

# Schools and Staffing Survey (SASS)

Website: <http://nces.ed.gov/surveys/sass/>

Updated: August 2018

## 1. OVERVIEW

The NCES Schools and Staffing Survey (SASS) provides data on public and private schools, principals, school districts, and teachers. SASS gathers information about many topics, including various characteristics of elementary and secondary students, some of the professional and paraprofessional staff who serve them, the programs offered by schools, principals' and teachers' perceptions of school climate and problems in their schools, teacher compensation, and district hiring practices. SASS is a unified set of surveys that facilitates comparisons between public and private schools and allows linkages of teacher, school, school district, principal, and library media center data. First conducted in school year 1987–88, SASS has been conducted seven times, most recently in school year 2011–12.

### Purpose

The purpose of SASS is to collect the information necessary for a complete picture of American elementary and secondary education. SASS is designed to provide national estimates of public elementary, secondary, and combined schools and teachers; state estimates of public elementary and secondary schools and teachers; and estimates for private schools; teachers and principals at the national level; and by private school affiliation. The SASS questionnaires were revised for the 2003–04 and the 2007–08 administrations, with the addition of new items about teachers' career paths, parental involvement, school safety, and institutional support for information literacy. The questionnaires continued to measure the same five policy issues: teacher shortage and demand; characteristics of elementary and secondary teachers; teacher workplace conditions; characteristics of school principals; and school programs and policies.

### Core Components

SASS consists of four core components administered to districts, schools, principals, and teachers. The district questionnaire is sent to a sample of public school districts. The school questionnaire is sent to a sample of public schools and private schools, as well as all charter schools in operation as of 1998–99, and all schools operated by the Bureau of Indian Education (BIE) or American Indian/Alaska Native tribes. However, the BIE collection was discontinued after the 2007–08 administration. The principal and teacher questionnaires are sent to a sample of principals and teachers working at the schools that receive the school questionnaire. There are two follow-up surveys: the Teacher Follow-up Survey (which is covered in the TFS chapter) and the Principal Follow-up Survey (which is covered in the PFS chapter).

### SAMPLE SURVEY OF PUBLIC, PRIVATE, CHARTER, AND BIE SCHOOLS

SASS collects data on:

- School districts
- Principals
- Schools
- Teachers
- Library media centers

***School District Survey (formerly the Teacher Demand and Shortage Survey).*** The questionnaire for this survey is mailed to each sampled local education agency (LEA). The respondents are contact people identified by LEA personnel.

If no contact person is identified, the questionnaire is addressed to “Research Director.” The School District Questionnaire consists of items about student enrollment, number of teachers, teacher recruitment and hiring practices, teacher dismissals, existence of a teacher union, length of the contract year, teacher compensation, school choice, magnet programs, graduation requirements, oversight of home-schooled students and charter schools, use of school performance reports, migrant education, and professional development for teachers and administrators. Some items that appeared previously have been dropped, such as those that collected layoff data and counts of students by grade level (the latter are available through the NCES Common Core of Data [CCD]). In the 2003–04 administration, new topics, including principal hiring practices and instructional aide hiring practices, were added to the questionnaire. In the 2007–08 administration, items on district performance, teacher tenure and dismissal, principal salary, length of the contract year for teachers, and type of retirement benefits for teachers were added or revised.

The School District Questionnaire is mailed only to public school districts. Independent public charter schools, BIE-funded schools<sup>1</sup>, and schools that are the only school in the district are given the School Questionnaire (with district items), not the School District Questionnaire. The School Questionnaire (with district items) includes all of the items included in the School Questionnaire as well as selected items from the School District Questionnaire. The applicable items for private schools appear in the Private School Questionnaire.

***School Principal Survey (formerly the School Administrator Survey).*** The questionnaire for this survey collects information about principal/school head demographic characteristics, training, experience, salary, and judgments about the seriousness of school problems. Information is also obtained on professional development opportunities for teachers and principals, teacher performance, barriers to dismissal of underperforming teachers, school climate and safety, parent/guardian participation in school events, and attitudes about educational goals and school governance. The 2007–08 questionnaire appeared in two versions: one for principals or heads of public schools and one for heads of private schools. The two versions contain minor variations in phrasing to reflect differences between public and private schools in governing bodies and position titles in schools. Items on experience prior to becoming a principal, teacher

and school performance, and time allocation for students during the week were added or revised in the 2007–08 questionnaire. These changes were then carried through to the 2011–12 questionnaire.

***School Survey.*** The questionnaires for this survey are sent to public schools, private schools, BIE schools<sup>1</sup>, and charter schools. Private schools receive the Private School Questionnaire, while BIE schools and charter schools receive the School Questionnaire (with district items), described separately below. As in 2007–08, the 2011–12 data collection for the private school component of SASS coincided with the administration of the NCES Private School Universe Survey (PSS). Since both PSS and SASS were administered in 2011–12, to reduce respondent burden, the private schools in the SASS sample were not sent a PSS questionnaire. Instead, the PSS items appeared in the SASS Private School Questionnaire. (See the PSS chapter for a more thorough discussion.)

The School Questionnaire is addressed to “Principal,” although the respondent can be any knowledgeable school staff member (e.g., vice principal, head teacher, or school administrator). Items cover grades offered, student attendance and enrollment, staffing patterns, teaching vacancies, high school graduation rates, programs and services offered, curriculum, and college application rates. The Private School Questionnaire also includes items from the School District Questionnaire that are applicable to private schools. The 2007–08 collection included items on the beginning time of students’ school day; length of the school year for students; school websites; and math, reading, or science specialist assignments.

***School Questionnaire (with district items).*** The purpose of the questionnaire (which was also referred to as the Unified School Questionnaire in the 2003–04 SASS) was to obtain information about schools, such as grades offered, number of students enrolled, staffing patterns, teaching vacancies, high school graduation rates, programs and services offered, and college application rates. Schools that are the only school in the district, state-run schools (e.g., schools for the blind), charter schools that do not report to a traditional school district, and BIE-funded schools<sup>1</sup> received the School Questionnaire (with district items), an expanded version of the Public School Questionnaire that included items from the School District Questionnaire.

