

## B. Description of Statistical Methodology

### 1. Respondent Universe

The sample universe is all children ages 12 to 18 living in households who have attended school during the previous six months (Grade 12 or less). In 2013, we expect that approximately 10,006 persons ages 12 to 18 and older will complete the core NCVS and be eligible for the SCS from January through June of 2013. Based on the 2011 SCS response rates, we anticipate that about 63.3% (the student completion rate for 2011), or about 6,334 persons, will complete the 2013 SCS.

### 2. Statistical Methodology

The NCVS sample of households is drawn from the more than 120 million households nationwide and excludes the military and barracks and institutionalized populations. The national sample of households consists of approximately 60,100 designated addresses located in 320 stratified primary sampling units (PSUs) throughout the United States. The sample consists of six parts, each of which is designated for interview in a given month and again at 6-month intervals. Beginning in 2005, new sample addresses were introduced based upon the 2000 Decennial Census of Population and Housing. Newly constructed housing since that census is also sampled.

The NCVS uses a rotating sample. The sample consists of six groups for each month of enumeration. Each of these groups stays in the sample for an initial interview and six subsequent interviews. During the course of a 6-month period, the length of time the SCS will be in the field, a full sample of six rotation groups will be interviewed (one-sixth each month). In addition, one rotation group enters the sample for its first interview each month.

The NCVS sample has also undergone a 26% sample boost. Beginning in October 2010, BJS began to reinstate the sample that was removed in 2007, increasing the monthly sample from about 8,500 households to about 10,700 households. The reinstated sample was completed by June of 2011. The sample reinstatement is an important component of BJS's effort to restore the capabilities of the NCVS to measure the impact of crime in the United States. It reduces the standard errors associated with violent crime by about 5%, and enables more robust analyses of annual estimates of crime victimization and the characteristics of crimes and crime victims.

Each interview period the interviewer completes or updates the household composition component of the NCVS interview and asks the crime screen questions (NCVS-1) for each household member 12 years old or older. The interviewer then completes a crime incident report (NCVS-2) for each reported crime incident identified in the crime screener. Following either the screener or the administration of the crime incident report, depending on whether a crime was reported, each household member 12-18 years of age will be administered the SCS. Each household member provides the information by self-response. Proxy respondents are allowable under very limited circumstances and represent less than 3% of all interviews. All forms and materials used to for the NCVS screener and crime incident report have been previously approved by OMB (OMB NO: 1121-0111). The SCS instrument is attached as Attachment 2.

The first contact with a household is by personal visit and subsequent contacts may be by telephone. For the second through seventh visits, interviews are done by telephone whenever possible. Approximately 57% of the interviews conducted each month are by telephone.

## **SAMPLING**

The SCS is designed to calculate national estimates of school crime and safety for the target population - the noninstitutional resident population aged 12-18 years old. The SCS will be administered to all age-eligible NCVS respondents during the 6-month periods from January-June, 2013. The frame used to reach the target NCVS population is the list of addresses of all living quarters in the U.S. compiled from the most recent decennial census and lists of housing units constructed since that most recent decennial census. Sample selection for the NCVS, and by default the SCS, has three stages: the selection of primary sampling units or areas known as PSUs, the selection of address units in sample PSUs, and the determination of persons and households to be included in the sample.

Survey estimates are derived from a stratified, multi-stage cluster sample. The PSUs composing the first stage of the sample are formed from counties or groups of adjacent counties based upon data from the decennial census. The larger PSUs are included in the sample automatically and are considered to be self-representing (SR) since all of them are selected with certainty. The remaining PSUs, called non self-representing (NSR), because only a subset of them are selected, are combined into strata by grouping PSUs with similar geographic and demographic characteristics, as collected in the decennial census from which the sample is drawn. For the NCVS, administrative crime data drawn from the FBI's Uniform Crime Reporting Program are also used to stratify the PSUs.

### **Stage 1. Defining and Selection of PSUs:**

**Defining PSUs** - Formation of PSUs begins with listing counties and independent cities in the target area. For the NCVS, the target area is the entire country. The counties are either grouped with one or more contiguous counties to form PSUs or are PSUs all by themselves. The groupings are based on certain characteristics such as total land area, current and projected population counts, large metropolitan areas, and potential natural barriers such as rivers and mountains. The resulting county groupings are called PSUs.

After the PSUs are formed, the large PSUs and those in large urban areas are designated self-representing (SR). The smaller PSUs are designated nonself-representing (NSR). Determining which PSUs are considered small and which are large depends on the survey's SR population cutoff. An SR PSU must be large enough in population to support at least one field representative with a full workload of approximately 32 cases. For the NCVS, all PSUs with population over 223,176 were labeled SR.

