection. The overall probability of selecting a district was equal to the probability that any of its constituent schools was selected for the principal's survey.

Before PEQIS was established, FRSS was sometimes used to examine postsecondary issues. For example, the 1990 *Survey of Remedial/Developmental Studies in Institutions of Higher Education* targeted institutions of higher education (IHEs) that served freshmen and were accredited at the college level by an association or agency recognized by the U.S. Secretary of Education. The sampling

frame was the universe file of the Higher Education General Information System (HEGIS) Fall Enrollment and Compliance Report of Institutions of Higher Education of 1983–84. (Note that HEGIS has since been replaced by the Integrated Postsecondary Education Data System—IPEDS—see chapter 14.) The universe of colleges and universities was stratified by type of control, type of institution, and enrollment size. Within strata, schools were selected at uniform rates, but the sampling rates varied considerably from stratum to stratum.

### Data Collection and Processing

Most FRSS surveys are self-administered questionnaires that are mailed to the respondents with telephone and fax follow up. A few have been telephone surveys, including one which used Random Digit Dialing (RDD) techniques. FRSS questionnaires are pretested and efforts are made to check for consistency of interpretation of questions and to eliminate ambiguous items before fielding the survey.

Data are keyed with 100 percent verification. To check the data for accuracy and consistency, questionnaire responses undergo both manual and machine editing. Cases with missing or inconsistent items are recontacted by telephone.

Westat has served as the contractor for all surveys.

### Weighting

The response data are weighted to produce national estimates. The weights are designed to adjust for the variable probabilities of selection and differential nonresponse. Out-of-scope units are deleted from the initial sample before weighting and analysis. In the case of two-stage sampling—for example, in the *Teacher Survey on Safe, Disciplined, and Drug-Free Schools*—the weights used to produce national estimates are equal to the reciprocal of the product of the probability of selecting the school and the probability of selecting the teacher, multiplied by an adjustment to account for school and teacher nonresponse.

### Imputation

Because item nonresponse rates in FRSS surveys are low, imputation has only been performed for one survey—the 1990 Survey of Remedial/Developmental Studies in Institutions of Higher Education. In that instance, seven items required imputation: percent enrolled in remedial reading, writing, mathematics courses (three items); percent passing remedial reading, writing, mathematics courses (three items); and percent enrolled in remedial

courses in reading, writing, or mathematics (one item). For the first six items, a sequential hot-deck imputation procedure was used. Imputations for the seventh item—total percentage of freshmen enrolled in one or more remedial courses in reading, writing, or mathematics—were restricted by the maximum and minimum values for the percentage enrolled in each of the individual subjects (remedial reading, writing, and mathematics). Because of these restrictions, it was decided to impute the midpoint (i.e., median) between the minimum and maximum values. The imputed values for this item had a slightly larger but still statistically insignificant impact on the estimated overall average percentage of students enrolled in one or more remedial courses.

### Sampling Error

FRSS estimates are based on the selected samples and, consequently, are subject to sampling variability. The standard error is a measure of the variability of estimates due to sampling. Jackknife replication is the method used to compute estimates of standard errors.

### Coverage Error

FRSS surveys are subject to any coverage error present in the major NCES data files that serve as their sampling

frames. Many FRSS surveys use the CCD surveys as the sampling frame. The report *Coverage Evaluation of the 1994–95 Common Core of Data: Public Elementary/Secondary Education Agency Universe Survey* (NCES 97–505) found that overall coverage in the Agency Universe Survey was 96.2 percent (in a comparison to state education directories). “Regular” agencies—those traditionally responsible for providing public education—had almost total coverage in the 1994–95 survey. Most coverage discrepancies were attributed to nontraditional agencies that provide special education, vocational education, and other services. Most FRSS surveys exclude nontraditional schools. However, there is potential for undercoverage bias associated with the absence of schools built between the construction of the sampling frame and time of the FRSS survey administration. Since teacher coverage depends on teacher lists sent by the schools, teacher coverage is assumed to be good. (See chapter 2 for a description of the CCD; see relevant chapters for other NCES surveys that serve as sampling frames for FRSS surveys.)

### Nonresponse Error

*Unit response* for most FRSS surveys is 90 percent or higher. (See the table below.) *Item nonresponse* for most

Table 12. Weighted unit response rates for several recent FRSS surveys, 1996–1999

Survey	List participation rate	Weighted first level response rate	Overall weighted response rate
National Student Service-Learning and Community Service Survey (1999)	†	93	93
Public School Teachers’ Use of Computers and the Internet (1999)	*91	*91	*83
Survey on the Condition of Public School Facilities (1999)	†	91	91
Vocational Programs in Secondary Schools (1999)	†	95	95
Survey on Advanced Telecommunications in U.S. Private Schools: 1998–99	†	84	84
Participation of Migrant Students in Title I Migrant Education Program (MEP) Summer-Term Projects (1998)	†	91	91
Teacher Survey on Professional Development and Training (1997–98)	93	92	86
Principal/School Disciplinarian Survey on School Violence (1997)	†	89	89
Public School Survey on Education Reform (1996)	†	90	90
Public School Teacher Survey on Education Reform (1996)	95	90	86
Survey on Family and School Partnerships in Public Schools, K–8 (1996)	†	92	92

\*Unweighted

†Not applicable

SOURCE: Alexander, Heaviside, and Farris, *Status of Education Reform in Public Elementary and Secondary Schools: Teachers’ Perspectives* (NCES 1999–045). Carey, Lewis, and Farris, *Parent Involvement in Children’s Education: Efforts by Public Elementary Schools* (NCES 98–032). Celebuski and Farris, *Status of Education Reform in Public Elementary and Secondary Schools: Principals’ Perspectives* (NCES 98–025). Heaviside, Rowand, Williams, Farris, Burns, and McArthur, *Violence and Discipline Problems in U.S. Public Schools: 1996–97* (NCES 98–030). Lewis, Parsad, Carey, Bartfai, Farris, and Smerdon, *Teacher Quality: A Report on the Preparation and Qualifications of Public School Teachers* (NCES 1999–080). Lewis, Snow, Farris, Smerdon, Cronen, and Kaplan, *Condition of America’s Public School Facilities: 1999* (NCES 2000–032). Parsad and Farris, *Occupational Programs and the Use of Skill Competencies at the Secondary and Postsecondary Levels, 1999* (NCES 2000–023). Parsad, Heaviside, Williams, and Farris, *Participation of Migrant Students in Title I Migrant Education Program (MEP) Summer-Term Projects, 1998* (NCES 2000–061). Parsad, Skinner, and Farris, *Advanced Telecommunications in U.S. Private Schools: 1998–99* (NCES 2001–037). Skinner and Chapman, *Service-Learning and Community Service in K–12 Public Schools* (NCES 1999–043). Smerdon, Cronen, Lanahan, Anderson, Iannotti, and Angeles, *Teachers’ Tools for the 21<sup>st</sup> Century: A Report on Teachers’ Use of Technology* (NCES 2000–102).

items is less than 1 percent. The weights are adjusted for unit nonresponse. As mentioned earlier, because item nonresponse rates have been low, imputation has only been implemented for one survey.

### Measurement Error

Errors may result from such problems as misrecording of responses; incorrect editing, coding, and data entry; different interpretations of definitions and the meaning of questions; memory effects; the timing of the survey; and the respondent's inability to report certain data due to its recordkeeping system. One specific example of possible measurement error comes from the *Public School Survey on Education Reform* and the *Public School Teacher Survey on Education Reform*, conducted in 1996. Survey results should be interpreted carefully for the following reasons: (1) survey questions were designed to be inclusive of a wide variety of reform activities since all principals and teachers do not share the same concept of reform; (2) respondents may overreport activities in which they believe they should be engaged; and (3) the questionnaire was too brief to collect information that could assist in judging the accuracy of the respondents' reports.

### Data Comparability

Some FRSS surveys are repeated so that results can be compared over time. For example, the *Survey on Advanced Telecommunications in U.S. Public Schools, K–12*, was administered annually from 1994 to 1997, and the *Survey on Advanced Telecommunications in U.S. Private Schools* was administered in 1995 and 1998–99. The 1997 *Principal/School Disciplinarian Survey on School Violence* can be compared with results from the 1991 *Principal Survey on Safe, Disciplined, and Drug-Free Schools*, although there are some sampling differences that should be taken into account. (The 1997 survey was restricted to regular elementary and secondary schools, whereas the 1991 survey also included 13 vocational education and alternative schools in the sample.) The 1990 *Survey of Remedial/Developmental Studies in Institutions of Higher Education* results updated the results from a 1983–84 FRSS survey on the same topic, and a third survey on remedial education was conducted under the PEQIS system in 1995.

Occasionally, an FRSS survey is fielded to provide data that can be compared with another NCES survey. For example, the 1996 *Survey on Family and School Partnerships in Public Schools, K–8*, was designed to provide data that could be compared with parent data in the 1996 National Household Education Survey and with the Pros-

pects Study, a congressionally mandated study of educational growth and opportunity from 1991 to 1994.

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### Methodology and Evaluation Reports

Methodology discussed in technical notes to survey reports. Some recent reports are listed below.

*Advanced Telecommunications in U.S. Private Schools: 1998–99*, NCES 2001–037, by B. Parsad, R. Skinner, and E. Farris. Washington, DC: 2001.

*College-Level Remedial Education in the Fall of 1989*, NCES 91–191, by W. Mansfield, E. Farris, and M. Black. Washington, DC: 1991.

*Condition of America's Public School Facilities: 1999*, NCES 2000–032, by L. Lewis, K. Snow, E. Farris, B. Smerdon, S. Cronen, and J. Kaplan. Washington, DC: 2000.

*Occupational Programs and the Use of Skill Competencies at the Secondary and Postsecondary Levels, 1999*, NCES 2000–023, by B. Parsad and E. Farris. Washington, DC: 2000.

*Parent Involvement in Children's Education: Efforts by Public Elementary Schools*, NCES 98–032, by N. Carey, L. Lewis, and E. Farris. Washington, DC: 1998.