***Teacher Survey.*** The questionnaire for this survey is mailed to a sample of teachers from the SASS sample of

<sup>1</sup> The BIE data collection was discontinued after the 2007-08 SASS; therefore no BIE schools, principals, teachers or library media centers were sampled for the 2011-12 SASS.

schools. It is sent to teachers in public schools, private schools, charter schools, and BIE schools. The Teacher Questionnaire collects data from teachers about their education and training, teaching assignment, certification, workload, and perceptions and attitudes about teaching. Questions are also asked about teacher preparation, induction, organization of classes, computers, and professional development. The only eligible respondent for each teacher questionnaire is the teacher named on the questionnaire label. As of the 1993–94 SASS, administrators are eligible for both the Teacher Survey and the Principal Survey, if they teach a regularly scheduled class. In the 2007–08 Teacher Survey, items on grade range of teaching certification, use of electronic communications with parents, and out-of-pocket expenses for school supplies were added or revised.

**Teacher Listing Form.** The SASS Teacher Listing Form collects the full list of teachers from a school, along with information on subject matter taught, full- or part-time teaching status, and teaching experience. The information in the Teacher Listing Form is used to select a representative teacher sample and send out the Teacher Questionnaires. In 2007–08, the Teacher Listing Form restored a section that was removed in 2003–04, which had asked about the school name and grade range for verification purposes. (This section was not included in the survey questionnaire in 2003–04, as it was verified at the school, using a laptop-collected form.)

### Additional Components

In addition to the core data collection described above, SASS featured additional components focusing on library media specialists/librarians and on student records in 1993–94 and on library media centers in 1993–94, 1999–2000, 2003–04, 2007–08, and 2011–12. One year following each SASS, a Teacher Follow-up Survey (TFS) is mailed to a sample of participants in the SASS Teacher Survey. (See the TFS chapter for a more complete description.) As well, one year following the the 2007–08 and 2011–12 iterations of SASS, a Principal Follow-up Survey occurred (2012–13 PFS); (<http://nces.ed.gov/surveys/sass/question1213pfs.asp>).

**School Library Media Center Survey.** This survey was added in the 1993–94 SASS. The questionnaire for the survey asks public and BIE schools about their access to and use of new information technologies. The questionnaire was not sent to private schools in 2003–04, due to budgetary reasons. (In 2007–08 and 2011–12, the survey only surveyed public schools as well.) The survey collects data on library collections, media equipment, use of technology, staffing, student services, expenditures, currency of the library collection, and collaboration between the library media specialist and classroom teachers. A section on information literacy was added to

the 2003–04 questionnaire. Items on access to online licensed databases, resource availability, and information literacy were added or revised in the 2007–08 questionnaire.

**School Library Media Specialist/Librarian Survey.** The questionnaire for this survey was mailed to a subsample of the SASS sample of public, private, and BIE schools in 1993–94. The survey solicited data that could be used to describe school librarians—for example, their educational background, work experience, and demographic characteristics. Because much of the collected information was comparable to that obtained in the Teacher Questionnaire, comparisons between librarians and classroom teachers can be made.

### Periodicity

Between the 1987–88 and 1993–94 school years, SASS core components were on a 3-year cycle, with the TFS conducted 1 year after SASS. After a 6-year hiatus, SASS was fielded again in the 1999–2000, 2003–04, 2007–08, school years and most recently the 2011–12 school year (with the TFS following in 2000–01, 2004–05, 2008–09, and 2012–13). Since 1999–2000, SASS administrations have been scheduled on a 4-year cycle.

### Data Availability

Information on all years of SASS data is available at <https://nces.ed.gov/surveys/sass/dataproducts.asp>.

## 2. USES OF DATA

SASS is the largest, most extensive survey of school districts, schools, principals, teachers, and library media centers in the United States today. It includes data from the public, private, and BIE school sectors. Moreover, SASS is the only survey that studies the complete universe of public charter schools. Therefore, SASS provides a multitude of opportunities for analysis and reporting on issues related to elementary and secondary schools.

SASS data have been collected seven times between 1987 and 2011. Many questions have been asked of respondents at multiple time points, allowing researchers to examine trends on these topics over time. SASS asks similar questions of respondents across sectors, including public, public charter, BIE, and private schools. The consistency of questions across sectors and the large sample sizes allow for exploration of similarities and differences across sectors.

SASS data are representative at the state level for public school respondents and at the private school affiliation level for private school respondents. Thus, SASS is invaluable for analysts interested in elementary, middle, and secondary schools within or across specific states or private school affiliations. The large SASS sample sizes

allow extensive disaggregation of data according to the characteristics of teachers, administrators, schools, and school districts. For example, researchers can compare urban and rural settings and the working conditions of teachers and administrators of differing demographic backgrounds.

SASS collects extensive data on teachers, principals, schools, and school districts. Information on teachers includes their qualifications, early teaching experience, teaching assignments, professional development, and attitudes about the school. The SASS School Principal Questionnaire collects information about principals' or school heads' years of experience and training, goals and decision making, professional development for teachers and instructional aides, school climate and safety, student instructional time, principal perceptions and working conditions, and demographic information. Questions about schools include enrollment, staffing, the types of programs and services offered, school leadership, parental involvement, and school climate. At the district level, information is sought on the recruitment and hiring of teachers, professional development programs, student services, and other relevant topics.

SASS data can be very useful for researchers performing their own focused studies on smaller populations of teachers, administrators, schools, or school districts. SASS can supply data at the state, affiliation, or national level that provide valuable contextual information for localized studies; localized studies can provide illustrations of broad findings produced by SASS.

Users of restricted-use SASS data can link school districts and schools to other data sources. For instance, 2007–08 SASS restricted-use datasets include selected information taken from the CCD, but researchers can augment the datasets by adding more data from the CCD—either fiscal or nonfiscal data.

### 3. KEY CONCEPTS

Because of the large number of concepts in SASS surveys, only those pertaining to the level of data collection (LEA, school, teacher, library) are described in this section. For additional terms, the reader is referred to glossaries in SASS reports.

**Local Education Agency (LEA).** A public school district, or LEA, is defined as a government agency employing elementary- and secondary-level teachers and administratively responsible for providing public elementary and/or secondary instruction and educational support services. Districts that do not operate schools but employ teachers were last included in the 1999–2000 SASS. (For example, some states have special education

cooperatives that employ special education teachers who teach in schools in more than one school district.)

**Public School.** An institution that provides educational services for at least one of grades 1–12 (or comparable ungraded levels), has one or more teachers to give instruction, is located in one or more buildings, receives public funds as primary support, and is operated by an education agency. Schools in juvenile detention centers and schools located on military bases and operated by the Department of Defense are included.

