

## **B. Collections of Information Employing Statistical Methods**

### **1. Respondent Universe**

The potential universe for the NCVS national sample is all persons 12 years of age or older in the more than 110 million households and persons 12 or over living in group quarters situations (except crews of vessels, military in barracks, and the institutional population).

Interviewers are able to obtain interviews with 85-87 percent of the household members in 91 percent of the occupied units in sample in any given month. This is an ongoing survey that is in the field 12 months of the year.

The national sample consists of approximately 51,000 designated addresses located in 329 stratified 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. In January 2007, a sample cut of 2% was made to the incoming sample to prevent sample increases due to the addition of new permits. In July 2007, a 14% sample cut was implemented across all sample areas for budgetary reasons. To offset the impact this sample reduction had on the number of cases contributing to the NCVS estimates, incoming sample cases were included in the NCVS estimates in 2007. Prior to 2007, incoming cases were always excluded from the official estimates. One exception to this was in 2006, when incoming cases in new areas were included in the 2006 NCVS estimates. Last, a 2% sample maintenance reduction was implemented to offset the increases in the new construction sample, which will extend until the 2000 design sample is phased out in December 2017.

The NCVS uses a rotating sample. The interviewing schedule is provided in Appendix A and the rotation chart is available in the attached forms (NCVS-551). 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, 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.

Each interview period the interviewer completes or updates the household composition component of the NCVS interview and asks the crime screen questions for each household member 12 years old or older. The interviewer then completes a crime incident report for each reported crime incident identified in the crime screener. 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 collect the NCVS are attached and are identified in Appendix B.

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 54 percent of the interviews conducted each month are by telephone.

## **2. Statistical Methodology**

The NCVS is designed to calculate national estimates of crime victimization for the target population - the noninstitutional resident population aged 12 years and older. The frame used to reach the target 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 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.

### **SAMPLING**

#### **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 SR. The smaller PSUs are designated 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, 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 are 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 percent 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 percent 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 place holders 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 NCVS, if the address is a residence and the occupants agree to participate, then every person aged 12 or older who lives at the resident address is interviewed. 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, they are removed from (added to) the roster.

### **DATA COLLECTION**

Each housing unit selected for the NCVS remains in the sample for three years, with each of seven interviews taking place at 6-month intervals. Respondents are asked to report crime experiences occurring in the six months preceding the month of interview. Research has shown that respondents are able to recall more accurately an event which occurred within three months of the interview rather than one which occurred within six months; they can recall events over a 6-month period more accurately than over a 12-month period. However, a shorter reference period would require more field interviews per year, increasing the data collection costs significantly. These increased costs would have to be balanced by cost reductions elsewhere (sample size is often considered). Reducing sample size however, reduces the precision of estimates of relatively rare crimes. In light of these trade-offs of cost and precision, a reference period of six months is used for the NCVS, and some degree of response error is accepted.

### **COLLECTING INFORMATION ON RACE OF OFFENDER**

Per the terms of the OMB Clearance approval for the Stalking Supplement to the NCVS in July, 2005, BJS and the Census Bureau were asked to review the questions on the NCVS-2 Incident Report used to obtain information about the perceived race of offenders. Currently, the questions ask "Were the offender(s) White, Black, or some other race?" Collecting data on race of offender has always been more problematic than collecting data on race of victim which is self-reported by the respondents. Because these questions provide information about offenders based on perceptions of respondents, care must be taken to avoid asking respondents to go beyond their ability to provide the information. After consideration and discussion of the issues associated with identifying the race and ethnicity of third parties, BJS concludes that a more detailed identification of race and ethnicity cannot be made solely by visual cues. As a result, BJS requests a variance at this time for collecting detailed information on race of offender.

### **METHODOLOGICAL PROBLEMS WITH 2006-07 ESTIMATES**

There were substantial fluctuations in the survey's estimates measure of crime from 2005 through 2007. These changes in estimates do not appear to be due to changes in the rate of criminal activity during this period. Evaluation of the NCVS estimates suggest that changes in the sample design and implementation of the survey account for the fluctuations in crime rates measured from 2005 to 2006 and from 2006 to 2007. These changes to the NCVS and their impact upon the survey's estimates in 2006 are discussed in the Criminal Victimization 2006 Technical Notes. This bulletin and technical notes are available online (<http://www.ojp.usdoj.gov/bjs/pub/pdf/cv06.pdf>).

While the estimates for 2007 are close to the levels for 2005, they are substantially below the levels for 2006. Changes in 2006 included the introduction of a new sample based on the 2000 decennial census, a transition from paper-and-pencil interviewing (PAPI) to computer-assisted interviewing (CAPI), and the use of first-time interviews in the new sample areas in the production of survey estimates.