*Participation of Migrant Students in Title I Migrant Education Program (MEP) Summer-Term Projects, 1998*, NCES 2000–061, by B. Parsad, S. Heaviside, C. Williams, and E. Farris. Washington, DC: 2000.

*Service-Learning and Community Service in K–12 Public Schools*, NCES 1999–043, by R. Skinner and C. Chapman. Washington, DC: 1999.

*Status of Education Reform in Public Elementary and Secondary Schools: Principals' Perspectives*, NCES 98–025, by C. Celebuski and E. Farris. Washington, DC: 1998.

*Status of Education Reform in Public Elementary and Secondary Schools: Teachers' Perspectives*, NCES 1999–045, by D. Alexander, S. Heaviside, and E. Farris. Washington, DC: 1999.

*Teacher Quality: A Report on the Preparation and Qualifications of Public School Teachers*, NCES 1999–080, by L. Lewis, B. Parsad, N. Carey, N. Bartfai, E. Farris, and B. Smerdon. Washington, DC: 1999.

*Teachers' Tools for the 21<sup>st</sup> Century: A Report on Teachers' Use of Technology*, NCES 2000–102, by B. Smerdon, S. Cronen, L. Lanahan, J. Anderson, N. Iannotti, and J. Angeles. Washington, DC: 2000.

*Violence and Discipline Problems in U.S. Public Schools: 1996–97*, NCES 98–030, by S. Heaviside, C. Rowand, C. Williams, E. Farris, S. Burns, and E. McArthur. Washington, DC: 1998.

## 2. POSTSECONDARY EDUCATION QUICK INFORMATION SYSTEM (PEQIS)

### Overview

The Postsecondary Education Quick Information System (PEQIS) was established in 1991 to quickly collect limited amounts of policy-relevant information from a nationally representative sample of postsecondary institutions. PEQIS surveys are also used to assess the feasibility of developing large-scale data collection efforts on a given topic or to supplement other NCES postsecondary surveys. To date, 12 PEQIS surveys have been completed, covering such diverse issues as distance learning, precollegiate programs for disadvantaged students, remedial education, campus crime and security, finances, services for deaf and hard of hearing students, and accommodation of disabled students.

### Sample Design

PEQIS employs a standing sample (panel) of approximately 1,600 nationally representative postsecondary education institutions. Two panels have been recruited since PEQIS was established in 1991. The sampling frame for the first PEQIS panel, recruited in 1992, was the 1990–91 Integrated Postsecondary Education Data System (IPEDS) Institutional Characteristics (IC) file. (See chapter 14.) The sampling frame for the second PEQIS panel, recruited in 1996, was the 1995–96 IPEDS IC file. The PEQIS panel was reselected in 1996 to re-

flect changes in the postsecondary education universe since the 1992 panel was recruited. A modified Keyfitz approach was used to maximize overlap between the two panels.

Institutions eligible for the PEQIS frames for both the 1992 and 1996 panels included 2-year and 4-year (including graduate-level) postsecondary institutions, and less-than-2-year institutions of higher education. In 1992, these institutions covered the 50 states, the District of Columbia, and Puerto Rico. In 1996, institutions in Puerto Rico were excluded. There were 5,317 institutions in the 1992 sampling frame, and 5,353 institutions in the 1996 sampling frame.

The sampling frames for both PEQIS panels were stratified by instructional level (4-year, 2-year, less-than-2-year); control (public, private nonprofit, private for-profit); highest level of offering (doctor's/first professional, master's, bachelor's, less than bachelor's); total enrollment; and status as either an institution of higher education or other postsecondary institution. Within each of the strata, institutions were sorted by region (Northeast, Southeast, Central, West), whether the institution had a relatively high minority enrollment, and whether the institution had research expenditures exceeding \$1 million. The 1992 sample of 1,665 institutions was allocated to the strata in proportion to the aggregate square root of *full-time-equivalent enrollment*. The 1996 sample of 1,669 institutions was allocated to the strata in proportion to the aggregate square root of *total enrollment*. For both panels, institutions within a stratum were sampled with equal probabilities of selection.

During recruitment for the 1992 panel, 50 institutions were found to be ineligible for PEQIS, primarily because they had closed or offered just correspondence courses. The final unweighted response rate at the end of PEQIS panel recruitment in spring 1992 was 98 percent (1,576 of the 1,615 eligible institutions). The weighted response rate for panel recruitment (weighted by the base weight) was 96 percent.

The modified Keyfitz approach used in 1996 resulted in 80 percent of the institutions in the 1996 panel overlapping the 1992 panel. Panel recruitment was conducted with the 338 institutions that were not part of the overlap sample. Twenty institutions were found to be ineligible for PEQIS. The final unweighted response rate for the institutions that were not part of the overlap sample was 98 percent. The final participation rate across all 1,669 institutions selected for the 1996 panel was 99.6 percent, or 1,628 out of 1,634 eligible institutions. The weighted

panel participation rate (weighted by the base weight) was 99.7 percent.

### Data Collection and Processing

All PEQIS surveys are mailed self-administered questionnaires. Surveys are limited to three pages of questions, with a response burden of about 30 minutes per respondent. The questionnaires are pretested and efforts are made to check for consistency of interpretation of questions and to eliminate ambiguous items before fielding the survey to all institutions in the sample.

The questionnaires are sent to institutional survey coordinators who identify the appropriate respondents for the particular survey and forward questionnaires to those persons. Nonrespondents who have not returned the survey within a set period of time are followed up by telephone. Data are keyed with 100 percent verification. To check the data for accuracy and consistency, questionnaire responses undergo both manual and machine editing. Cases with missing or inconsistent items are recontacted by telephone.

Westat has served as the contractor for all surveys.

### Weighting

The response data are weighted to produce national estimates. The weights are designed to adjust for the variable probabilities of selection and differential nonresponse. Out-of-scope units are deleted from the sample before weighting and analysis.

### Imputation

Item nonresponse rates in PEQIS surveys have been very low, so imputation has only been performed for two surveys. All nonresponse on the 1997–98 *Survey on Distance Education Courses Offered by Higher Education Institutions* was imputed using a combination of standard (random within class) hot-deck imputation procedures (for questions involving numbers of courses and enrollments) and/or assignment of modal values from imputation classes on the question concerning plans for distance education technologies. For the 1992 *Survey on Deaf and Hard of Hearing Students in Postsecondary Education*, the three items with the highest nonresponse rates were imputed. These items requested, respectively, the number of deaf and hard of hearing students enrolled at the institution in each of 4 academic years from 1989–90 through 1992–93; the number of such students to whom *any* special support services were provided by the institution; and the number of such students provided

*specific types* of support services (sign language interpreters, oral interpreters, classroom notetakers, tutors, assistive listening devices, etc.). The imputation procedures involved a combination of standard hot-deck imputation for institutions missing data for all 4 years and, for institutions that provided data for one or more of the 4 years, application of subsequent years' data to previous years, adjusted by the average rate of change of similar institutions (based on sampling strata).

### Sampling Error

Estimates are based on the selected samples and, consequently, are subject to sampling variability. The standard error is a measure of the variability of estimates due to sampling. Jackknife replication is the method used to compute estimates of standard errors.

### Coverage Error

Because the frames for PEQIS surveys are constructed from IPEDS, coverage error is believed to be minimal.

### Nonresponse Error

Both unit nonresponse and item nonresponse are quite low in PEQIS surveys. For the 12 surveys completed thus far, weighted *unit response* has ranged from 90 to 97 percent. *Item nonresponse* for most items in PEQIS surveys has been less than 1 percent. The weights are adjusted for unit nonresponse. As mentioned earlier, because item nonresponse rates have been low, imputation has only been implemented twice.

### Measurement Error

This type of nonsampling error may result from different interpretations of survey definitions by respondents or the institution's inability to report according to survey specifications due to its recordkeeping system. Some examples of measurement error in PEQIS surveys follow.

In the 1996 *Survey on Campus Crime and Security at Postsecondary Education Institutions*, the crime statistics collected were only for occurrences of crimes committed *on* campus; the victims could be students, staff, or campus visitors. Also, these statistics only reflect crimes that were *reported* to local police agencies or to any institution official with responsibility for student and campus activities.

The 1995 *Survey on Remedial Education in Higher Education Institutions* was conducted to provide current national estimates on the extent of remediation on college

campuses. Institutions provided information about their remedial reading, writing, and mathematics courses offered in fall 1995. Remedial courses were defined as courses designed for college students lacking those skills necessary to perform college-level work at the level required by the institution. Thus, what constituted remedial courses varied by institution. Respondents were asked to include any courses meeting the definition, regardless of name. Some institutions refer to remedial courses as “compensatory,” “developmental,” or “basic skills.”

In the 1994 *Survey on Precollegiate Programs for Disadvantaged Students at Higher Education Institutions*, some institutions failed to properly identify their largest precollegiate program due to the lack of a centralized information source about precollegiate programs. After data collection was completed, eight responding institutions were externally identified as having Upward Bound programs, although on the survey they reported having no precollegiate programs for the disadvantaged. It is probable that other non-Upward Bound precollegiate programs were also omitted. The failure to report having a precollegiate program may be more likely when an institution has only small, less visible programs. For similar reasons, some respondents with multiple precollegiate programs may have misidentified the largest program. However, numerous errors of this type were detected and resolved during data collection, so misidentification of the largest programs should be a relatively infrequent error. Another effect of the decentralized structure of precollegiate programs is that institutional respondents had little sense of how the largest program compared to the totality of all programs. Institutions could only compare the largest program to others of which they were aware.

The 1993 *Survey on Deaf and Hard of Hearing Students in Postsecondary Education* gathered information about the range of postsecondary institutions in which deaf and hard of hearing students enroll, the number of such students enrolled, and the support services provided to these students by the postsecondary institutions. However, institutions could only report about those students who had identified themselves to the institution as deaf or hard of hearing; thus it is likely that the survey results represent only a subset of all deaf or hard of hearing postsecondary students. Moreover, no definitions of these terms were provided to the institutions.

## Data Comparability

While most PEQIS surveys are not designed specifically for comparison with other surveys, the data from some PEQIS surveys can be compared with data from other postsecondary surveys. There have been, however, two administration of the PEQIS *Survey on Distance Education Courses Offered by Higher Education Institutions*.

