Supporting Statement B

Revision Request for Clearance

NATIONAL HEALTH INTERVIEW SURVEY

OMB No. 0920-0214

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B. Collection of Information Employing Statistical Methods

1. Respondent Universe and Sampling Methods

The NHIS is a cross-sectional household interview survey. The sampling plan follows a multistage probability design. Approximately every ten years, the NHIS sampling plan is revised following the decennial census of the population. The 2006-2015 sampling plan was based on the 2000 decennial census. To keep the sample current with population distribution changes over the decade, a new sampling plan was developed for implementation beginning in 2016. An overview of the new sampling plan is provided below. Additional detail about the redesign process is included in Attachment 8.

The 2006-2015 Sampling Plan

For the 2006 design, the basic NHIS sample contained 428 primary sampling units (PSUs), usually a county, a small group of counties, or a metropolitan statistical area, drawn from 1,838 PSUs that cover the 50 States and the District of Columbia. Within PSUs, second-stage sampling units called segments contain an expected 4, 8, 12 or 16 housing units. The sample assigned to each month represented the target population, and the monthly samples were additive.

A major feature of the sample design was the oversample of minority domains of black, Hispanic and Asian persons by oversampling these groups to increase the reliability of estimates. Two strategies were used to implement such oversampling. The first strategy was to select the household sample from minority density substrata within each PSU. The second oversampling strategy of the black, Hispanic and Asian households was to have two sampling designations for addresses within a segment, a traditional interview designation and a screening designation.

In a typical data collection year, if there were sufficient resources to fund the sample fully, the final NHIS sample contained approximately 35,000 households (or 87,500 persons). This sample size and distribution allowed for the production of estimates in some of the larger states. From 2011-2015, additional funding was provided to increase the sample to improve state-level estimates of key variables in less populous states. The initial sample increases came from sample addresses cut in previous years due to budget shortfalls and addresses assigned to years beyond the current sample design period. These two sources were exhausted at the end of 2012. Beginning with the 2012 NHIS, another source of addresses for increasing sample came from areas in existing NHIS primary sampling units (PSU) that had been subsampled out during an initial phase of within-PSU sampling. Beginning with the 2013 NHIS, to allow for new sample increases, new PSUs were added to the NHIS using a process similar to that used to create the 2006 design.

The current NHIS objectives are broader in scope than they have been in the past. Now, the 10 year survey objectives also include the ability to achieve accurate estimates for state and targeted minority populations, but on an “as needed” basis. Budgetary and operational considerations have placed the existing design objectives in conflict for receiving resources needed for optimal sampling.

In addition, the 2006-2015 sample has been exhausted. Therefore, a new sampling strategy is being implemented in 2016 and for the foreseeable future.

As a compromise, the final redesign is structured with a nationally-focused design as its core, but the design contains large reserve samples that can be used to achieve state or minority objectives. A recent focus on state-level heath care has placed a priority on the allocation of sample to achieve state estimates.

The 2016 (and beyond) Sampling Plan

The new sample design is structured with a nationally-focused design as its core, and contains large reserve samples that can be used to achieve state or minority objectives. The new sample design takes into account demographic shifts in the U.S. civilian noninstitutionalized population but is also more flexible than the previous design, as it allows for additions and contractions to reflect funding availability and to meet estimation goals. As in previous years, the base sample will remain at approximately 35,000 completed household interviews annually. To balance the precision of national and state-based estimates, most of the sample (approximately 25,000 completed interviews) will be allocated proportionally to the state population to maximize the precision of national-level estimates. A smaller portion of the sample (approximately 10,000 completed interviews) will be shifted to increase sample in the 10 least populous states, enabling state-level estimates of key variables to be produced for all 50 states and DC by pooling 3 years of data. This flexibility embedded in the new sampling plan reflects the increasing demand for state-level health outcomes, in particular support of the recent focus on state-level heath care.

While the sampling frame for the NHIS has traditionally used field listing by the Census Bureau, in order to contain costs, the new frame will use a commercial list that covers addresses within all 50 states and the District of Columbia. Supplementary field listing is being undertaken to improve coverage in rural areas with poor addresses, in high density areas with addresses that are too general (as drop boxes for apartment buildings), and of university housing units. This represents a substantial reduction in the number of listings performed annually. On campus college dormitories are not included in the commercial address database. For this reason, a separate sample was created for these residences. A sample of colleges was selected (OMB# 0920-0222) for inclusion in the sample. These colleges were contacted and a listing was made of dormitories. From this list individual units were selected for inclusion. A more extensive description of the redesign process is included in Attachment 8.