**Stratifying PSUs** - The NSR PSUs are grouped with similar NSR PSUs within census divisions (New England, Mid Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific) to form strata. Each SR PSU forms its own stratum. The data used for grouping the PSUs consist of decennial census

demographic data and administrative crime data. As was stated earlier, NSR PSUs are grouped to be as similar or homogeneous as possible. Just as the SR PSUs must be large enough to support a full workload so must each NSR strata be of that size. The most efficient stratification scheme is determined by minimizing the between PSU variance and the within PSU variance.

**Selecting PSUs** - The SR PSUs are automatically selected for sample or “selected with certainty.” One NSR PSU is selected from each grouped stratum. The NSR PSUs are sampled with probability proportional to the population size using a linear programming algorithm. Beginning with collection year 2006, the NCVS design consists of 183 SR PSUs and 146 NSR PSUs.

## **Stage 2. Preparing Frames and Sampling Within PSUs**

**Frame Determination** - To ensure adequate coverage for the target population, the Census Bureau defines and selects sample from four address lists called frames: the unit frame, the area frame, the group quarters frame, and the new construction or permit frame. Each address in the country is assigned to one and only one of these frames. Which frame an address is assigned to depends on four factors: 1) what type of living quarters are at the address, 2) when the living quarters were built, 3) where the living quarters were built, and 4) how completely the street address was listed. The main distinction between the frames is the procedures used to obtain the sample addresses.

Two types of living quarters are defined in the decennial census. The first type is a housing unit. A housing unit (HU) is a group of rooms or a single room occupied as separate living quarters or intended for occupancy as separate living quarters. A housing unit may be occupied by a family or one person, as well as by two or more unrelated persons who share the living quarters. Before the 2000 decennial census, separate living quarters were defined as a space in which the occupants live and eat separately from all the other persons on the property and have direct access to their living quarters from the outside or through a common hall or lobby as found in apartment buildings. Beginning with the 2000 decennial census, the criteria for separate living quarters are that the occupants must live separately from any other individuals in the building and have direct access from outside the building or through a common hall or entry. Eating separately is no longer a criterion.

The second type of living quarters is group quarters (GQ). Group quarters are living quarters where residents share common facilities or receive formally authorized care. About 3 % of the population counted in the 2000 census resided in group quarters. Of those, less than half resided in non-institutionalized group quarters. About 97% of the population counted in the 2000 census lived in housing units.

**Within-PSU Sampling** - All the Census Bureau’s continuing demographic surveys, such as the NCVS, are sampled together shortly after the most recent decennial census. This takes advantage of newly available census data that shows population growth and demographic changes, as well as updated unit address lists. Roughly a decade’s worth of sample is selected at that time. Selection of samples is done one survey at a time (sequentially) and one frame at a time (independently). Each survey determines how the unit addresses within the frame should be sorted prior to sampling. For the NCVS, each frame is sorted by geographic

variables. A systematic sampling procedure is used to select housing units from each frame. For the unit and the GQ frames, actual unit addresses are selected and reserved for the NCVS. In the area frame, a specified number of living quarters in a specific geographic location are promised to the NCVS and after the address listing operation in that geographic area, the specific unit addresses are assigned. Similarly, in the permit frames, empty placeholders are selected for the NCVS within the PSU. Then over time as new permits are issued, the placeholders are replaced with actual newly built housing units/addresses.

Addresses selected for a survey are removed from the frames, leaving an unbiased or clean universe behind for the next survey that is subsequently sampled. By leaving a clean universe for the next survey, duplication of addresses between surveys is avoided. This is done to help preserve response rates by insuring no unit falls into more than one survey sample.

### **Stage 3: Sample Within Sample Addresses**

The last stage of sampling is done during initial contact of the sample address during the data collection phase. For the SCS, if the address is a residence and the occupants agree to participate, then an attempt is made to interview every person ages 12–18 years old who lives at the resident address and completes the NCVS-1. There are procedures to determine who lives in the sample unit and a household roster is completed with their name and other demographic information. If someone moves out (in) during the interviewing cycle, he or she is removed from (added to) the roster.

## **DATA COLLECTION**

The SCS will be administered from January through June of 2013. Initially each eligible person age 12-18 is asked a short set of screener questions to determine if they attended school, either private or public sector, at any time during the past 6 months. Students are eliminated if they were home-schooled the entire survey period. If they did attend school, the students are then administered the SCS core instrument.

