

SUPPORTING STATEMENT B

B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS

1. Respondent Universe

The universe for the CPS is about 122 million households. From their Master Address File, the Census Bureau selects approximately 72,000 households each month. Of these, approximately 60,000 households are eligible for interviews. (Note: ‘Eligible’ can be simplistically defined as an occupied housing unit having at least one person in the civilian noninstitutional population.) The Census Bureau actually interviews about 53,000 households each month. This sample includes about 10,000 eligible housing units from the monthly supplementary sample to improve state-level estimates of health insurance coverage for low-income children, also known as the CHIP expansion. This supplementary sample has been part of the official CPS since July 2001. Thirty-two states plus the District of Columbia contain this supplementary sample each month.

The CPS sample was redesigned based on information from the 2010 decennial census. Interviewing of the redesigned sample phased in beginning in April 2014 and was completed July 2015. Historically, the CPS sample has been redesigned after each decennial census. (See Attachment I for more detail about the sample redesign: https://www.bls.gov/cps/sample_redesign_2014.pdf.)

2. Description of Procedures

The CPS produces demographic data, labor force data, and data from various periodic supplemental surveys. The CPS sample is designed to produce estimates of employment and unemployment characteristics with sufficient reliability to meet the BLS’ requirements for monthly data and estimates of month-to-month, quarter-to-quarter, and year-to-year changes.

One of the primary goals of the CPS is to provide change estimates (both month-to-month as well as over-the-year) in the employment and unemployment statistics. The current rotation pattern of CPS (households are contacted by interviewers for 4 consecutive months, followed by 8 months during which they are not in the survey, and then they return to the survey for another 4 months) was chosen because it provides such estimates reliably, and performs better overall than other rotation patterns in which respondents are in for a total of 8 months.

CPS Estimation Procedure:

Under the estimating methods used in the CPS, initial second-stage results for a given month are based on responses obtained from the monthly sample of eight panels. This involves weighting the data from each sample person. The baseweight, which is the inverse of the probability of the person being in the sample, is a rough measure of the

number of actual persons that the sample person represents. Almost all sample persons within the same state have the same baseweight, and every person in the same housing unit receives the same baseweight. These weights are then adjusted for noninterview, and a ratio adjustment procedure is applied.

a. Noninterview Adjustment

The baseweights for all interviewed housing units are adjusted to account for occupied sample housing units for which no information was obtained. Reasons for a noninterviewed housing unit include absence of the occupants, impassable roads, refusal of the occupant to participate in the survey, or unavailability of the occupant for other reasons. The noninterview adjustment is performed by noninterview cluster. Noninterview clusters are classified as either metropolitan or non-metropolitan. PSUs classified as metropolitan are assigned to metropolitan clusters. PSUs representing metropolitan areas of the same or similar size (based on Census 2010 population) are grouped into the same noninterview cluster. Each metropolitan cluster is further divided into two cells: central city and balance of the metropolitan area. Likewise, non-metropolitan PSUs are assigned to non-metropolitan clusters. All non-metropolitan areas in a state are placed within the same noninterview cluster. Due to small sample sizes, a few non-metropolitan noninterview clusters contain PSUs from more than one state.

b. Adjusting Estimates to Population Controls

The distribution of the population selected in the sample may differ somewhat, by chance, from that of the population as a whole in such characteristics as age, race, Hispanic ethnicity, and sex. Since these characteristics are correlated closely with labor force participation and other principal measurements made from the sample, survey estimates are substantially improved when weighted appropriately by the known distribution of these population characteristics. This is accomplished through four adjustments:

1) First-stage ratio adjustment

In the CPS, some of the sample areas are chosen to represent both themselves and other areas in the same state, but not in the sample; the remainder of the sample areas represent only themselves. The first-stage ratio estimation procedure is designed to reduce that portion of the variance resulting from non-self-representing PSUs. Therefore, this adjustment procedure is applied only to sample areas that represent other areas and is done by Black alone / not Black alone cells at a state level. Each race cell is further divided into two age cells: age 0 to 15, and age 16 and older.

2) National and state coverage adjustments

The national and state coverage adjustments are intended to improve the national and state estimates by race, Hispanic ethnicity, sex, and age. The national coverage adjustment is done by Black alone, White alone, Asian alone, and the residual of all other race categories for non-Hispanics, and White alone and not White alone for Hispanics. (Note that respondents who indicate that they belong to more than one race are included in the Residual race category.) These race/ethnicity categories are further divided into cells representing various combinations of age and sex. This national adjustment is performed by month-in-sample pair (1,5; 2,6; 3,7; and 4,8).