**Private School.** An institution that is not in the public system and that provides instruction for any of grades 1–12 (or comparable ungraded levels). The instruction must be given in a building that is not used primarily as a private home. Private schools are divided into three categories: (1) Catholic: parochial, diocesan, private order; (2) other religious: affiliated with a conservative Christian school association, affiliated with a national denomination, unaffiliated; and (3) nonsectarian: regular, special program emphasis, special education. The classification of nonsectarian schools by program emphasis disentangles private schools offering a conventional academic program (regular) from those that either serve special-needs children (special education) or provide a program with a special emphasis (e.g., arts and sciences).

**Charter School.** A charter school is a public school that, in accordance with an enabling state statute, has been granted a charter exempting it from selected state or local rules and regulations. A charter school may be a newly created school or it may previously have been a public or private school.

**BIE School.** A school funded by the Bureau of Indian Education of the Bureau of Indian Affairs, U.S. Department of the Interior. These schools may be operated by the BIE, a tribe, a private contractor, or an LEA.

**Library Media Center.** A library media center is an organized collection of printed, audiovisual, or computer resources that (a) is administered as a unit, (b) is located in a designated place or places, and (c) makes resources and services available to students, teachers, and administrators.

**Teacher.** A full- or part-time teacher who teaches any regularly scheduled classes in any of grades K–12.<sup>2</sup> This includes administrators, librarians, and other professional or support staff who teach regularly scheduled classes on a part-time basis. Itinerant teachers are also included, as well

<sup>2</sup> A teacher teaching only kindergarten students is in scope, provided the school serves students in a grade higher than kindergarten.

as long-term substitutes who are filling the role of a regular teacher on a long-term basis. An itinerant teacher is one who teaches at more than one school (e.g., a music teacher who teaches 3 days per week at one school and 2 days per week at another). Short-term substitute teachers and student teachers are not included.

## 4. SURVEY DESIGN

### Target Population

LEAs that employ elementary- and/or secondary-level teachers (e.g., public school districts, state agencies that operate schools for special student populations, such as inmates of juvenile correctional facilities or students in Department of Defense schools); cooperative agencies that provide special services to more than one school district; public, private, BIE, and charter schools with students in any of grades 1–12; the principals of these schools; library media centers; and teachers in public, private, BIE, and charter schools who teach students in grades K–12 in a school with at least a 1<sup>st</sup> grade.

### Sample Design

SASS uses a stratified probability sample design. Details of stratification variables, sample selection, and frame sources are provided below.

**Public school sample.** In the public school sample, schools are selected first. The first level of stratification is by type of school: (a) BIE schools (all BIE schools are automatically in the sample); (b) schools with a high percentage of American Indian students (i.e., schools with 19.5 percent or more American Indian students); (c) schools in Delaware, Florida, Maryland, Nevada, and West Virginia (where it is necessary to implement a different sampling methodology to select at least one school from each LEA in the state); (d) charter schools; and (e) all other schools. Schools falling into more than one group are assigned to types A, B, D, C, and E in that order. The second level of stratification varies within school type. All BIE schools are automatically selected for the sample, so no stratification is needed. Schools with a high percentage of American Indian students are stratified by state (Arizona; California; Montana; New Mexico; Washington; the remaining western states; Minnesota; North Dakota; South Dakota; the remaining midwestern states; North Carolina; Oklahoma; and the remaining states except Alaska, since most Alaskan schools have a high Native American enrollment). Schools in Delaware, Florida, Maryland, Nevada, and West Virginia are stratified first by state and then by LEA. Charter schools and schools not placed in another category are stratified by state. Within each second level, there are three grade level strata (elementary, secondary, and combined schools).

Within each stratum, all non-BIE schools are systematically selected using a probability proportionate to size algorithm. The measure of size used for schools in the CCD is the square root of the number of teachers in the school as reported in the CCD file. Any school with a measure of size larger than the sampling interval is excluded from the probability sampling operation and included in the sample with certainty.

The CCD Public Elementary/Secondary School Universe Survey serves as the public school sampling frame. (See the CCD chapter for a more thorough discussion.) The frame includes regular public schools, Department of Defense-operated military base schools, and special purpose schools (such as special education, vocational, and alternative schools). Schools outside the United States and schools that teach only prekindergarten, kindergarten, or postsecondary students are deleted from the file. The following years of the CCD were used as the public school frame for the last five rounds of SASS:

- 2009–10 CCD for the 2011–12 SASS;
- 2005–06 CCD for the 2007–08 SASS;
- 2001–02 CCD for the 2003–04 SASS;
- 1997–98 CCD for the 1999–2000 SASS;
- 1991–92 CCD for the 1993–94 SASS; and
- 1988–89 CCD for the 1990–91 SASS.

In the 1987–88 SASS, the 1986 Quality Education Data (QED) survey was used as the sampling frame.

**Private school sample.** For private schools, the sample is stratified within each of the two types of frames: (1) a list frame, which is the primary private school frame; and (2) an area frame, which is used to identify schools not included in the list frame and to compensate for the undercoverage of the list frame. Private schools in the list frame are stratified by affiliation, grade level, and region. Within each stratum, schools are sampled systematically using a probability proportionate to size algorithm. Any school with a measure of size larger than the sampling interval is excluded from the probability sampling process and included in the sample with certainty. All schools in the area frame within noncertainty PSUs and not already listed in the list frame are included in the sample with certainty.

The most recent PSS, updated with the most recent association lists, serves as the private school sampling frame. For example, the 2001–02 PSS—updated with 26 lists of private schools provided by a private school association (as well as 51 lists of private schools, from the 50 states and the District of Columbia)—was used as the private school frame for the 2003–04 SASS. SASS 2011–

12 was based on the 2009–10 PSS. For the 2007–08 SASS, the private school list frame was based on the 2005–06 PSS, updated with private school organizations and state lists collected by the U.S. Census Bureau in the summer of 2006. The 1991–92, 1989–90, and 1997–98 PSS were the basis for the private school frame for the 1993–94, 1990–91, and 1999–2000 SASS, respectively. The 1986 QED survey was used as the sampling frame for the 1987–88 SASS.

**BIE school selection.** Since the 1993–94 SASS, all BIE schools have been selected with certainty; in 1990–91, 80 percent of BIE schools were sampled. The BIE school frame for the 2003–04 SASS consisted of a list of schools that the BIE operated or funded during the 2001–02 school year. (The list was obtained from the U.S. Department of the Interior.) The BIE list was matched against the CCD, and the schools on the BIE list that did not match the CCD were added to the universe of schools.