The SCS instrument is divided into 7 primary parts: 1) environmental (school environment), 2) fighting, bullying, and hate behaviors, 3) avoidance, 4) fear, 5) weapons, 6) gangs, and 7) student characteristics. The environmental section asks students about their school's name, type, grade levels, access to school and building, student activities, school organizational features related to safety, academic and teaching conditions, student-teacher relations, and drug availability. Section two, fighting, bullying, and hate behaviors asks students about the number and characteristics related to physical fights, physical and cyber bullying, and hate-related incidents. Section three, avoidance, asks students whether they avoided certain parts of the school building or campus, skipped class, or stayed home entirely because of the threat of harm or attack. Section 4, fear, follows up with questions on how afraid students feel in and on their way to and from school. Section 5, weapons, focuses on whether students carried weapons on to school grounds for protection or know of any students who have brought a gun to school. Section 6, gangs, asks students about their perception of gang presence and activity at school. Finally, section 7 asks students about their attendance and academic performance. Justifications for the sections/items can be found in Attachment 3.

### 3. Maximizing Response Rates

Census Bureau staff mails an introductory letter (NCVS-572(L), NCVS-573(L)) (see Attachment 4 and Attachment 5) explaining the NCVS to the household before the interviewer's visit or call. When they go to a house, the interviewers carry cards and portfolios identifying them as Census Bureau employees. The Census Bureau trains interviewers to obtain respondent cooperation and instructs them to make repeated attempts to contact respondents and complete all interviews. The interviewer obtains demographic characteristics of noninterview persons and the race of noninterview households for use in the adjustment for nonresponse. SCS response rate reports will be generated on a monthly basis and compared to the previous month's average to ensure their reasonableness.

As part of their job, interviewers are instructed to keep noninterviews to a minimum. Maintaining a low nonresponse rate involves the interviewer's ability to enlist cooperation from all kinds of people and to contact households when people are most likely to be home. As part of their initial training, interviewers are exposed to ways in which they can persuade respondents to participate as well as strategies to use to avoid refusals. Furthermore, the office staff makes every effort to help interviewers reduce their noninterviews by suggesting ways to obtain an interview, and by making sure that sample units reported as noninterviews are in fact noninterviews. Also, survey procedures permit sending a letter to a reluctant respondent as soon as a new refusal is reported by the interviewer to encourage their participation and to reiterate the importance of the survey and their response.

In addition to the above procedures used to ensure high participation rates, beginning in 2011, interviewers were required to complete a two-day refresher training course designed to reinforce standards for collecting accurate data. Following the refresher training, the Census Bureau implemented additional performance measures for interviewers based on data quality standards. Interviewers are trained to and assessed on administering the NCVS I and the NCVS II exactly as worded to ensure the uniformity of data collection, completing interviews in an appropriate amount of time (not rushing through them), and keeping item nonresponse and "don't know" responses to a minimum.

The Census Bureau also uses quality control methods to ensure that accurate data is collected. Interviewers are continually monitored by each Regional Office to assess whether performance and response rate standards are being met and corrective action is taken to assist and discipline interviewers who are not meeting the standards.

As was done in 2011, in 2013, NCES will prepare a number of informational materials about the SCS for FR distribution to parents and students. Designed as brochures, these informational materials will provide answers to frequently asked questions about the SCS, and they will be produced in both English and Spanish (see Attachments 6, 7, 8, and 9). The student brochure includes the answers to such questions as "Do I have to take the survey?" and "Why are my answers to the survey important?". The parent brochure includes answers to such questions as "What is the purpose of the survey?" and "What questions are on the survey for my child?" The parent brochure will also include some illustrative survey findings

from the 2009 SCS. Findings will not be included on the student brochure out of concern that they might bias student responses.

The 2013 brochures will be virtually identical to those produced for 2011. The four 2011 brochures are archived on the NCES website as follows:

For Parents in English (see: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2010359>)

For Parents in Spanish (see: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011308>)

For Students in English (see: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2010344>)

For Students in Spanish (see: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011309>)

For the core NCVS, interviewers are able to obtain interviews with about 88% of household members in 90% of the occupied units in sample in any given month. Only household members who have completed the NCVS-1 will be eligible for the SCS. The response rates for the last two (2009 and 2011) administrations of the School Crime Supplement were 51.3% and approximately 57.4%, respectively. A nonresponse bias analysis report was produced for 2011 SCS examining unit and item level nonresponse (Attachment 10).

#### 4. Test of Procedures

Because the 2013 SCS questionnaire is essentially the same as that used in the 2011 SCS, no testing of the questionnaire has been done.

#### 5. Consultants on Statistical Aspects of the Design

The Census Bureau will collect all information. Mr. Stephen Ash and Ms. Barbara Blass of the Demographic Statistical Methods Division of the Census Bureau provided consultation on the statistical aspects of the supplement. Ms. Meagan Wilson and Mr. William Samples head the Crime Surveys Branch of the Demographic Surveys Division, which manages and coordinates the NCVS and the SCS supplement. Dr. Marilyn Seastrom, NCES's Chief Statistician, has attended and will continue to attend a Census-organized meeting of statisticians to consult on the statistical aspects of the survey.