The 1998 *Survey on Students with Disabilities at Postsecondary Education Institutions* complements another recent NCES study on the self-reported preparation, participation, and outcomes of students with disabilities. The latter study is based on an analysis of four different NCES surveys, which were used to address enrollment in postsecondary education, access to postsecondary education, persistence to degree attainment, and early labor market outcomes and graduate school enrollment rates of college graduates with disabilities. (See *Students with Disabilities in Postsecondary Education: A Profile of Preparation, Participation, and Outcomes*, NCES 1999–187, by L. Horn and J. Berkthold. Washington, DC: 1998.)

The two *Surveys on Distance Education Courses Offered by Higher Education Institutions*, conducted first in late 1995, and again during winter 1998–99, were the first to collect nationally representative data about distance education course offerings in higher education institutions. The two studies differed in their samples and variations in question wording. Further, data from the 1995 study was not imputed for item nonresponse. However, comparisons between the two studies are possible when using the subset of higher education institutions from the 1998–99 study.

The 1995 *Survey on Remedial Education in Higher Education Institutions* was conducted to provide current national estimates on the extent of remediation on college campuses. Results from this survey update the information collected in two earlier NCES surveys for academic years 1983–84 and 1989–90; because PEQIS was not in existence at those times, these surveys were conducted under FRSS. (See section 1 of this chapter.) In addition, although the 1995 survey was not designed as a comparative study, the survey results can be compared with data from the IPEDS Institutional Characteristics Survey: PEQIS estimated that 78 percent of institutions offered at least one remedial course for freshmen in fall 1995, and IPEDS estimated that 79 percent of institutions offered remedial courses in academic year 1993–94. Results from this PEQIS survey can be compared at the student level with institutional surveys conducted by the American Council on Education and an earlier study by the

Southern Regional Education Board. However, these studies asked about freshmen *needing* remediation rather than about freshmen *enrolled* in remedial courses. Remedial enrollments can also be examined from postsecondary transcripts collected during the National Longitudinal Study of the High School Class of 1972 and the High School and Beyond/Sophomores Study. (See chapters 7 and 8.) Institutional reports of remedial enrollments in all of these surveys are substantially higher than student self-reports collected in the NCES National Postsecondary Student Aid Study (NPSAS). (See chapter 16.)

The *Survey on Deaf and Hard of Hearing Students in Postsecondary Education* was conducted in 1993. Comparisons of the estimate of deaf and hard of hearing students obtained from this PEQIS survey with estimates from other surveys show considerable variation due to differences in methodologies and populations of interest. Because the PEQIS study was not designed as a comparative study, the precise reasons for the differences in the estimates from the various sources cannot be answered with the available data. The PEQIS estimate of 20,040 deaf and hard of hearing students in 1992–93 is much lower than the 258,197 national estimate of students with hearing impairments based on student self-reports in the 1989–90 NPSAS. However, the estimate from an earlier institutional study conducted by Gallaudet College (now University) is more in line with the PEQIS estimate—10,400 hearing impaired students enrolled in postsecondary institutions in 1978, including the 2,000 students enrolled at Gallaudet and the National Technical Institute for the Deaf (NTID). The NCES estimate for that year, based on institutional data, was 11,256 “acoustically impaired” students enrolled in postsecondary institutions, excluding Gallaudet and NTID.

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## Methodology and Evaluation Reports

Methodology discussed in technical notes to survey reports. Some recent reports are listed below.

*Campus Crime and Security at Postsecondary Education Institutions*, NCES 97-402, by L. Lewis and E. Farris. Washington, DC: 1997.

*Distance Education at Postsecondary Education Institutions: 1997-98*, NCES 2000-013, by L. Lewis, K. Snow, E. Farris, and D. Levin. Washington, DC: 2000.

*Distance Education in Higher Education Institutions*, NCES 98-062, by L. Lewis, D. Alexander, and E. Farris. Washington, DC: 1998.

*Features of Occupational Programs at the Secondary and Postsecondary Education Levels*, NCES 2001-018, by R. Phelps, B. Parsad, E. Farris, and L. Hudson. Washington, DC: 2001.

*An Institutional Perspective on Students with Disabilities in Postsecondary Education*, NCES 1999-046, by L. Lewis and E. Farris. Washington, DC: 1999.

# Chapter 28: Other NCES Surveys and Studies

The final chapter of the Handbook covers five additional projects sponsored by NCES.

## 1. SCHOOL CRIME SUPPLEMENT (SCS)

### Overview

The School Crime Supplement (SCS) is conducted periodically as an enhancement to the National Crime Victimization Survey (NCVS), which is administered by the Bureau of Justice Statistics (BJS), U.S. Department of Justice. The NCVS is an ongoing household survey that gathers information on the criminal victimization of household members age 12 and older. NCES and BJS jointly designed the SCS for the purpose of studying the relationship between victimization at school and the school environment.

The SCS gathers data on nationally representative samples of approximately 10,000 students who are between the ages of 12 and 18 and who have attended school at some point during the 6 months preceding the interview. Only crimes that occurred at school during this 6-month period are covered. Topics include victimization in school, avoidance behaviors, weapons, gangs, availability of drugs and alcohol in school, and preventive measures employed by the school. The SCS was fielded in 1989, 1995, 1999, and 2001. Future administrations are planned at 2-year intervals.

### Sample Design

Survey estimates for the NCVS are derived from a stratified, multistage cluster sample. The primary sampling units (PSUs) composing the first stage of the sample are counties, groups of counties, or large metropolitan areas. Large PSUs are included in the sample automatically and are considered to be self-representing since all of them are selected. The remaining PSUs (called nonself-representing because only a subset of them is selected) are combined into strata by grouping PSUs with similar geographic and demographic characteristics, as determined by the decennial census.

The households for the NCVS sample are drawn according to the sample design based on the decennial census. The two remaining stages of sampling are designed to ensure a self-weighting probability sample of housing units and group-quarter dwellings within each of the selected areas. (Self-weighting means that, prior to any weighting adjustments, each sample housing unit had the same overall probability of being selected.) This involves a systematic selection of enumeration districts, with a probability of selection proportionate to their population size, followed by the selection of segments (clusters of approximately four housing units each) from within each enumeration district. To account for units built within each of the sample areas after the decennial census, a sample of permits issued for the construction of residential housing is drawn. Jurisdictions that do not issue building permits are sampled using small land-area segments. These supplementary procedures, though yielding a relatively small portion

### FIVE MORE NCES SURVEYS AND STUDIES:

- ▶ School Crime Supplement
- ▶ School Survey on Crime and Safety
- ▶ High School Transcript Studies
- ▶ Library Cooperatives Survey
- ▶ IEA Civics Study

of the total sample, enable persons living in housing units built after the decennial census to be properly represented. Approximately 43,000 housing units and other living quarters were designated for the 1999 NCVS sample.

In order to conduct field interviews for the NCVS, the sample is divided into six groups, or rotations. Each group of households is interviewed seven times—once every 6 months over a period of 3 years. The initial interview is used to bound the interviews (establishing a timeframe to avoid duplication of crimes on subsequent interviews), but is not used to compute the annual estimates. Each rotation group is further divided into six panels. A different panel of households, corresponding to one-sixth of each rotation group, is interviewed each month during the 6-month period. Because the NCVS is continuous, newly constructed housing units are selected as described above, and assigned to rotation groups and panels for subsequent incorporation into the sample. A new rotation group enters the sample every 6 months, replacing a group phased out after 3 years.

All age-eligible individuals in a selected household become part of the panel. NCVS interviews are conducted with each household member who is 12 years old or older. Once all NCVS interviews are completed, an SCS interview is given to household members who were enrolled in primary or secondary education programs leading to a high school diploma sometime during the 6 months prior to the interview. For the 1989 and 1995 SCS, 19-year-old household members were considered eligible for the SCS interview. The upper age range was lowered to 18 for eligibility in the 1999 SCS. Home-schooled students are not surveyed.

### **Data Collection and Processing**

The SCS questionnaire is designed to record the incidence of crime and criminal activity occurring inside a school, on school grounds, or on a school bus during the 6 months preceding the interview. Two modes of data collection were used through the 1999 SCS: paper-and-pencil interviewing (PAPI), which can be conducted in person or over the phone, and computer-assisted telephone interviewing (CATI). For 2001, the CATI questionnaire was replaced by an instrument coded using computer-assisted survey execution system (CASES) software. Interviews are conducted with the subject student between January and June; one-sixth of the sample is covered each month. There were 8,398 SCS interviews completed in 1999, 9,954 in 1995, and 10,449 in 1989. The U.S. Bureau of the Census collects the data.

Interviewers are instructed to conduct interviews in privacy unless respondents specifically agree to permit others to be present. Most interviews are conducted over the telephone, and most questions require “yes” or “no” answers, thereby affording respondents a further measure of privacy. While efforts are made to assure that interviews about student experiences at school are conducted with the students themselves, interviews with proxy respondents are accepted under certain circumstances. These include interviews scheduled with a child between the ages of 12 and 13 where parents refuse to allow an interview with the child; interviews where the subject child is unavailable during the period of data collection; and interviews where the child is physically or emotionally unable to answer for him/herself.

### **Weighting**

Weighting compensates for differential probabilities of selection and nonresponse. The NCVS weights are a combination of household-level and person-level adjustment factors. Adjustments are made to account for nonresponse at both levels. Next, additional factors are applied to reduce the variance of the estimate by correcting for differences between the sample distribution of age, race, and sex, and known population distributions of these characteristics. The resulting weights are assigned to all interviewed households and persons on the file. A special weighting adjustment is then made for the SCS respondents. Noninterview adjustment factors are computed to adjust for SCS interview nonresponse. Finally, this noninterview factor is applied to the NCVS person-level weight for each SCS respondent.

### **Imputation**

Because item response rates are high (in all administrations, rates were mostly over 95 percent of all eligible respondents), no imputation is performed.