For the 2007–08 SASS data collection, a separate universe of schools operated or funded by the BIE in the 2005–06 school year was drawn from the Program Education Directory maintained by the BIE. (The CCD now defines the BIE as its own “territory,” similar to Puerto Rico and other non-state territories, and does not permit duplicates to be reported by the states.) All BIE schools meeting the SASS definition of a school were included in the sample.

After the 2007–08 SASS data collection however, BIE data collection was discontinued; as a result no BIE schools, principals, teachers or library media centers were sampled for the 2011–12 SASS.

**Charter school selection.** In the 1999–2000 SASS, a charter school sample was added. All charter schools were selected with certainty from the frame, which consisted of a list of charter schools developed for the U.S. Department of Education’s Institute of Education Sciences. The list included only charter schools that were open (teaching students) during the 1998–99 year. This changed in the 2003–04 SASS, when a nationally representative sample of public charter schools was included as part of the public school sample. In the 2011–12 SASS, charter schools continued to be included as a part of the public school sample.

Each school sampled for SASS receives a school questionnaire, and the principal of each sampled school receives a principal questionnaire.

**Teacher selection.** Within each sampled school, a sample of teachers is selected. First, the sampled schools are asked to provide a list of their teachers and selected characteristics. For example, in the 2007–08 SASS data collection, the Teacher Listing Form was collected

as early as possible in the 2007–08 school year at all public (including public charter), private, and BIE-funded schools in the SASS sample to obtain a complete list of all the teachers employed at each school.

In the 2007–08 SASS, teachers were stratified into one of two teacher types: new and experienced. For new and experienced teachers in public schools, oversampling was not required, due to the large number of sampled schools with new teachers. Therefore, teachers were allocated to the new and experienced categories in proportion to their numbers in the school. However, in private schools, new teachers were oversampled. Before teachers were allocated to the new or experienced strata, schools were first allocated an overall number of teachers to be selected.

For the 2011–12 SASS, Teacher Listing Forms were collected for sample schools and districts, and compiled by the Census Bureau throughout the collection period. Sampled schools provided information on teacher’s teaching experience, with stratifications of beginning, early career, mid-year, and experienced. Beginning and early career teachers were oversampled to improve survey estimates for this subpopulation; within each teacher stratum within each school, teachers were selected systematically with equal probability.

Teacher records within a school are sorted by the teacher stratum code, the teacher subject code, and the teacher line number code. The teacher line number code is a unique number assigned to identify the teacher within the list of teachers keyed by the field representative. Within each teacher stratum in each school, teachers are selected systematically with equal probability. The within-school probabilities of selection are computed so as to give all teachers within a school stratum the same overall probability of selection (self-weighted) within teacher and school strata, but not across strata. However, since the school sample size of teachers is altered due to the minimum constraint (i.e., at least one teacher per school) or maximum constraint (i.e., no more than either twice the average stratum allocation or 20 teachers per school), the goal of achieving self-weighting for teachers is lost in some schools. Each sampled teacher receives a teacher questionnaire.

**Library media center selection.** For the 2003–04 and 2007–08 SASS, all library media centers in public, public charter, and BIE-funded schools in the SASS sample were asked to complete the School Library Media Center Questionnaire. For 2011–12, all library media centers in public and public charter schools were sampled equating to roughly 10,250 public and 750 public charter library media centers being sampled.

**School district selection.** In most states, once public schools are selected, the districts associated with these

schools are placed in the sample as well. However, in Delaware, Florida, Maryland, Nevada, and West Virginia, all districts are defined as school sampling strata, placing all districts in each of these states in the district sample. (In some SASS administrations, a sample of districts not associated with schools is taken, but not in the 2007–08 SASS.) For the 2011–12 SASS sampling frame, public charter schools were classified as dependent (governed by a school district) and independent (not associated with a school district). The district sample is selected using a probability proportionate to size algorithm. Each sampled school district receives a school district questionnaire. The approximate sample sizes for the 2011–12 SASS were 51,100 public school teachers; 7,100 private school teachers; 14,000 school principals; and 5,800 school districts.

### Data Collection and Processing

In the 2011–12 SASS, teachers were mailed an invitation to complete a web-based questionnaire, although they could also request to take the paper questionnaire. 67% of public school teachers and 59% of private school teachers chose to use the web-based questionnaire. In 2003–04 and 2007–08, the School Library Media Center Survey did not have an Internet reporting option, as it did in 1999–2000. All survey modes used in SASS are administered by the U.S. Bureau of the Census.

**Reference Dates.** Data for SASS components are collected during a single school year. Most data items refer to that school year. Questions on enrollment and staffing refer to October 1 of the school year. Questions for teachers about current teaching loads refer to the most recent full week that school was in session, and questions on professional development refer to the past 12 months.

**Data Collection.** The data collection procedures begin with advance mailings to school districts explaining the nature and purpose of SASS. Field staff attempt to establish a contact person for the School District Questionnaire and determine whether the district is willing and able to provide an electronic list of teachers for their selected school(s) in the fall. If the district agrees to provide an electronic list, field staff determine the appropriate contact person to receive the request. Field staff verify the selected schools' names, grade ranges, and operational statuses. Finally, field staff attempt to collect the names of the selected schools' principals and their e-mail addresses.

The school district questionnaires are mailed out first. Then, the school, principal, and library media center surveys are delivered to schools in person. The teacher questionnaires are delivered last. Follow-up efforts begin approximately 2 weeks after questionnaires are distributed. They consist of telephone calls and personal visits to

schools to obtain completed questionnaires or to verify that they have been mailed back. Field staff record the status of each questionnaire and, if necessary, supply additional blank questionnaires.

**Processing.** During the check-in phase, each questionnaire is assigned an outcome code: completed interview, out-of-scope, or noninterview. A combination of manual data keying and imaging technology was used to enter the data. Then, interview records in the data files undergo a round of primary data review, where analysts examine the frequencies of each data item in order to identify any suspicious values. Census staff review the problem cases and make corrections whenever possible.

After the primary data review, all records (i.e., records from all survey components) classified as interviews are subject to a set of computer edits: a range check, a consistency edit, and a blanking edit. After the completion of these edits, the records are put through another edit to make a final determination of whether the case is eligible for the survey, and, if so, whether sufficient data have been collected for the case to be classified as an interview. A final interview status recode (ISR) value is assigned to each case as a result of the edit.