In 2007, three additional changes were made largely for budgetary reasons to the NCVS program: 1) the sample was reduced by 14% in July 2007; 2) first-time interviews from all sample areas were used in the production of 2007 estimates; and 3) computer-assisted interviews from centralized telephone centers were discontinued in July 2007. Analyses of the 2007 estimates indicate that the program changes made in 2007 had relatively small effects on NCVS estimates. As discussed in *Criminal Victimization, 2006*, the substantial increases in victimization rates from 2005 to 2006 do not appear to be due to actual changes in crime during that period. The increases were attributed to the impact of the methodological changes in the survey. These effects were reversed in 2007, suggesting that the 2006 findings represent a temporary anomaly in the data. The methodological changes implemented in 2007, their impact on the survey estimates, and the NCVS methodological research program are described more fully in the *Technical Notes* on page 7.

As a result of these fluctuations in estimates, NCVS convened a panel of experts to evaluate the data prior to the release of the 2006 data. This panel recommended that BJS release the 2006 estimates and provide a clear description of the issues associated with the changes in methodology, the impact of the changes to the extent known and future plans for further study of the impact of the methodological changes on survey estimates. The panel was comprised of staff from BJS, the Census Bureau and the following outside experts:

- Dr. Janet Lauritsen, University of Missouri-St. Louis;
- Dr. Colin Loftin, State University of New York at Albany;

- Dr. David Cantor, Research Associate Professor, Joint Program in Survey Methodology, University of Maryland, and Westat; and
- Dr. James P. Lynch, Professor, John Jay College of Criminal Justice, NY;
- Dr. David Hubble, Westat

BJS continues to work with the U.S. Census Bureau to better understand the impact of these changes upon survey estimates. Once the research is complete, BJS will publish a technical report to describe the findings. If adjustments to the reported crime rates for 2006 and 2007 are warranted, or if other changes to the data are identified, BJS will issue a revised report to provide users with a more comparable set of figures. Based on research completed to date, there is a high degree of confidence that survey estimates for 2007 are consistent with and comparable to those for 2005 and previous years.

### **3. Maximizing Response Rates**

Several steps are taken to encourage response and maximize response rates:

- An advance introductory letter is mailed to sampled households from the Director of the Census Bureau explaining the authority for and purposes of the survey to the household before the interviewer's visit or call. All introductory letters in English and non-English languages are attached (NCVS 572 letter series).
- Field representatives carry cards and portfolios identifying them as Census Bureau employees.
- The Census Bureau trains the 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.
- Potential respondents are assured that their answers will be held in confidence and used only for statistical purposes.
- Senior field representatives and may be called in to convert refusals.

Performance guidelines were established for the NCVS in an effort to maximize response rates. These guidelines are used by the regional offices as examples of how they might measure performance (see Attachment NCVS 570).

In 2008, the household response rate for the NCVS for 2008 was 91 percent and the individual response rate was 86 percent. The Type A noninterviews are used

for eligible, occupied sample units, while Type Z noninterviews are for households in which there was a household respondent but one or more eligible individuals did not participate.

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, the Census Bureau also uses quality control methods to ensure that accurate data is collected. Current policy is for 3% of the sample to be reinterviewed to verify that the information the interviewer collected was in fact reported by the respondent. All respondents are informed that they may be contacted by someone else to verify the work of the interviewer.

#### **4. Test of Procedures or Methods**

Since July 1993, changes to the survey content, such as the inclusion of questions on hate crime, disability, computer crime, identity theft, and stalking, were either cognitively tested or an expert review of the survey questions was conducted to ensure the wording and sequence of the question items were appropriate.

The conversion of the NCVS to a fully automated survey entailed various testing of the survey instrument and control systems. In late 2005, testing of the NCVS CATI/CAPI survey began and continued through the first half of 2006. Testing included a *full instrument test* of all parts of the instrument including the systematic checking of instrument output; multiple *systems tests* of all control systems that are used for production; a *hothouse* in which interviewers come in from the field and review the instrument with input; a *dress rehearsal* (test) of all production systems but using test data and conducted by real interviewers who may interview live respondents taken from the NCVS reserve sample or do mock interviews; a *verifications test* to ensure that all changes/problems reported in Systems Test are corrected.

Other changes over the history of the survey that were approved by OMB are detailed in Appendix C.

## **5. Consultation Information**

The Victimization Statistics Unit at BJS takes responsibility for the overall design and management of the activities described in this submission, including developing study protocols, sampling procedures, and questionnaires and overseeing the conduct of the studies and analysis of the data by contractors. BJS is also working with staff at the Census Bureau to coordinate research activities with ongoing NCVS operations. BJS, Census Bureau, and current contractor contacts include:

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