### **Sampling Error**

To adjust the standard errors to account for the SCS sample design, the Census Bureau developed three generalized variance function (GVF) constant parameters. The GVF represents the curve fitted to the individual standard errors that are calculated using the jackknife repeated replication technique. For the 1989 and 1995 SCS surveys, the three constant parameters (a, b, and c) derived from the curve-fitting process were:

Year	a	b	c
1989	0.00001559	3,108	0.000
1995	-0.00006269	2,278	1.804
1999	-0.00026646	2,579	2.826

To adjust the standard errors associated with percentages, the following formula is used:

$$\text{standard error of } p = \sqrt{\frac{bp(1.0-p)}{y} + \frac{cp(\sqrt{p}-p)}{\sqrt{y}}}$$

where  $p$  is the percentage of interest expressed as a proportion and  $y$  is the size of the population to which the percentage applies. The estimated standard error of the proportion is then multiplied by 100 to make it applicable to the percentage.

To calculate the adjusted standard errors associated with population counts, the following applies:

$$\text{standard error of } x = \sqrt{ax^2 + bx + cx^{3/2}}$$

where  $x$  is the estimated number of students who experienced a given event (e.g., violent victimization).

### Coverage Error

The decennial census is used for sampling housing units in the NCVS. To account for units built since the census was taken, supplemental procedures are implemented. (See earlier section on Sample Design.) Coverage error in the NCVS (and SCS), if any, would result from coverage error in the census and the supplemental procedures.

### Unit Nonresponse

Because interviews with students can only be completed after households have responded to the NCVS, the unit completion rate for the SCS reflects both the household interview completion rate and the student interview completion rate. The household completion rates were 93.8 percent in 1999, 95.1 percent in 1994, and 96.5 percent in 1989. The student completion rates were 77.6 percent in 1999, 77.5 percent in 1995, and 86.5 percent in 1989. Multiplying the household completion rate by the student completion rate produced an overall SCS response rate of 72.9 percent in 1999, 73.7 percent in 1995, and 83.5 percent in 1989.

### Item Nonresponse

Item response rates for the SCS have been high. In all administrations, most items were answered by over 95 percent of all eligible respondents. The only exception was the household income question, which was answered by approximately 86.0 percent of all households in 1999 and approximately 90.0 percent of all households for both 1995 and 1989. Due to their sensitive nature, income and income-related questions typically have relatively lower response rates than other items.

### Measurement Error

Measurement error can result from respondents' different understandings of what constitutes a crime, memory lapses, and reluctance or refusal to report incidences of victimization. A change in the screener procedure between 1989 and 1995 probably resulted in the reporting of more incidences of victimization and more detail on the types of crime (and presumably more accurate data) in 1995 than in 1989. (See Data Comparability below for further explanation.) Differences in the questions asked in the NCVS and SCS, as well as the sequencing of questions (SCS after NCVS), might lead to better recall in the SCS. (See below.)

### Data Comparability

Respondents to the SCS are asked two separate sets of questions regarding personal victimization. The first set of questions is part of the NCVS, and the second set is part of the SCS. The following have an impact on the comparability of data on victimization: (1) differences between the 1989 and 1995 victimization items on the NCVS; and (2) differences between SCS items and NCVS items for collecting similar data.

### *Differences between 1989 and 1995 and later NCVS Victimization Items.*

The NCVS questions capture data on up to six separate incidents of victimization reported by respondents. These questions cover several different dimensions of victimization, including the nature of each incident, where it occurred, what losses resulted, and so forth. Changes to the NCVS screening procedure put in place in 1992 make cross-year comparisons difficult. The victimization screening procedure used in 1995 and later years was meant to elicit a more complete tally of victimization incidents than the one used in 1989. For instance, it specifically asked whether respondents had been raped or otherwise sexually assaulted, whereas the 1989 screener did not. Therefore, cross-year changes in reported victimization rates based on NCVS items may only be

the result of changes in how questions were asked and not of actual changes in the incidence of victimization. Refer to the BJS report, *Effects of the Redesign of Victimization Estimates*, for more details on this issue. (See Methodology and Evaluation Reports at the end of this section.)

Because NCVS questionnaires are completed before students are given the SCS questionnaires, it is likely that the changes to the NCVS screening procedure differentially affected responses to the 1989 and the 1995 and later SCS victimization items. Although it is not possible to test this assumption, it is nevertheless reasonable to expect that the more detailed victimization screening instrument led to better victimization recall by SCS respondents in later years than in 1989.

**Differences between 1995 and 1999 NCVS and SCS Items.** The SCS asks a less detailed set of victimization questions than are asked in the NCVS. Because these questions were not modified between 1989 and 1995, they are more generally comparable for the 2 years. However, the SCS victimization questions were changed in 1999 to specifically ask respondents only to provide information about incidents not previously reported in the main NCVS questionnaire. Thus, unlike prior SCS analyses, in 1999 the prevalence of victimization was calculated by including incidents reports by students on both the NCVS and SCS portions of the instrument.

Additional changes were made in the 1999 SCS. Prior to this year, in 1989 and 1995, students were asked only how easy or hard it was to obtain alcohol or particular drugs at school. In 1999, for the first time, students were asked about alcohol or drugs at school in two parts. There were first asked whether it was possible to obtain alcohol or certain drugs at school. If it was possible to obtain alcohol or a certain drug, they were then asked about the degree of difficulty in obtaining it. Moreover, in 1999, the SCS reworded questions about respondents bring weapons to school. Specifically, students were asked about only guns and knives in the 1999 SCS, while the 1995 SCS asked about other types of weapons as well. The 1999 SCS also covered topics not previously included, such as the use of hate words, the presence of hate-related graffiti, and the prevalence of bullying at school.

**Comparisons with Other Related Survey.** NCVS/SCS data have been analyzed and reported in conjunction with several other surveys on crime, safety, and risk behaviors. (See *Indicators of School Crime and Safety, 1998*, listed in the Methodology and Evaluation Reports section below.) These other surveys include three NCES

surveys: the School Safety and Discipline component of the 1993 National Household Education Survey; teacher victimization items on the Teacher Questionnaire component of the 1993–94 Schools and Staffing Survey; and the Fast Response Survey System’s Principal/School Disciplinary Survey, conducted periodically. Other related surveys and studies include the National School-Based Youth Risk Behavior Survey (YRBS), an epidemiological surveillance system developed by the Centers for Disease Control and Prevention to monitor the prevalence of youth behaviors that most influence health; the School Associated Violent Death Study (SAVD), an epidemiological study developed by the Centers for Disease Control and Prevention in conjunction with the Departments of Education and Justice to describe the epidemiology of school-associated violent death in the United States and identify potential risk factors for these deaths; and Monitoring the Future, an annual ongoing survey conducted by the University of Michigan’s Institute for Social Research to study changes in important values, behaviors, and lifestyle orientations of contemporary American youth.

*Readers should exercise caution when doing cross-survey analyses using these data.* While some of the data were collected from universe surveys, most were collected from sample surveys. Also, some questions may appear the same across surveys when, in fact, they were asked of different populations of students, in different years, at different locations, and about experiences that occurred within different periods of time. Because of these variations in collection procedures, timing, phrasing of questions, and so forth, the results from the different sources are not strictly comparable.

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## Methodology and Evaluation Reports

The references listed below were either published by the U.S. Department of Education, National Center for Education Statistics (indicated by an NCES number), or published by the U.S. Department of Justice, Bureau of Justice Statistics. See technical notes for discussion of methodology.

### General

U.S. Department of Justice, Bureau of Justice Statistics. *Criminal Victimization in the United States, 1994*, NCJ-162126. Washington, DC: 1997.

### Uses of Data

*Indicators of School Crime and Safety, 2000*, NCES 2001-017, by Phillip Kaufman, Xianglei Chen, Susan P. Choy, Sally A. Ruddy, Amanda K. Miller, Jill K. Fleury, Kathryn A. Chandler, Michael R. Rand, Patsy Klaus, and Michael G. Planty. Washington, DC: 2000.

### Survey Design

U.S. Department of Justice, Bureau of Justice Statistics. *Effects of the Redesign on Victimization Estimates*, NCJ-164381, by C. Kindermann, J. Lynch, and D. Cantor. Washington, DC: 1997.

## 2. SCHOOL SURVEY ON CRIME AND SAFETY (SSOCS)

### Overview

The School Survey on Crime and Safety (SSOCS) was inaugurated in 2000. By collecting information from school principals in U.S. elementary and secondary schools, it provides detailed information on school crime and safety from the schools' perspective. Measuring the extent of school crime is important for many reasons. The safety of students and teachers is a primary concern, but the nature and frequency of school crime have other important implications as well. Safety and discipline are necessary for effective education. In order to learn, students need a secure environment where they can concentrate on their studies. Further, school crime affects school resources, sometimes diverting funds from academic programs or decreasing schools' ability to attract and retain qualified teachers.

Despite the need for information about school crime, most of the data about it are limited and anecdotal in nature. Schools and policymakers have difficulty know-

ing which media reports reflect problems that are nationwide and which are relevant only to some schools. Schools also need to know how they compare to other schools nationwide in their policies and programs. For example, there might appear to be a trend toward certain types of school policies (e.g., metal detectors), yet there is often little information about the prevalence of such policies. SSOCS addresses this need by collecting nationally representative data and providing measures of change over time.

### Uses of Data

SSOCS is currently NCES' primary source of school-level data on crime and safety. Some of the topics that may be examined are the following:

- ▶ frequency and types of crimes at schools, including homicide, rape, sexual battery, attacks with or without weapons, robbery, theft, and vandalism;
- ▶ frequency and types of disciplinary actions such as expulsions, transfers, and suspensions for selected offenses;
- ▶ perceptions of other disciplinary problems such as bullying, verbal abuse, and disorder in the classroom;
- ▶ description of school policies and programs concerning crime and safety; and
- ▶ description of the pervasiveness of student and teacher involvement in efforts that are intended to prevent or reduce school violence.

The survey data also support analyses of how these topics are related to each other, and how they are related to various school characteristics.

### Sample Design

The SSOCS is a nationally representative cross-sectional survey of about 3,000 public elementary and secondary schools. The sampling frame for the 2000 SSOCS was constructed from the public school universe file created for the 1999-2000 Schools and Staffing Survey (SASS). Only "regular" schools (i.e., excluding schools in the outlying U.S. territories, ungraded schools, and those with a high grade of kindergarten or lower) are eligible for SSOCS.