### Estimation Methods

Sample units are weighted to produce national and state estimates for public elementary and secondary school surveys (i.e., schools, teachers, administrators, school districts, and school library media centers); and national estimates for BIE, charter school, and public combined school surveys (i.e., schools, teachers, administrators, and school library media centers). The private sector is weighted to produce national and affiliation group estimates. These estimates are produced through the weighting and imputation procedures discussed below.

**Weighting.** Estimates from SASS sample data are produced by using weights. The weighting process for each component of SASS includes adjustments for nonresponse using respondents' data and adjustments of the sample totals to the frame totals to reduce sampling variability. The exact formula representing the construction of the weight for each component of SASS is provided in each administration's sample design report (e.g., *1993–94 Schools and Staffing Survey: Sample Design and Estimation* [Abramson et al. 1996]). The construction of weights is also discussed in the *Quality Profile* reports (Jabine 1994; Kalton et al. 2000) and in the documentation for the 2003–04 administration (Tourkin et al. 2007). Since SASS and PSS data were collected at the same time in 1993–94 and 1999–2000, in both years the number of private schools reported in SASS was made to match the number of private schools reported in PSS.

**Imputation.** In all administrations of SASS, all items with missing values are imputed for records classified as interviews. SASS uses a two-stage imputation procedure. The first-stage imputation uses a logical or deductive method, such as:

- Using data from other items in the same questionnaire;
- Extracting data from a related SASS component (different questionnaire); or
- Extracting information about the sample case from the PSS or CCD, the sampling frames for private and public schools, respectively.

In addition, some inconsistencies between items are corrected by ratio adjustment during the first-stage imputation.

The second-stage imputation process is applied to all items with missing values that were not imputed in the first stage. This imputation uses a hot-deck imputation method, extracting data from a respondent (i.e., a donor) with similar characteristics to the nonrespondent. If there is still no observed value after collapsing to a certain point, the missing values are imputed using a clerically imputed value or automated algorithm.

### Recent Changes

Several changes were made over time, largely due to budgetary reasons.

Design changes from 1999–2000 to 2011–12:

- Since the 2007–08 SASS, BIE schools, principals, teachers, or library media centers are no longer sampled.
- Rather than surveying all public charter schools, as was done in the 1999–2000 SASS, some 300 public charter schools were sampled for the 2003–04 SASS.
- The separate questionnaire for public charter schools was discontinued. The reduction in the public charter school sample size from 1,100 in the 1999–2000 SASS to about 300 in the 2003–04 SASS meant it was no longer feasible to produce a separate questionnaire, since public charter school data could not be published with as much detail (for the 2003–04 SASS, only at the national and regional levels). Public charter school data are now included with traditional public school data.
- Affiliation for private schools was redefined and stratified into 17 groups rather than the previous 20 groups in the 2003–04 SASS. Catholic schools were split into three groups based on typology. Other religious schools were divided into five groups corresponding to the four largest non-Catholic religious organizations (by number of schools) and a catch-all

“other.” Nonsectarian schools were divided into three groups by typology.

- Grade-level stratification in public and private schools was defined purely on the basis of grade level of the school starting in 2003–04 SASS. Schools classified as a type other than “regular school” were no longer placed by default in the combined school category, which includes schools with some elementary and some secondary grades. Many nonregular schools (i.e., special education, alternative, and vocational schools) cover a specific grade range. To the extent this grade range is known, this was a more appropriate method of stratification than placing them all in the combined school strata. Nonregular schools with a grade range that is ungraded or unknown remain in the combined school strata.
- Public schools from the CCD were collapsed into what was perceived to be a better fit with the SASS definition of a school prior to stratification beginning in the 2003–04 SASS. The sample allocation was revised to avoid undersampling schools now classified at the combined grade level. In other words, the revision of the sample allocation ensured that the newly combined schools were sampled at the same approximate rate as they would have been prior to the collapsing procedure. In general, the combined school sample size was increased to the point at which the combined school sampling rate equaled the overall state-level sampling rate. For example, if one in five schools were sampled in a particular state, then one in five of the combined schools were sampled rather than using the default sample size of 10 combined schools.
- The sort order for the public and private school sampling was altered to sort on enrollment in a serpentine fashion (instead of always sorting in descending order) in the 2003–04 SASS. Serpentine sorting involves sorting in ascending order with respect to higher level sort variables one time, then sorting in descending order the next time, and so on. This reduces the variation in enrollment between adjacent sampled schools and thus reduces the overall sampling error.
- Florida and Maryland were added to the list of states where at least one school is selected in each school district. This was done in the 2003–04 SASS to decrease the standard error of the state-level school district estimates.
- Oversampling of bilingual/English as a Second Language (ESL) teachers was discontinued in the 2003–04 SASS, since a sufficient number of bilingual teachers to produce the desired reliability estimates could be done without oversampling.

- Teacher sampling was automated to speed up the distribution of the teacher questionnaires. This, however, reduced the level of control over the sample sizes for the remaining oversampled teacher strata (Asian/Pacific Islander and American Indian/Alaska Native). The automation no longer allowed the sampling rate for these teachers to be periodically revised during the sampling process. Thus, if the number of these teachers listed differed from the expected number, the sample size goal would no longer be met.
- The School Library Media Center Questionnaire was not administered to private schools for budget reasons as of the 2003–04 SASS.
- The School Questionnaire (with district items) is a questionnaire that contains the public school questions and most of the school district questions in the 1999–2000 SASS. It was administered to public charter, state-operated (often schools for the blind or schools located in juvenile detention facilities), and BIE-funded schools, as well as public schools in one-school districts. This change was made to ease respondent burden in cases where the respondent for the school and school district questionnaires was expected to be the same.

#### Future Plans

SASS was re-designed into the National Teacher and Principal Survey (NTPS), which was administered for the first time in 2015–16.

## 5. DATA QUALITY AND COMPARABILITY

### Sampling Error

The estimators of sampling variances for SASS statistics take the SASS complex sample design into account. For an overview of the calculation of sampling errors, see the *Quality Profile* reports (Jabine 1994; Kalton et al. 2000).

**Direct Variance Estimators.** The balanced half-sample replication (BHR) method, also called balanced repeated replication (BRR), was used to estimate the sampling errors associated with estimates from the 1987–88 and 1990–91 SASS. Given the replicate weights, the statistic of interest (e.g., the number of 12<sup>th</sup> grade teachers from the School Survey) can be estimated from the full sample and from each replicate. The mean square error of the replicate estimates around the full sample estimate provides an estimate of the variance of the statistic.