The cells used in the state coverage adjustment are defined by race category (Black alone, not Black alone), age, and sex. The adjustment is performed either for each month-in-sample pair or for all eight month-in-sample groups combined. The actual cells used vary by state and race category.

3) Second-stage ratio adjustment

The second-stage ratio adjustment modifies sample estimates in a number of age-sex-race-Hispanic ethnicity groups to independently derived census-based estimates of the civilian noninstitutional population (CNP) in each of these groups. This adjustment reduces mean square error of sample estimates by reducing bias due to differential coverage of the sampling frame. The adjustment is executed in three steps and each set of three steps is referred to as a “rake.” There are 10 cycles (or iterations) of raking. Each step in each rake is done by month-in-sample pair.

In the first step, the sample estimates are adjusted for each state and the District of Columbia to independent controls for the CNP by age and sex. There are three age cells by sex (0 to 15, 16 to 44, and 45 and over). The second step of the adjustment is done at the national level by Hispanic ethnicity. Hispanic and non-Hispanic each have 13 age/sex cells, which are adjusted to nationwide independent controls. The third and final step of the second-stage adjustment is performed by race (Black alone, White alone, Residual race). The cell division is by age/race/sex. Each of these cells is adjusted to national independent population controls as in the previous step.

The entire second-stage adjustment procedure is iterated through 10 rakes. This iteration ensures that the sample estimates of state and national population by the various age-race-sex-Hispanic ethnicity categories will be virtually equal to the independent population controls.

c. Composite Estimation and Weighting

The last step in the preparation of most CPS estimates makes use of a composite estimation procedure. A basic composite estimate is a weighted average of 1) a second-stage estimate based solely on current month responses and 2) a composite estimate from the previous month that is updated to the current month with an estimate of month-to-month change based on six sample panels that are common to both months. Estimates of month-to-month change in employment and unemployment that are computed using composite estimates generally have lower sampling errors than comparable change estimates using second-stage estimates. A composite weighting procedure computes a weight for each person. Using these weights, it is then unnecessary to recompute composite labor force estimates each time a table is produced.

3. Methods to Maximize Response

Response rates and data accuracy for the CPS are maintained at high levels through internal consistency edits in the computerized instrument, interviewer instructions, training, and close monitoring of these data.

If a respondent is reluctant to participate in the CPS, the interviewer immediately informs the Regional Office staff. The Regional Office sends a follow-up letter to the household explaining CPS in greater detail and urging cooperation. The interviewer then recontacts the household and attempts the interview again. If this procedure fails, a field supervisor then contacts the household in an attempt to convert the reluctant respondent. Methods used to interview reluctant households include conducting telephone or personal interviews with the household, if so requested, and interviewing an individual within the household. The CPS estimation procedure adjusts for household nonresponse in its noninterview adjustment procedure, detailed in the preceding Paragraph 2.a. Three imputation methods for individual item nonresponse are used: relational imputation, hot-deck imputation, and longitudinal assignments. As appropriate, longitudinal assignments are used in most of the labor force edits. The CPS household noninterview rate ranges between 12 and 13 percent monthly. Accuracy of the CPS data is maintained through interviewer training and monthly home studies, monitoring of error and noninterview rates, and systematic reinterviewing of CPS households. Each month about 10 percent of all CPS enumerators have a portion of their assignments reinterviewed for quality control purposes. Depending on the interviewer's experience level and position, they can be selected as many as three times every 15 months. Errors uncovered during the reinterview are discussed with the original interviewer and remedial action is taken.

Chapter 16 of Technical Paper 66 addresses overall CPS and item nonresponse. (See Appendix H or <https://www.census.gov/prod/2006pubs/tp-66.pdf>.) In recent years, the CPS response rate has been about 87 percent.

4. Contact Persons for CPS statistical data collection and analysis:

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Attachments:

- A. Basic CPS Questionnaire-Front
- B. Basic CPS Questionnaire- Demographic
- C. Basic CPS Questionnaire- Labor force
- D. Title 29, United States Code, Sections 1 through 9
- E. CPS Advance Letter
- F. Confidentiality Brochure
- G. Title 13, United States Code
- H. Design and Methodology: Current Population Survey, Technical Paper 66
- I. Redesign of the Sample for the Current Population Survey