The sample is first allocated to three instructional levels: elementary schools, middle schools, and secondary/combined schools. Within each instructional level, the sample is further allocated to substrata defined by type of locale, size class, and minority status.

SSOCS was first administered in 2000. It will next be administered in 2003–04, and then NCES plans to conduct SSOCS every 2 years in order to provide continued updates on crime and safety in U.S. schools.

### Data Collection and Processing

SSOCS is a mail survey with telephone follow up. The questionnaire is mailed to the school principal. Telephone prompts begin approximately 10 days after the mailout. Fax submissions are accepted.

Returned questionnaires are examined for quality and completeness using both visual and computerized edits. Depending on the total number of items that have missing or problematic data, and on whether those items have been designated as key data items, data quality issues are resolved by recontacting the respondents or by imputation. Westat is the contractor for SSOCS.

### Weighting

The SSOCS base weight is the reciprocal of the probability of selecting a school for the sample. To calculate unit nonresponse, adjustment factors are calculated within selected weighting classes, and these factors are applied to the base weights.

### Imputation

NCES plans to impute for item nonresponse.

### Sampling Error

Standard errors of the estimates are estimated using a jackknife replication method. The estimated standard errors are computed using WesVar.

### Future Plans

The next administration will be in 2003–04.

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## Methodology and Evaluation Reports

No documentation has been published as of February 2003.

## 3. HIGH SCHOOL TRANSCRIPT (HST) STUDIES

### Overview

The value of school transcripts as objective, reliable measures of crucial aspects of students' educational experiences is widely recognized. With respect to level of detail, accuracy, and completeness, transcript data are superior to student self-reports of exposure to learning situations. Transcript studies inform researchers and policymakers about the coursetaking patterns of students, which can then be analyzed in relation to the students' academic performance on assessment tests. Since 1982, NCES has conducted six high school transcript studies.

The 1982 study was part of the first follow up to the High School and Beyond (HS&B) Study. (See chapter 8.) Transcripts were collected for members of the 1980 HS&B sophomore cohort who were seniors in 1982. Another transcript study was conducted in conjunction with the 1992 second follow up to the National Education Longitudinal Study of 1988 (NELS:88). (See chapter 6.) Four transcript studies are associated with the National Assessment of Educational Progress (NAEP). (See chapter 20.) Results from the 1987 High School Transcript Study (from schools selected for the 1986 NAEP) were used to compare coursetaking patterns of 12<sup>th</sup>-grade students in 1982 and 1987. The 1990 HST study, conducted in conjunction with the 1990 NAEP, tracked changes in the curricular patterns of high school students since 1987. The 1994 and 1998 HST studies were conducted in conjunction with those years' NAEP collections. These studies further monitor students' coursetaking behavior.

### Sample Design

Sample design is essentially similar across the various administrations of the HST studies: multistage, stratified, and clustered design. However, there are differential rates of oversampling among the studies to reflect special interests. For instance, the 1987 study oversampled students with disabilities and the 1994 and 1998 studies oversampled minority students. Design differences are noted below and in the later section on Data Comparability. The transcript studies are grouped according to the major NCES survey with which they are associated.

***The 1998, 1994, 1990, and 1987 Transcript Studies (conducted in conjunction with NAEP).*** The NAEP Transcript Studies were conducted using nearly identical methodologies and techniques.

*The 1998 High School Transcript Study.* The 1998 HST sample is nationally representative at both the school and student levels. The sample was comprised of schools selected for the NAEP main sample that had 12<sup>th</sup>-grade classes and were within the 58 PSUs selected for the HST study. A subsample of 322 schools was selected from the eligible NAEP sample, consisting of 269 public schools and 53 nonpublic schools. In order to maintain as many links as possible with NAEP scores, replacement schools that were used in NAEP were also asked to participate in the transcript study, as opposed to sampling the NAEP refusal schools. Of the 322 schools in the original sample, 264 participated, of which 232 cooperated with both NAEP and HST and maintained links between students' transcript and NAEP data.

A total of 28,764 students were selected for inclusion in the HST study. Of these, 27,183 students were from schools that maintained their NAEP administration schedules and were identified by their NAEP booklet numbers. Another 500 students were from schools that participated in NAEP but had lost the link between student names and NAEP booklet numbers, and 1,081 were from schools that did not participate in NAEP. Of the 28,764 students in the original sample, 25,248 were deemed eligible for the transcript study, and 24,218 transcripts were collected and processed.

*The 1994 High School Transcript Study.* The 1994 HST sample of schools was nationally representative of all high schools in the United States. A subsample of 333 public schools and 47 private schools were drawn from the lists of eligible NAEP public and private schools. One of these schools had no 12<sup>th</sup>-grade students, and was not included in the HST study. Of the 379 remaining schools, 340 participated in the 1994 HST study. The student sample was representative of graduating seniors from each school. Only those students were included whose transcripts indicated that they had graduated between January 1, 1994, and November 21, 1994. Approximately 90 percent of students in the 1994 HST study also participated in the 1994 NAEP. The remaining students were sampled specifically for the transcript study, either because their schools did not agree to participate in the 1994 NAEP or because the schools participated in the NAEP study but did not retain the lists linking NAEP IDs to student names. The 1994 HST study also included special

education students who were excluded from the 1994 NAEP. High school transcripts were collected for 25,494 from an eligible sample of 26,045 students.

*The 1990 High School Transcript Study.* The sample of schools was nationally representative of schools with grade 12 or having 17-year-old students. (Some 379 schools were selected for the sample; 8 of these had no 12<sup>th</sup>-grade students.) The sample of students was representative of graduating seniors from each school. These students attended 330 schools that had previously been sampled for the 1990 NAEP. Approximately three-fourths of the sampled students had participated in the 1990 NAEP assessments. The remaining students attended schools that did not participate in the NAEP or did not retain the lists linking student names to NAEP IDs. As with the 1994 HST study, only schools with a 12<sup>th</sup> grade were included, and only students who graduated from high school in 1990 were included. The 1990 HST study also included special education students who had been excluded from the 1990 NAEP. In spring 1991, transcripts were requested for 23,270 students who graduated from high school in 1990; 21,607 transcripts were received.

*The 1987 High School Transcript Study.* The schools in the 1987 HST study were a nationally representative sample of 497 secondary schools that had been selected for the 1986 NAEP assessments. The 1987 HST student sample represented an augmented sample of 1986 NAEP participants who were enrolled in the 11<sup>th</sup> grade and/or were 17 years old in 1985–86 and who successfully completed their graduation requirements prior to fall 1987. The HST study included (1) students who were selected and retained for the 1986 NAEP assessment; (2) students who were sampled for the 1986 NAEP but were deliberately excluded due to severe mental, physical, or linguistic barriers; and (3) all students with disabilities attending schools selected for the 1986 assessment. Four of the participating schools had no eligible students without disabilities. Of the 497 schools selected for the HST study, 433 participated in the study. There were 35,180 graduates in the sample, for whom 34,140 transcripts were received.

Westat, Inc. conducted the NAEP HST studies.

***The 1992 High School Transcript Study.*** This transcript study was conducted as part of the NELS:88 second follow up—see chapter 6. A total of 2,258 schools were identified in the second follow-up tracing of the NELS:88 first follow-up sample. Since the HST component was limited to 1,500 schools, it was necessary to select a

sample of schools. All schools identified as having four or more first follow-up sample members enrolled were included in the school-level sample with certainty (1,030 schools, probability = 1.0), and random samples were selected for retention from schools identified as having three first follow-up members (45 out of 60 schools, probability = 0.75), two first follow-up members (104 out of 160 schools, probability = 0.65), and one first follow-up member (321 out of 1,008, probability = 0.31845). (Note that by the time of data collection, only 1,374 of the 1,500 schools contained at least one NELS sample member.) Transcript data were requested for all students in the 1,374 selected schools.

In addition, transcripts were collected for all dropouts, early graduates, and 12<sup>th</sup>-grade sample members ineligible for the base year, first follow-up, and second follow-up surveys owing to a language, physical, or mental barrier (triple ineligibles). Including triple ineligibles improved comparability with the 1987 and 1990 NAEP-based transcript studies, which included special education students excluded from NAEP administrations as well as NAEP-eligible students. This added 468 schools to the sample.

Of the 1,842 schools in the 1992 sample, 1,543 participated in the 1992 study. Transcripts were requested for 19,320 students, and 17,285 transcripts were received. This study was conducted by the National Opinion Research Center (NORC) at the University of Chicago.

***The 1982 High School and Beyond (HS&B) Transcript Study.*** The first transcript study was a component of the HS&B first follow up. The 1982 study included 1,899 secondary schools—999 HS&B sampled schools and 900 schools to which students selected for the transcript survey had transferred (and for which no data collection activities other than transcript collection were carried out). Of these 1,899 schools, 1,720 provided transcripts. The total student sample size was 18,427 students. From among the 1980 sophomores selected for the HS&B first follow up, 12,309 cases were retained in the HST sample with certainty—12,034 cases in the probability sample plus 275 nonsampled co-twins. In addition, a systematic sample of 6,118 cases was subsampled from the 17,703 remaining first follow-up selections, with a uniform probability of approximately .35. Transcripts were collected for 15,941 of the 18,427 students. The NORC at the University of Chicago conducted this study.

### **Data Collection and Processing**

The procedures for transcript and other data collection and processing are similar for the various HST studies.

The description in this section pertains mostly to the five NAEP-based transcript studies. The 1998 HST procedures illustrate the process.

NAEP field workers requested sample materials for the 1998 HST study when they first went to a school as part of the 1998 NAEP, and they collected these materials when they returned to the school for sampling. The sample materials included a list of courses offered for each of four consecutive years from 1994 to 1998; a completed School Information Form (SIF); and three transcripts of students who graduated in 1998 (representing a “regular” student, one with honors courses, and one with special education courses). An SD/LEP questionnaire was completed for students with a disability or with limited English proficiency by the person most knowledgeable about the student. The School Questionnaire—a 54-item questionnaire that asked for information about school, teacher, and home factors that might relate to student achievement—was completed by a school official (usually the principal) as part of NAEP.