A bootstrap variance estimator was used for the 1993–94, 1999–2000, 2003–04, 2007–08, and 2011–12 SASS. The bootstrap variance reflects the increase in precision due to large sampling rates because the bootstrap is done systematically without replacement, as was the original sampling. Bootstrap samples can be selected from the

bootstrap frame, replicate weights computed, and variances estimated with standard BHR software. The bootstrap replicate basic weights (inverse of the probability of selection) were subsequently reweighted. More information on the bootstrap variance methodology and how it applies to SASS is contained in the following sources: “A Bootstrap Variance Estimator for Systematic PPS Sampling” (U.S. Department of Education 2000) which describes the methodology used in the 1999–2000 SASS; “A Bootstrap Variance Estimator for the Schools and Staffing Survey” (U.S. Department of Education 1994); “Balanced Half-Sample Replication With Aggregation Units” (U.S. Department of Education 1994); “Comparing Three Bootstrap Methods for Survey Data” (Sitter 1990); “Properties of the Schools and Staffing Survey Bootstrap Variance Estimator” (U.S. Department of Education 1996); and “The Jackknife, the Bootstrap and Other Resampling Plans” (Efron 1982).

SASS variances can be calculated using the replicates of the full sample that are available in the data files with software such as WesVarPC. For examples of other software that support BRR, see *Introduction to Variance Estimation* (Wolter 1985).

**Average Design Effects.** Design effects (Deffs) measure the impact of the complex sample design on the accuracy of a sample estimate, in comparison to the alternative simple random sample design. For the 1990–91 SASS, an average design effect was derived for groups of statistics and, within each group, for a set of subpopulations. Standard errors for 1990–91 and 1993–94 SASS statistics of various groups for various subpopulations can then be calculated approximately from the standard errors based on the simple random sample (using SAS or SPSS) in conjunction with the average design effects provided. For example, for the 1990–91 SASS, average design effects for selected variables in the School Survey are 1.60 (public sector) and 1.36 (private sector); in the Principal Survey, 4.40 (public sector) and 4.02 (private sector); and in the Teacher Survey, 3.75 (public sector) and 2.52 (private sector). Examples illustrating the use of SASS average design effect tables are provided in Design Effects and Generalized Variance Functions for the 1990–91 Schools and Staffing Survey (SASS), Volume I, User’s Manual (Salvucci and Weng 1995).

**Generalized Variance Functions (GVFs).** GVF tables were developed for use in the calculation of standard errors of totals, averages, and proportions of interest in the 1990–91 SASS components. The 1990–91 GVFs can be used for the 1993–94 SASS because no major design changes were adopted between 1990–91 and 1993–94. Note that the GVF approach, unlike the design effect approach described above, involves no need to calculate the simple random sample variance estimates. Examples illustrating

the use of the GVF tables are provided in *Design Effects and Generalized Variance Functions for the 1990–91 Schools and Staffing Survey (SASS), Volume I, User's Manual* (Salvucci and Weng 1995).

### **Nonsampling Error**

**Coverage Error.** SASS surveys are subject to any coverage error present in the CCD and PSS data files, which serve as their principal sampling frames. The report *Coverage Evaluation of the 1994–95 Common Core of Data: Public Elementary/Secondary Education Agency Universe Survey* (Owens 1997) found that overall coverage in the 1994–95 CCD Local Education 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 agency universe survey. Most coverage discrepancies were attributed to nontraditional agencies that provide special education, vocational education, and other services. However, there is potential for undercoverage bias associated with the absence of schools built between the time when the sampling frame is constructed and the time of the SASS survey administration. Further research on coverage can be found in *Evaluating the Coverage of the U.S. National Center for Education Statistics' Public Elementary/Secondary School Frame* (Hamann 2000) and *Evaluating the Coverage of the U.S. National Center for Education Statistics' Public and Private School Frames Using Data from the National Assessment of Educational Progress* (Lee, Burke, and Rust 2000).

A capture-recapture methodology was used to estimate the number of private schools in the United States and to estimate the coverage of private schools in the 1999–2000 PSS; the study found that the PSS school coverage rate is equal to 97 percent. (See CCD and PSS chapters for a more thorough discussion.)

### **Nonresponse Error.**

**Unit nonresponse.** The weighted unit response rates for public schools have been higher than the weighted unit response rates for private schools in all six rounds of SASS. (See table SASS-1 for response rates from selected years.) For more information on the analysis of nonresponse rates, refer to *An Analysis of Total Nonresponse in the 1993–94 Schools and Staffing Survey (SASS)* (Monaco et al. 1997) and *An Exploratory Analysis*

*of Response Rates in the 1990–91 Schools and Staffing Survey (SASS)* (Scheuren et al. 1996).

**Item Nonresponse.** For the 2011–12 SASS, the percentage with weighted item response rates at or above 85 percent, by individual survey, are: 100 percent for public school districts; 96 percent for public schools; 94 percent for private schools; 99 percent for public school principals; 98 percent for private school principals; 94 percent for public school teachers; and 93 percent for private school teachers. Only private school teachers surveys had items with response rates below 70 percent.

**Measurement Error.** Results reported in *An Analysis of Total Response in the 1993–94 Schools and Staffing Survey (SASS)* (Monaco et al. 1997) support the contention that, without follow-up to mail surveys, nonresponse error would be much greater than it is and that the validity and reliability of the data would be considerably reduced. However, because of the substantial amount of telephone follow-up, there is concern about possible bias due to differences in the mode of survey collection. Other possible sources of measurement error include long, complex instructions that respondents either do not read or do not understand, navigation problems related to the format of the questionnaires, and definitional and classification problems. See also *Measurement Error Studies at the National Center for Education Statistics* (Salvucci et al. 1997).

Several NCES working papers also address measurement error. Reports on the 1993–94 SASS include *Cognitive Research on the Teacher Listing Form for the Schools and Staffing Survey* (Jenkins and Von Thurn 1996); *Further Cognitive Research on the Schools and Staffing Survey (SASS)* (Zuckerberg and Lee 1997); *Report of Cognitive Research on the Public and Private School Teacher Questionnaires for the Schools and Staffing Survey 1993–94 School Year* (Jenkins 1997); and *Response Variance in the 1993–94 Schools and Staffing Survey: A Reinterview Report* (Bushery, Schreiner, and Sebron 1998). Reports on the 1991–92 SASS include the *1991 Schools and Staffing Survey (SASS) Reinterview Response Variance Report* (Royce 1994) and *The Results of the 1991–92 Teacher Follow-up Survey (TFS) Reinterview and Extensive Reconciliation* (Jenkins and Wetzel 1995).