It is anticipated that the new sample will not affect estimates generated using NHIS data. To monitor the new design's performance, NHIS analysts will perform monthly checks in line with the ones currently performed as part of routine data review. NCHS receives raw data files monthly from the Census Bureau for processing and quality review. Each year, results from the January sample are compared to the previous year to determine whether the results are consistent. In addition to comparing the unweighted and weighted frequencies, the input and output specifications are reviewed, and the flowcharts are compared to the skip instructions and universes for each question.

If a difference is found, steps are taken to determine whether the change is legitimate or whether there is a factor other than the programming of the questionnaire such as the location or context of the question in the questionnaire. If a difference persists, the paradata are reviewed to determine whether there are changes in the mean or median time spent on that question, whether interviewers had a high rate of backing up to return to that question, and whether other questions in that battery were similarly affected. Persistent differences will be examined to determine whether there is any other interviewer effect such as results comparing newly hired and experienced interviewers and newly added primary sampling units compared to continuing primary sampling units. In addition, national estimates on the key set of indicators that are released in a quarterly report as part of the Early Release program will be monitored by NHIS analysts.

2. Procedures for the Collection of Information

The U.S. Bureau of the Census is responsible for drawing the final sample and for performing the necessary field procedures related to data collection and initial processing. Specifications for the field operations are provided by the Division of Health Interview Statistics (DHIS) staff at NCHS.

DHIS staff provide specifications for the sample design, specific content of the questionnaire, detailed instructions for the administration of the interview, and procedures to measure quality control by reinterview and paradata analysis. The Census Bureau, in addition to drawing the sample, performs supervisor and interviewer training and conducts the field operations. These operations include first contacting all households via an advance letter (Attachment 6a), followed by a personal visit. Making contact via telephone is also sometimes used to follow up on respondents who were unable to be contacted in person or to complete the interview during a personal visit. DHIS staff monitor the field activities through observation and communication with Census during all phases of data collection and through the analysis of paradata such as audit trails, contact history, and item timing. Frequent status meetings are held to assess progress toward data collection goals.

All data are weighted to provide national estimates using the following four components: 1) The reciprocal of the probability of selection; 2) a household nonresponse adjustment within segment; 3) a first-stage ratio adjustment; and 4) a second stage ratio (or post stratification) adjustment to the U.S. population by age, sex, and race-ethnicity.

Standard errors may be calculated using a Taylor linearization approach as applied in SUDAAN variance software. (See: Research Triangle Institute. SUDAAN Language Manual; Release 11.0. Research Triangle Park, NC: Research Triangle Institute. 2012.)

A small sample of respondents is reinterviewed by the Census Bureau to ensure that interviewers are not submitting falsified information. NHIS reinterviews will be conducted primarily by telephone, by staff at one of the Census Bureau's centralized call centers. The reinterview is very brief and verifies that the original interview was completed. Typically, the NHIS reinterview is conducted within two to three weeks of the main survey with the same respondent who originally participated in the NHIS. The reinterview questionnaire is shown in Attachment 3f.

Additional technical details on routine survey execution can be found in the National Center for Health Statistics (2012) Survey Description Document available at ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2014/srvydesc.pdf.

A sample of adult respondents that is not part of the sample set aside for MEPS may be selected to participate in a follow-back study in 2016 to 2018. The effort will build on previous NHIS follow-back surveys and extend their scope in the examination of different modes of data collection and assignment of different respondents to complete similar sets of questions. Additional details about these follow-back activities are provided in Supporting Statement A.

3. Methods to Maximize Response Rates and Deal with Nonresponse

As 2015 NHIS data collection is still underway, the latest year of available data is from the 2014 survey. In 2014, the final household response rate was 73.8 percent. This rate is calculated by dividing the number of completed household interviews by the number of assigned, in-scope households. The sample child component was completed in 91.2 percent of participating households in 2014, for an overall response rate of 66.6 percent. The sample adult component was completed in 80.5 percent of participating households in 2014, for an overall response rate of 58.9 percent.

The NHIS, like most surveys, has witnessed steadily declining response rates. Over the past ten years, response rates have fallen by more than ten percentage points, from 86.5% in 2005 to 73.8% to the latest available in 2014. Reasons for declining response rates are unclear but may include increased survey length, general mistrust of the government, growing time constraints, improvements in privacy screening technology for telephones, and other reasons.