The SIF requested information about the school in general, sources of information within the school, course description materials, graduation requirements, grading practices, and the format of the school transcripts or as part of the HST data collection process for non-NAEP participating schools.

In schools that did not participate in NAEP, the field worker first selected a sample of students, then requested transcripts for those students and followed the procedures for NAEP participants for reviewing and shipping transcripts. The SIF was also completed and course catalogs for the past four academic years were collected. The information in the catalogs was documented by completing the Course Catalog Checklist. At this point the procedure was different. Rather than obtaining and annotating three example transcripts, the field worker used the Transcript Format Checklist to annotate three actual transcripts from among those that were collected.

In the non-NAEP participating schools, the process of generating a sample of students began when the school produced a listing of all students who graduated from the 12<sup>th</sup> grade during the spring or summer of 1998. This list was requested during the preliminary call placed to the school when it was determined that the school would participate in the HST. The following information was collected for each student in the HST: exit status; sex; date of birth (month/year); race/ethnicity; whether the student had a disability (SD); whether the student was

classified as Limited English Proficiency (LEP); whether the student was receiving Title I services; and whether the student was a participant in the National School Lunch Program. These data were collected either with the list of 1998 graduates or after sampling, depending on which procedure was easier for the school. SD/LEP questionnaires were not collected for students in schools that had not participated in NAEP.

Each of the courses entered on the transcripts were coded using a common course-coding system, a modification of the *Classification of Secondary School Courses* (CSSC). The CSSC—which contains approximately 2,000 course codes—is a modification of the Classification of Instructional Programs (CIP) used for classifying college courses. Both systems use a three-level, six-digit system for classifying courses. The CSSC uses the same first two levels as the CIP, represented by the first four digits of each code. The third level of the CSSC (the fifth and sixth digits of the course code) is unique to the CSSC and represents specific high school courses.

For all NAEP transcript studies, courses appearing on student transcripts were also coded to indicate whether they were transfer courses, held off campus, honors or above grade-level courses, remedial or below grade-level courses, or designed for students with Limited English Proficiency and/or taught in a language other than English.

Credit and grade information reported on transcripts also needed to be standardized. Standardization of credit information was based on the Carnegie Unit, defined as the number of credits a student received for a course taken every day, one period per day, for a full school year. (Note that the 1982 High School and Beyond Transcript Study provided course totals rather than Carnegie Units.) Coders converted numeric grades to standardized letter grades unless the school documents specified other letter grade equivalents for numeric grades.

The Computer Assisted Coding and Editing (CACE) system was designed specifically for coding high school catalogs. CACE has two major components: (1) a component for selecting and entering the most appropriate CSSC code and “flags” for each course in a catalog; and (2) a component for matching each entry appearing on a transcript with the appropriate course title in the corresponding school’s list of course offerings.

Each stage of the data coding and entering process included measures to assure the quality and consistency of data. Measures to maintain the quality of data entry

on transcripts included: 100 percent verification of data entry; review of all transcripts where the number of credits reported for a given year (or the total number of credits) was not indicative of the school’s normal course load or graduation requirements; and reconciliation of transcript IDs with the list of HST-valid IDs. Catalog coding reliability was maintained by conducting reliability checks. At least 10 percent of each school’s course offerings were re-entered by an experienced coder and the results compared with those of the original coder. If less than 90 percent of the entries agreed, the catalog was completely reviewed and any necessary changes were made. Agreement of 90 percent or better was found for approximately 85 percent of the school catalogs during the first review.

An additional quality check took place when the CACE files for a school were converted to delivery format. Reports listing frequencies of occurrences that might indicate errors were sent to the curriculum specialist for review. Each file was then assigned a status of 1 for complete, 2 for errors in transcript entry, 3 for errors in catalog coding and associations, or 4 for computer errors. A file with a status of 2, 3, or 4 was returned to Computer Assisted Data Entry (CADE) and CACE for correction, a new report was generated, and the report was again reviewed. This process was repeated until the file had a status of 1, indicating that it was complete and correct.

## Weighting

The sampling weights for the HST studies are designed primarily to represent differential sampling and response rates. Only the 1998 procedures are described below. (For details on weighting in the other studies, see the relevant technical manuals.)

Two types of weights were created in the 1998 HST:

- ▶ HST base weights for all students who participated in the 1998 HST study—that is, for whom a transcript was received and coded; and
- ▶ HST-NAEP linked weights for students who participated in both the 1998 HST and the 1998 NAEP. Linked weights were computed separately for writing, 25-minute reading, 50-minute reading, civics, and civics trend assessment students. Each assessment sample represents the full population, so each of the five sets of assessment-linked weights aggregate separately to the population totals.

In each set of weights, the final weight attached to an individual student record reflected two major aspects of the sample design and the population surveyed. The first component, the base weight, reflected the probability of

selection in the sample (the product of the probability of selecting the primary sampling unit, the probability of selecting the school within the primary sampling unit, and the probability of selecting the student within the school). The second component resulted from the adjustment of the base weight to account for nonresponse within the sample and to ensure that the resulting survey estimates of certain characteristics (race/ethnicity, size of community, and region) conformed to those known reliably from external sources.

The final *HST student weights* were constructed in five steps:

- (1) The student base weights (or design unbiased weight) were constructed as the reciprocal of the overall probability of selection.
- (2) School nonresponse factors were computed, adjusting for schools that did not participate in the HST study. For the linked weights, adjustment factors were assigned for each session type (writing/civics, reading, and civics trend). The school nonresponse factors for the linked weights were also slightly different than the corresponding HST student weight school nonresponse factors, to account for schools that refused to participate in NAEP.
- (3) Student nonresponse factors were computed, adjusting the weights of responding students to account for nonresponding students. Definitions of responding and nonresponding students differed for the HST weights and the linked weights.
- (4) Student trimming factors were generated to reduce the mean squared error of the resulting estimates. Another purpose of the trimming was to protect against a small number of large weights from dominating the resulting estimates of small domains of interest.
- (5) The final step was poststratification, the process of adjusting weights proportionally so that they aggregate within certain subpopulations to independent estimates of these subpopulation totals. These independent estimates were obtained from the Current Population Survey (CPS) estimates for various student subgroups. As the CPS estimate has smaller sampling error associated with it, this adjustment should improve the quality of the weights.

The *linked student weights* were constructed in a parallel manner, with some differences (e.g., the student base weight incorporated a factor for assignment to NAEP assessments). The school nonresponse factors were also slightly different for the linked weights to account for schools that refused to participate in the NAEP assessments. In addition, there was an extra nonresponse factor computed for the linked weights to adjust for students whose transcripts were included in the HST study but

who were absent from (or refused to participate in) a NAEP assessment. The trimming and poststratification steps for the linked weights were similar to those of the HST weights, with some differences. The missing transcript adjustments for the linked weights were very similar to those computed for HST weights.

### Imputation

In the 1994 and 1998 HST, for a small percentage of graduated students it was not possible to obtain a transcript. In addition, some transcripts were considered unusable, since the number of standardized credits shown on the transcript was less than the number of credits required to graduate by the school. An adjustment is necessary in the weights of graduated students with transcripts to account for missing and unusable transcripts. To do this adjustment correctly, it is necessary to have the complete set of graduated students, with or without transcripts. Students who did not graduate were not included in this adjustment, but they were retained in the process for poststratification. There are a few students, however, for whom no transcripts were received and the graduation status was unknown. Among these students, a certain percent was imputed as graduating, based on overall percentages of graduating students. The remaining students were imputed as nongraduating. The imputation process was a standard (random within class) hot-deck imputation. For each student with unknown graduation status, a “donor” was randomly selected (without replacement) from the set of all students with known graduation status from the same region, school type, race/ethnicity, age class, school, and sex, in hierarchical order. The two race/ethnicity categories were (1) White, Asian, or Pacific Islander and (2) Black, Hispanic, American Indian, or other. There were two age classes (born before 10/79; born during or after 10/79). Each student with known graduation status in a cell could be used up to three times as a donor for a student in the same cell with unknown graduation status. If insufficient donors were available within the cell, then donors were randomly selected from students in another cell with similar characteristics to the cell in question. A donor had at least to be from the same region, type of school, race category, and age category.

Imputation was done for missing sex data in the 1992 NELS Transcript Study, using the student’s first name to determine the sex. In the 1982 HS&B Transcript Study, values were imputed for missing sex and race/ethnicity. Because the 1982 and 1992 studies were part of longitudinal studies covering the same students over time, there

were more opportunities to collect information on both sex and race/ethnicity than in the NAEP studies.

### Sampling Error

Because of the HST multistage design, jackknife replication was used for variance estimation. In the 1998 HST, a set of 62 replicate weights was attached to each record, one for each replicate. Variance estimation was performed by repeating the estimate procedure 63 times, once using the original full set of sample weights and once each for the set of 62 replicate weights. The variability among replicate estimates was used to derive an approximately unbiased estimate of the sampling variance. This procedure was used to obtain sampling errors for a large number of variables for the whole population and for specified subgroups.

In general, the variability was very small compared to the size of the estimates, although this is not true in cases of infrequently taken courses in the smaller subpopulations. For example, the percentage of White students taking geometry is estimated at 78.08, with a standard error of 1.03 (a ratio of 0.01), while the percentage of Native Americans taking calculus is estimated at 4.14, with a standard error of 1.62 (a ratio of 0.39). (See *The 1998 High School Transcript Study Tabulations*, NCES 2001–498.)

### Coverage Error

Potential sources of undercoverage in the HST studies include: (1) incomplete sampling frame data, as no national listing of schools is, or remains for very long, 100 percent complete and accurate (see “Nonsampling Error, Coverage error” in chapters 6, 8, and 20, as relevant to the particular HST study); (2) omissions and errors in school rosters; and (3) deliberate exclusion of certain categories of students—such as students with physical or mental disabilities or non-English speakers, who might find it difficult or impossible to complete demanding cognitive tests and questionnaires. The first two sources are thought to have only a very small impact on HST estimates. The most serious potential source of undercoverage bias for HS&B, NELS, and NAEP studies is believed to be the exclusion of students with physical, mental, or linguistic barriers to assessment or survey participation. While these studies have used similar exclusion criteria for completion of survey forms and testing, specific guidelines differ somewhat across studies, as well as within studies over time. In an effort to minimize the number of exclusions, eligibility criteria were made more specific in 1990.