**Table SASS-1. Summary of weighted unit response rates for selected SASS questionnaires: 1993–94 through 2011–12**

Questionnaire	1993–94	1999–2000	2003–04	2007–08	2011–12
School District Survey	93.9	88.6	82.9	87.8	80.6
Public Principal Survey	96.6	90.0	82.2	79.4	72.7
Public School Survey	92.3	88.5	80.8	80.4	72.5
Public Teacher Survey <sup>1</sup>	88.2	92.2	89.2	86.2	79.6
Private Principal Survey	87.6	84.8	74.9	72.2	64.7
Private School Survey	83.2	79.8	75.9	75.9	65.7
Private Teacher Survey <sup>1</sup>	80.2	87.0	85.4	85.1	71.6
BIE Principal Survey	98.7	93.3	90.7	79.2	—
BIE School Survey	99.3	96.7	89.5	77.1	—
BIE Teacher Survey	86.5	97.8	93.8	87.3	—

—Not available. Data were not collected.

<sup>1</sup>The overall teacher response rates are the percentage of teachers responding in schools that provided teacher lists for sampling.

SOURCE: SASS methodology reports; available at <https://nces.ed.gov/pubsearch/getpubcats.asp?sid=003>.

## 6. CONTACT INFORMATION

For content information on SASS, contact:

Maura Spiegelman  
 Phone: (202) 245-6581  
 E-mail: [Maura.Spiegelman@ed.gov](mailto:Maura.Spiegelman@ed.gov)

### Mailing Address

National Center for Education Statistics  
 Institute of Education Sciences  
 Potomac Center Plaza  
 550 12th Street, SW  
 Washington, DC 20202

## 7. METHODOLOGY AND EVALUATION REPORTS

### General

Aritomi, P., and Coopersmith, J. (2009). *Characteristics of Public School Districts in the United States: Results From the 2007-08 Schools and Staffing Survey* (NCES 2009-320). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2009320>.

Broene, P. (1991a). *User's Manual: 1987–88 Schools and Staffing Survey - Public School Administrator Questionnaire Data* (NCES 91-137). National Center for Education Statistics, U.S. Department of

Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=91137>.

Broene, P. (1991b.) *User's Manual: 1987–88 Schools and Staffing Survey - Public School Data* (NCES 91-136). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=91136>.

Cox, S., Parmer, R., Strizek, G., and Thomas, T. (2016). *Documentation for the 2011–12 Schools and Staffing Survey* (NCES 2016-817). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016817>.

Goldring, R., Taie, S. Rizzo, L. Colby, D. and Fraser, A. (2013). *User's Manual for the 2011-12 Schools and Staffing Survey Volume 1: Overview* (NCES 2013-330). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2014356>.

Gruber, K.J., Rohr, C.L., and Fondelier, S.E. (1994). *1990–91 Schools and Staffing Survey: Data File User's Manual Volumes I-IV: Public Use Codebook and Bureau of Indian Affairs Codebooks* (NCES 93-144). National Center for Education Statistics, U.S.

Department of Education. Washington, DC.  
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=93144>.

Gruber, K.J., Rohr, C.L., and Fondelier, S.E. (1996). *1993–94 Schools and Staffing Survey: Data File User's Manual, Volume I: Survey Documentation* (NCES 96-142). National Center for Education Statistics, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=96142>.

Rouk, Ü., Weiner, L., and Riley, D. (1999). *What Users Say About Schools and Staffing Survey Publications* (NCES Working Paper 1999-10). National Center for Education Statistics, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=199910>.

Tourkin, S.C., Pugh, K.W., Fondelier, S.E., Parmer, R.J., Cole, C., Jackson, B., Warner, T., and Weant, G. (2004). *1999–2000 Schools and Staffing Survey (SASS) Data File User's Manual* (NCES 2004-303). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2004303>.

Tourkin, S., Thomas, T., Swaim, N., Cox, S., Parmer, R., Jackson, B., Cole, C., and Zhang, B. (2010). *Documentation for the 2007–08 Schools and Staffing Survey* (NCES 2010-332). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2010332>.

Tourkin, S.C., Warner, T., Parmer, R., Cole, C., Jackson, B., Zukerburg, A., Cox, S., and Soderborg, A. (2007). *Documentation for the 2003–04 Schools and Staffing Survey* (NCES 2007-337). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2007337>.

#### Uses of Data

McGrath, D.J., and Luekens, M.T. (2000). *A Research Agenda for the 1999–2000 Schools and Staffing Survey* (NCES Working Paper 2000-10). National Center for Education Statistics, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=200010>.

Mullens, J.E., and Kasprzyk, D. (1997). *The Schools and Staffing Survey: Recommendations for the Future* (NCES 97-596). National Center for Education Statistics, U.S. Department of Education. Washington, DC.

<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=97596>.

Wiley, S.D., and Reynolds, K.A. (1999). *Tracking Secondary Use of the Schools and Staffing Survey Data: Preliminary Results* (NCES Working Paper 1999-02). National Center for Education Statistics, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubs99/199902.pdf>.

#### Survey Design

Abramson, R., Cole, C., Fondelier, S., Jackson, B., Parmer, R., and Kaufman, S. (1996). *1993–94 Schools and Staffing Survey: Sample Design and Estimation* (NCES 96-089). National Center for Education Statistics, U.S. Department of Education. Washington, DC.

<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=96089>.

Baker, D.P., Levine, R., Han, M., and Garet, M. (1998). *A Feasibility Study of Longitudinal Design for Schools and Staffing Survey* (NCES Working Paper 98-16). National Center for Education Statistics, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9816>.

Ingersoll, R.M. (1995). *An Agenda for Research on Teachers and Schools: Revisiting NCES' Schools and Staffing Survey* (NCES Working Paper 95-18). National Center for Education Statistics, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9518>.

Ingersoll, R.M. (1996). *National Assessments of Teacher Quality* (NCES Working Paper 96-24). National Center for Education Statistics, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9624>.

Isaacs, J.B., Best, C.M., Cullen, A.D., Garet, M.S., and Sherman, J.D. (1998). *Collection of Public School Expenditure Data: Development of a Questionnaire* (NCES Working Paper 98-01). National Center for Education Statistics, U.S. Department of Education. Washington, DC.  
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9801>.