To provide respondents with advance notification of the interview in an attempt to maximize response rates, an advance letter is sent to all sample households prior to the interviewer's arrival (Attachment 6a). The letter legitimizes and justifies the survey, increasing the probability that the respondent will cooperate. It references the authorizing legislation of the survey, a statement of confidentiality and an explanation of how the data will be used, as well as the voluntary nature of the survey and other elements for informed consent. The letter further explains the purpose of and need for the survey and tells the respondent that there is some chance that they may be contacted more than once. If at the time of the initial contact the interviewer is told that the letter was not received, another letter is provided prior to the interview and time is allowed for the person to read it before proceeding.

In 2014, a flyer was developed based on published NHIS data to demonstrate to respondents the value of their participation. Additional materials to improve response rates by demonstrating salience and the importance of the selected household's participation are attached (Attachment 6b). Examination of the effectiveness of these supplemental materials is currently underway. Targeted interviewer training modules on improving respondent cooperation are presented at initial

interviewer training and at least once a year. Gaining cooperation, accessing respondents through gatekeepers, and averting refusals are a standard part of initial and refresher training.

If the time of contact is inconvenient for a respondent, interviewers offer to schedule an appointment for a more convenient time. If the respondent declines the interview with one interviewer, the field work supervisor often reassigns the case to an interviewer with more experience at converting reluctant respondents. Although face-to-face interviews are preferred, interviewers are allowed to substitute telephone interviews if attempts to get a face-to-face interview are not successful.

In the summer of 2015, an incentive experiment was conducted in the states included in three Census Regional Offices (Denver, New York, and Philadelphia). The experimental design involved two components: a $5 cash unconditional advance token incentive mailed to families with the introductory letter, and a $20 incentive (in the form of a debit card) for completion of both the Family and the Sample Adult component of the NHIS interview. Families were randomly assigned into each of the two components, and the resulting comparison groups were $0, $5, $40, and $45. Preliminary results indicate that overall, using incentives improved response rates as much as 4 percentage points among some groups, whereas in other groups there was no improvement. Analysis of the data is underway but the initial conclusion is not to give incentives across the board.

4. Tests of Procedures or Methods to be Undertaken

Developmental work related to the NHIS questionnaire is conducted by the NCHS Questionnaire Design Research Laboratory (QDRL) under their clearance (OMB No. 0920-0222). Developmental work on new diabetes and chronic pain questions was completed in 2015.

At the end of the family interview a random half of families will receive six supplemental disability questions originally developed for use on the American Community Survey (ACS). Randomization of families into one of the two treatment groups will occur at the time the family roster is established during the Household Module. Randomization will occur using a software-generated pre-assigned table of random numbers, a method developed by Kish (1949). The addition of these questions comprises one component of a larger testing effort to develop and adopt a standard set of disability questions to be used with multiple surveys in multiple countries. In addition, the Adult Functioning and Disability Supplement (AFD) will be administered to sample adults from the random half of families that did not receive the six test disability questions at the end of the family interview. The AFD supplement is part of an international project to develop and test improved measures of functioning.

A multi-mode follow-back survey will build on the previous two follow-back surveys and extend their scope in the examination of different modes of data collection, monitoring respondents' changes in health care coverage, and impact of assignment of different respondents to complete similar sets of

questions. This mechanism may be used in 2016 to 2018 to test questions or procedures to inform decision making about the NHIS questionnaire redesign.

Pending receipt of funding, a subsample of NHIS respondents may be identified to participate in a pilot test to assess the feasibility of integrating wearable devices into the NHIS data collection process. The aim is to determine the NHIS's ability to obtain objective health measurements, and to compare those measurements to relevant self-reported health information provided by respondents. A description of this project is provided in Attachment 3g.

5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

The following person was consulted in the statistical aspects of the design and collection of the NHIS:

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List of Attachments

Attachment 1	Applicable Laws and Regulations: NHIS Legislative Mandate (42 USC 242K)
Attachment 2a	Federal Register Notice
Attachment 2b	Public Comments
Attachment 3	Core and Supplement Changes Summary Table
Attachment 4a	Family Questionnaire
Attachment 4b	Sample Adult Questionnaire
Attachment 4c	Sample Child Questionnaire
Attachment 4d	Supplement Questions
Attachment 4e	Flashcards
Attachment 4f	Reinterview Survey
Attachment 4g	Wearables Pilot Description
Attachment 4h	OMB Statement and Screener
Attachment 5	Consultants for 1997 Redesign
Attachment 6a	Advance Letters
Attachment 6b	Informational Materials
Attachment 7	Research Ethics Review Board Approval
Attachment 8	Sample Redesign Description