Because the NAEP and NELS studies collected data on the characteristics of excluded students, undercoverage bias can be quantified. Also, these studies were more inclusive in their transcript components than in their test or questionnaire administration. (See Sample Design above.) It is believed that NAEP transcript studies had no transcript undercoverage due to exclusion of certain students and that the 1992 NELS study had negligible undercoverage of about 2.5 percent for the senior cohort. Although quantifiable exclusion data are not available for the HS&B, given the similarity of eligibility rules in all three studies, it is reasonable to presume that HS&B exclusion rates were between 3 and 6 percent.

### Unit Nonresponse

There is unit nonresponse at both the school and student levels in HST studies. In 1998, an unweighted 88 percent of schools participated in the transcript study (compared to 90 percent in the 1994 study, 87 percent in both the 1987 and 1990 studies, 91 percent in the 1982 HS&B study (95 percent for HS&B regular schools vs. 86 percent for transfer schools), and 84 percent in the 1992 NELS study (94 percent for contextual schools vs. 55 percent for noncontextual schools). Response rates, however, varied with characteristics of the sample school. For example, in 1998, despite the high overall response rate, only 71 percent of nonpublic schools responded to the study.

At the student level, transcripts were obtained for 98 percent of eligible students in the 1998 HST study. This rate matches that for the 1994 HST study and is higher than the student-level response rates for the other studies—89 percent in 1992 (92 percent for students in contextual schools versus 74 percent for dropouts and alternative completers); 93 percent in 1990; 97 percent in 1987; and 88 percent in 1982 (89 percent for students in regular HS&B schools versus 72 percent for transfer students).

### Item Nonresponse

Rates for item nonresponse have ranged from nonexistent to extremely high, depending on the type of item. As would be expected in transcript studies, course-level items have little if any nonresponse. Specific items include school year, term, and grade in which a course was taken; school-assigned course credits; and standardized course grade. For these items in the 1992 NELS Transcript Study, nonresponse rates ranged from 0 percent for school year to less than 2 percent for school term in which a course was taken. Incompleteness of actual course data, while

considered to be limited, is another source of potential bias in a transcript study. Course data may be incomplete for students who transferred from one school to another. Also, it is difficult to assess the completeness of transcript data for dropouts (1982 HS&B and 1992 NELS) because of inconsistencies between enrollment reports of the sample member and the school.

Transcripts often provide other pieces of information useful for analysis of coursetaking patterns: days absent in each school year, class rank, class size, month and year student left school, reason student left school (e.g., dropped out, graduated, transferred), cumulative GPA, participation in specialized courses or programs, and various standardized test scores (e.g., PSAT, SAT, ACT). While nonresponse rates for participation in specialized courses or programs (1.8 percent in 1992) and month/year/reason student left school (less than 4 percent in 1992) are quite low, nonresponse rates for the other items are very high: in 1992, 18 percent nonresponse for class size; 22 percent for cumulative GPA; 23 percent for class rank; 42–44 percent for days absent in each of the 4 high school years; and 67–73 percent for standardized test scores. (Note that although students were asked on a student questionnaire whether and when they planned to take specific tests, some students may not have actually taken the tests; this would explain in part the high nonresponse rates for test scores.) This wide range of item nonresponse rates is comparable to results of the 1982 HS&B Transcript Study and the NAEP transcript studies. For example, the 1982 HS&B study showed 32 percent nonresponse for class rank and class size, 41–47 percent nonresponse for days absent per school year, and 75 percent and above for standardized test scores.

Two key analytic variables are sex and race/ethnicity. Item nonresponse rates for sex have been extremely low, ranging from 0 percent in the 1982 HS&B study and the 1992 NELS study to 0.26 percent in the 1987 NAEP study. For race/ethnicity, nonresponse has ranged from 0 percent in 1982 and 0.7 percent in 1992 to 5.4 percent in 1987.

### Measurement Error

Possible sources of measurement error in HST studies are differences between schools and teachers in grading practices (e.g., grade inflation), differences in how data are recorded (although efforts are made to standardize grades and course credits for the HST studies), and errors in keying or processing the transcript data (although

the system has many built-in quality checks). The amount of measurement error in any survey or study is difficult to determine, and it is unknown for the HST studies. However, because the transcripts are official school records of students' progress, it is reasonable to presume that there is less measurement error than in other types of data collections, particularly those that are self-reported.

### Data Comparability

While there are many similarities among the HST studies conducted thus far, there are also some differences. Users should consider the following:

**Sample Design.** The overall sample design for the HS&B, NELS:88, and NAEP studies is quite similar. All are large, nationally representative school-based samples that have employed a multistage, stratified, clustered design. However, despite their fundamental similarity, the designs differ somewhat in a number of features. Five differences, in particular, should be considered because of their potential impact on comparative analyses:

**Sample sizes.** There are differences in sample sizes across the various transcript studies, and marked differences in the distribution of transcript-eligible students across schools. For example, the 1982 HS&B Transcript Study collected 15,941 transcripts from 1,720 schools. In contrast, the 1987 NAEP study collected more than twice as many transcripts (34,140) from a quarter as many schools (433). The 1982 HS&B Transcript Study collected considerably fewer transcripts than were collected in the other transcript studies and from a considerably greater number of schools. This means that comparable estimates across the multiple transcript studies have similar sampling errors despite differences in the total number of transcripts sampled. In fact, sampling errors were often *smaller* for the 1982 estimates. The design effects for years other than 1982 were considerably larger than for 1982, more than offsetting the effects of the larger sample size of transcripts in those other years.

**Oversampling.** To reflect special interests, different rare student populations and school types have been disproportionately included in the studies. The 1982 HS&B Transcript Study included nonsampled co-twins, and the 1987 NAEP Transcript Study oversampled students with disabilities. The HS&B study oversampled Hispanics; the NELS:88 study oversampled Asians and Hispanics; and the NAEP studies oversampled schools with high percentages of Hispanics and Blacks. All studies oversampled private schools.

*Eligibility.* While similar exclusion criteria have been used for the main HS&B, NELS:88, and NAEP studies, specific guidelines have differed. Eligibility criteria became more specific in 1990, so comparability between studies should have improved. (See Sample Design above for eligibility criteria for the transcript studies, which have included special education students who were excluded from the main surveys.)

*Representativeness of cross-sectional and longitudinal populations.* The HS&B and NAEP transcript studies were based on national probability samples of high schools. Although the transcript studies did not always take place in the years the school samples were drawn, the timeframes were close enough to consider the samples a close approximation of a national probability sample of schools for that year. The 1992 NELS transcript study, on the other hand, cannot be considered nationally representative of high schools in 1992. Rather, it represents the schools to which a national probability sample of 8<sup>th</sup> graders had dispersed 2 and 4 years later.

One fundamental difference among the transcript studies is that the 1982 HS&B study and the 1992 NELS study collected transcripts of students who were still enrolled in school, dropouts, transfers, and GED recipients, whereas the NAEP studies excluded these students. Also, the student samples for the various studies were drawn at different points in students' high school careers so they are not universally representative of the senior classes for the study years. The 1982 HS&B students were sampled when they were sophomores in 1980. Although transferring students were followed to their new schools, the 1982 student sample is not *fully* representative of high school seniors because it does not include (1) eligible students who were not selected in 1980 but who had since transferred into a HS&B school, and (2) 1982 seniors who were not sophomores in 1980. The students for the 1987 NAEP Transcript Study were sampled for the 1986 NAEP when they were juniors and/or 17 years old, but no attempt was made to follow them if they left school as a transfer or dropout. Nor were students who transferred into the school after NAEP sampling included. Additionally, 1987 graduating seniors who were not 1986 juniors had no chance of selection into the study. The 1987 sample, therefore, only approximates the high school graduating class of 1987. The students in the 1990, 1994, and 1998 NAEP studies were sampled in their senior year and were further restricted to seniors who actually graduated in those years. As such, these studies do provide representative samples of each high school's graduates in the respective years. These studies, like the one in

1987, excluded students who transferred out, failed to graduate on time, or who received GEDs. In contrast to these studies, the 1992 NELS in-school samples of students are not necessarily representative of seniors within these schools since they exclude non-NELS 8<sup>th</sup> graders who may have fed the schools.

**Definition of Seniors.** *Users should be cautious when comparing data for seniors in a given academic year (e.g., 1991–92) with graduates in a given calendar year (e.g., 1992).* Moreover, not all members of the 1982 HS&B senior cohort and the 1992 NELS senior cohort succeeded in meeting graduation requirements. The transcript data sets generally provide information about both the date and the reason for leaving the school so that the same unit of analysis (e.g., graduates as of a certain point in time) can be determined. (See *Sample Design* differences above.)

**Coded Information.** In all of these studies, transcripts were obtained from both public and private high schools. Information from these transcripts—including specific courses taken, grades, and credits earned—was coded according to the CSSC coding system and processed into a system of data files designed to be merged with questionnaire and test data files. (See *Data Collection* above.) In addition to general course information, the CSSC for coding transcript data includes a “disability” flag and a “sequence” flag. The disability flag was added to the CSSC during the 1987 transcript study to indicate whether a course is open to all students or is restricted to disabled students. The sequence flag indicates whether a course is part of a sequence of courses and, if so, its place in that sequence. It was added to the CSSC during the 1990 transcript study.

Unlike the other HST studies, some transcript information was not coded in the 1982 HS&B study. Uncoded information includes the identification of courses as remedial, regular, or advanced; as offered in a different location; or as redesigned for students with disabilities. (The HS&B study also used a different method for identifying students with disabilities than did the other studies.)