- Isaacs, J.B., Garet, M.S., Sherman, J.D., Cullen, A., and Phelps, R. (1999). *Collection of Resource and Expenditure Data on the Schools and Staffing Survey* (NCES Working Paper 1999-07). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=199907>.
- Kaufman, S. (1991). *1988 Schools and Staffing Survey Sample Design and Estimation* (NCES 91-127). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=91127>.
- Kaufman, S., and Huang, H. (1993). *1990–91 Schools and Staffing Survey: Sample Design and Estimation* (NCES 93-449). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=93449>.
- Levine, R.E., Chambers, J.G., Dueñas, I.E., and Hikido, C.S. (1997). *Improving the Measurement of Staffing Resources at the School Level: The Development of Recommendations for NCES for the Schools and Staffing Survey* (NCES Working Paper 97-42). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9742>.
- Rollefson, M. (1998). *The Redesign of the Schools and Staffing Survey for 1999–2000: A Position Paper* (NCES Working Paper 98-08). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9808>.
- Data Quality and Comparability**
- Bushery, J., Schreiner, I., and Sebron, G. (1998). *Response Variance in the 1993–94 Schools and Staffing Survey: A Reinterview Report* (NCES Working Paper 98-02). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9802>.
- Efron, B. (1982). The Jackknife, the Bootstrap, and Other Resampling Plans. *Society of Industrial and Applied Mathematics CBMS-NSF Monographs*, 38.
- Hamann, T.A. (2000). Evaluating the Coverage of the U.S. National Center for Education Statistics' Public Elementary/Secondary School Frame. In *The Second International Conference on Establishment Surveys: Survey Methods for Businesses, Farms, and Institutions* (pp. 79–88). Arlington, VA: American Statistical Association.
- Jabine, T. (1994). *Quality Profile for SASS: Aspects of the Quality of Data in the Schools and Staffing Surveys (SASS)* (NCES 94-340). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=94340>.
- Jenkins, C.R. (1997). *Report of Cognitive Research on the Public and Private School Teacher Questionnaires for the Schools and Staffing Survey 1993–94 School Year* (NCES Working Paper 97-10). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9710>.
- Jenkins, C.R., and Von Thurn, D. (1996). *Cognitive Research on the Teacher Listing Form for the Schools and Staffing Survey* (NCES Working Paper 96-05). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9605>.
- Jenkins, C.R., and Wetzel, A. (1995). *The Results of the 1991–92 Teacher Follow-up Survey (TFS) Reinterview and Extensive Reconciliation* (NCES Working Paper 95-10). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9510>.
- Kalton, G., Winglee, M., Krawchuk, S., and Levine, D. (2000). *Quality Profile for SASS Rounds 1–3: 1987–1995, Aspects of the Quality of Data in the Schools and Staffing Surveys (SASS)* (NCES 2000-308). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2000308>.
- Lee, H., Burke, J., and Rust, K. (2000). Evaluating the Coverage of the U.S. National Center for Education Statistics' Public and Private School Frames Using Data From the National Assessment of Educational Progress. In *The Second International Conference on Establishment Surveys: Survey Methods for Businesses, Farms, and Institutions* (pp. 89–98). Arlington, VA: American Statistical Association.

- Monaco, D., Salvucci, S., Zhang, F., and Hu, M. (1997). *An Analysis of Total Nonresponse in the 1993–94 Schools and Staffing Survey (SASS)* (NCES 98-243). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=98243>.
- Owens, S. (1997). *Coverage Evaluation of the 1994–95 Common Core of Data: Public Elementary/Secondary Education Agency Universe Survey* (NCES 97-505). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=97505>.
- Royce, D. (1994). *1991 Schools and Staffing Survey (SASS) Reinterview Response Variance Report* (NCES 94-03). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9403>.
- Salvucci, S., Conley, V., Fink, S., and Saba, M. (1997). *Measurement Error Studies at the National Center for Education Statistics* (NCES 97-464). National Center for Education Statistics, Sciences, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=97464>.
- Salvucci, S., Holt, A., and Moonesingle, R. (1995). *Design Effects and Generalized Variance Functions for the 1990–91 Schools and Staffing Survey (SASS): Volume II, Technical Report* (NCES 95-342-II). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=95342-II>.
- Salvucci, S., and Weng, S. (1995). *Design Effects and Generalized Variance Functions for the 1990–91 Schools and Staffing Surveys (SASS) Volume I—User’s Manual* (NCES 95-342-I). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=95342-I>.
- Scheuren, F., Monaco, D., Zhang, F., Ikosi, G., and Chang, M. (1996). *An Exploratory Analysis of Response Rates in the 1990–91 Schools and Staffing Survey (SASS)* (NCES 96-338). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=96338>.
- Sitter, R. (1990). Comparing Three Bootstrap Methods for Survey Data. *Technical Report Series of the Laboratory for Research in Statistics and Probability*. Carleton University.
- U.S. Department of Education, National Center for Education Statistics. (1994). A Bootstrap Variance Estimator for the Schools and Staffing Survey; Balanced Half-Sample Replication With Aggregation Units. In *Schools and Staffing Survey (SASS), Papers Presented at the Meetings of the American Statistical Association* (NCES Working Paper 94-01). Washington, DC: Author. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9401>.
- U.S. Department of Education, National Center for Education Statistics. (1996). Properties of the Schools and Staffing Survey Bootstrap Variance Estimator. In *Schools and Staffing Survey (SASS): 1995 Selected Papers Presented at the 1995 Meeting of the American Statistical Association* (NCES Working Paper 96-02). Washington, DC: Author. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9602>.
- U.S. Department of Education, National Center for Education Statistics. (2000). A Bootstrap Variance Estimator for Systematic PPS Sampling. In *Selected Papers on Education Surveys: Papers Presented at the 1998 and 1999 ASA and 1999 AAPOR Meetings* (NCES Working Paper 2000-04). Washington, DC: Author. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=200004>.
- Wolter, K.M. (1985). *Introduction to Variance Estimation*. New York: Springer-Verlag.
- Zukerberg, A., and Lee, M. (1997). *Further Cognitive Research on the Schools and Staffing Survey (SASS) Teacher Listing Form* (NCES Working Paper 97-23). National Center for Education Statistics, U.S. Department of Education. Washington, DC. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9723>.