As noted above, the HS&B and NELS transcript studies included students who had not yet graduated, who received a GED, who transferred to another school, or who dropped out of school. Transcript information for some of these students is less complete than for seniors who graduated from their sampled school. Dropouts would not necessarily have transcripts spanning the usual 4-year high school career. While attempts were made to obtain

transcripts for transferring students, the transfer schools were less cooperative than were schools that were part of the regular school sample.

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### Methodology and Evaluation Reports

The U.S. Department of Education, National Center for Education Statistics, is the source of the references listed below.

#### General

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## 4. LIBRARY COOPERATIVES SURVEY (LCS)

### Overview

The Library Cooperatives Survey (LCS) was first administered in 1998 and is scheduled to be conducted at 5-year intervals thereafter. The first survey gathered data for fiscal year (FY) 1997 from about 400 library cooperatives. LCS collects descriptive information about library cooperatives—entities that provide additional services and resources primarily to public, academic, school, and special libraries. Data items include member service measures, such as number of reference transactions and interlibrary loans, training and instruction hours provided to member library staff, and consulting and planning hours. In addition, the library cooperatives report information about membership, size of collection, operating income and expenditures, and staffing.

The survey included 55 data items and covered the following areas: type of organization, geographic area served; whether the general public is directly served;

cooperative membership; operating income; operating expenditures; capital expenditures; cooperative services such as reference, interlibrary loan, training, consulting, Internet access, electronic services, statistics, preservation, union lists, public relations, cooperative purchasing, delivery, advocacy, and outreach programming.

The data from this survey fill a significant gap in library information. The results are extremely useful to federal, state, and local officials in assessing the utility of library cooperatives in sharing resources among various types of libraries. Input elements (e.g., expenditures) can be compared with output elements (e.g., services). Additionally, the FY 97 data serve as a critical baseline for gauging the influence of the 1997 Library Services and Technology Act (LSTA) on library cooperatives. LSTA urges cooperative relationships and resource sharing among various types of libraries.

### Data Collection and Processing

The FY 97 data were collected in spring 1998 through a combination of paper forms and electronic forms accessed by respondents via the Internet. A pretest collection of FY 96 data from a sample of approximately 150 respondents in the anticipated universe was conducted in the summer of 1997, using paper forms. At that time, quick-response postcards were mailed to all organizations in the universe (approximately 768) to collect address corrections and qualifying information for the full survey.

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### Methodology and Evaluation Reports

Currently, no reports are available for LCS.

## 5. CIVIC EDUCATION STUDY (CivEd)

### Overview

Within the United States there has been growing interest in cross-national comparisons of students' educational achievement. In light of the rapidly changing international political and economic climate, this interest has focused on a concern about the ability of our population to meet the growing challenges of an information society and a desire to maintain our competitive advantage in the world economy. In addition to participation in cross-national comparisons of reading literacy (see chapter 22), adult literacy (see chapter 24), and mathematics and science education (see chapter 21), in 1999 the United States participated in the International Association for the Evaluation of Educational Achievement (IEA) Civic Education Study (CivEd).

Phase I of CivEd began in 1995 and 1996, examining the goals and curriculum of civics education in approximately 20 countries. The product of Phase I, released in 1999, was a volume of case studies describing civics education in participating countries, designed to provide the information needed to develop a framework to guide the construction of an assessment instrument about civic knowledge and behavior. Phase II was the administration of the assessment in the fall of 1999. The assessment measures 9<sup>th</sup>-grade students' civic knowledge, skills, and attitudes across the following three domains: democracy, national identity and international relations, and social cohesion and diversity.

### Components

The 1999 CivEd consisted of three instruments: a student questionnaire, a school questionnaire, and a teacher questionnaire.

**Student Questionnaire.** The questionnaire contained five types of items: items assessing knowledge of key civic principles and pivotal ideas (civic content items—type 1); items assessing skills in using civic-related knowledge (civic skills items—type 2); items measuring students' concepts of democracy, citizenship, and government (type 3); items measuring attitudes toward civic issues (type 4); and items measuring expected political participation (type 5). Additional survey questions assessed students' perceptions of the climate of the classroom and other background variables. Test questions were multiple-choice.

**School Questionnaire.** The school questionnaire, completed by the principal, contained questions designed to gather information on the school's general environment, such as size, length of school year, and characteristics of the student body. The school questionnaire also asked questions designed to provide a picture of how civic education is delivered through the school curriculum and school-sponsored activities, as well as the number of staff involved in teaching civic-related subjects.

**Teacher Questionnaire.** A teacher questionnaire was administered to the teacher of the selected class. However, because the organization of civic education and the role of civic education teachers in U.S. schools differ from those of many other countries in the study, results from the teacher questionnaire were not analyzed in the U.S. report.

### Sample Design

The CivEd school sample for the United States was drawn in October 1998, following international requirements as given in the *IEA Civics School Sampling Manual*. The United States sample was a three-stage, stratified, clustered sample. The overall sample design was intended to approximate a self-weighting sample of students as much as possible, with each 9<sup>th</sup>-grade student in the United States having an approximately equal probability of being selected (within the major school strata).

The first stage included defining geographic primary sampling units (PSUs); classifying the PSUs into strata defined by region and community type; then selecting PSUs with probability proportional to size.

The second stage of sampling was the selection of schools, using a frame developed from two lists. Regular public, Bureau of Indian Affairs, and Department of Defense Education Activity schools were obtained from the 1997 QED list. Catholic and nonpublic schools were obtained from the 1995–96 Private School Survey. (See chapter 3.) Any school having a 9<sup>th</sup> grade and located within an IEA Civics PSU was included on the school sampling frame. A total of 7,936 schools were on the frame.

The primary variable ordering the schools on the frame was public/private status: a total of 11 private schools and 139 public schools were drawn in the final sample. The measures of size for each school were designed to be proportional to the estimated number of 9<sup>th</sup> graders in the school, within each implicit stratum. A Keyfitz procedure was carried out to minimize overlap with the 1999 TIMSS-R school sample being fielded in the same

PSUs during the same time period. Additionally, for public schools, measures of size were assigned such that those with high minority populations (greater than 15 percent Blacks and Hispanics) had probabilities of selection twice as high as those in the same PSU with low minority populations; for private schools, additional stratification was done by three size groupings, and the two smallest strata were given reduced measures of size to lower the expected sample count of schools in these strata. When drawing the school sample, private schools were ordered first by school type, next by PSU, and last by measure of size. Public schools were ordered first by PSU, next by minority enrollment category, and last by measure of size.

The third stage of sampling was classrooms within schools. Within each participating school, the plan was to randomly select one classroom, preferably in Civics or a related subject, and all students in the classroom were selected. In schools that could not provide a list of classes for grade 9 that (a) included every grade 9 student in the school exactly once, and (b) was preferably a Civics or related class, alternative procedures were used. Classrooms with less than 15 students were collapsed into pseudo-classrooms.

Finally, the teacher of the selected class was asked to complete a questionnaire.

### Data Collection and Processing

The CivEd data were collected in fall 1999. States, then school districts, and then schools were contacted about participating in CivEd. Schools were offered an honorarium for their participation and a one-page report indicating how their students did. With these incentives, a school cooperation rate of 89 percent (including substitutes) was secured.

Westat handled the field operations, and hired and trained the external test administrators.

In each school, an original testing session was held, and a makeup session if the student response rate was less than 90 percent. Overall, the student response rate was 92 percent, with only 7 students assessed in makeup sessions. The sessions were administered according to international specifications, and timed as specified in the script and international materials. Most sessions were conducted in the morning with minimal breaks of 3–10 minutes. A total number of 124 schools and 2,811 students participated.

Data were optically scanned.

## Weighting

Sampling weights were used to account for the fact that the probabilities of selection were not identical for all students.

## Scaling

Item response theory (IRT) methods were used to estimate average scale scores in CivEd for the nation as a whole and for various subgroups of interest. CivEd used two types of IRT models to estimate scale scores: the one-parameter Rasch model for the three civic achievement scales, and the Generalized Partial Credit model (GPC) for the attitudinal scales. The one-parameter Rasch model specifies the probability of a correct response as a logistic distribution in which items vary only in terms of their difficulty. This model is used on items that are scored correct or incorrect. The GPC model was developed for situation where item response are contained in two or more ordered categories (such as “agree” and “strongly agree”). Items are conceptualized as a series of ordered steps where examinees receive partial credit for successfully completing a step. The GPC is formulated based on the assumption that each probability of choosing the  $k^{\text{th}}$  category over the  $(k - 1)^{\text{th}}$  category is governed by the dichotomous (i.e., Rasch) response model.

## Imputation

Imputation has not been performed.

## Sampling Error

Because CivEd uses complex sampling procedures, it uses a Taylor series procedure to estimate standard errors.

## Data Comparability

The CivEd International Coordinating Center (ICC), located at Humboldt University in Berlin, Germany, worked to ensure that the data collection procedures across countries are comparable. To this end, the ICC instituted the following procedures for quality assurance:

- ▶ Coordinated by the CivEd Sampling Referee, national school and student samples are rigorously reviewed for bias and international comparability.
- ▶ Utilizing two independent translations within each country, the CivEd materials are translated into the national languages of the participating countries. Once these translations are reconciled, the CivEd International Coordinating Center verifies these results through the use of a professional translation agency.
- ▶ Data collection staff from each nation are thoroughly trained in data collection and scoring procedures. Furthermore, the CivEd International Coordinating Center monitors the work of the national data collection staff throughout the entire project.
- ▶ Site visits by quality control staff are conducted during the testing period to further ensure the international data collection procedures are being followed at the national level.
- ▶ Finally, an extensive review of data is conducted for internal and cross-country consistency.

Within the United States, survey administrators discovered an unexpected problem in sampling classrooms within schools. They found that the increasing use of “block scheduling” in high schools created a situation where not all students within grade 9 were taking a given subject at the same time. Thus, while schools were able to provide a list of first-semester civics classes, not all students take civics during the first semester, even where civics is compulsory (some students can take civics during the second semester). Schools were also reluctant to assess students who had not yet taken civics, particularly if they were scheduled to take civics during the second semester, and schools also resisted drawing a sample of students from across more than one class. (The study had been promoted as assessing one classroom per school.)

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## Methodology and Evaluation Reports

Methodology discussed in technical notes.

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