# **Supporting Statement B for Request for Clearance:**

# **NATIONAL SURVEY OF FAMILY GROWTH, 2015-2018**

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# Supporting Statement for Request for Clearance: NATIONAL SURVEY OF FAMILY GROWTH, Continuous Interviewing, 2015-2018

# **SECTION B**

# **Collection of Information Employing Statistical Methods**

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**NOTE:** The sample design of the 2015-2019 NSFG is similar in most respects to the sample design of the 2006-2010 and 2011-2015 surveys. An abridged description of the sample design for the 2011-15 NSFG is included as part of the User's Guide for the 2011-13 NSFG public use files (http://www.cdc.gov/nchs/nsfg/nsfg\_2011\_2013\_puf.htm). Further details, which apply to the NSFG sample design beyond 2011 as well, are contained in 2 reports on the 2006-2010 NSFG (Lepkowski et al., 2010; Lepkowski et al., 2013).

## 1. Respondent Universe and Sampling Methods

**Summary**—The National Survey of Family Growth (NSFG) is based on a national area probability sample. To control costs, a nationally representative sample of 35 Primary Sampling Units (PSUs) is selected each year, but the majority of PSU's are rotated each year, resulting in a total national sample of 117 PSU's by the end of 4 years of interviewing. The data will be collected annually and continuously. Each year, about 15,000 households will be contacted, in order to yield approximately 5,000 interviews annually. Each year of data is an independent national sample, but the desired sample size and precision for several key estimates and statistics will be attained after about 4 years of interviewing (Sept 2015- June 2019).

<u>Target Population.</u> The target population of the National Survey of Family Growth has long been the household population 15-44 years of age. For the 2015-19 data collection, it is proposed that the age range for respondents will be expanded to 15-49 years of age, however the overall sample size and burden are not expected to increase. The NSFG sample excludes current residents of military bases and institutions (e.g., long-term hospitals, jails, prisons). College students temporarily away from their homes at college are included by sampling them at their home address; they can be interviewed either at home or at college.

## **Details of the NSFG Sample Design**

The sample is selected in 5 stages.

- (1) 117 Primary Sampling Units (Metropolitan Statistical Areas (MSAs), counties, or groups of adjacent counties) are selected at random from the 2,149 PSUs on the sampling frame comprised of the 50 United States plus the District of Columbia over the four year period. PSUs are stratified according to attributes such as Census Division, MSA status, and size, then one or two PSUs are selected from each stratum with the probability of selection proportionate to population size—that is, PSUs with large populations have a larger chance of selection than PSUs with smaller populations. The three PSUs with the largest populations have a probability of selection equal to 1.0, and are included every year.
- (2) Within each of those 117 PSU's, Secondary Sampling Units (SSUs) or sample segments are selected. A segment is a geographical area (e.g., a neighborhood or a group of blocks in cities or an area bounded by roads in a rural area). It can contain as few as 50 structures in a rural area or several hundred in a densely settled urban area. One or two interviewers are assigned to a PSU, and twelve SSUs per interviewer are selected. Each interviewer's 12 segments are divided into 4 groups; 1 group of SSUs is released to each interviewer each calendar year.
- (3) Trained interviewers update commercially-available lists of housing units within an SSU.

  If a commercially-available listing is unavailable, interviewers visit the geographically-

- delimited segment and prepare a list of housing unit addresses
- (4) Once the addresses are listed or verified within an SSU, a sample of housing units is selected for the study.
- (5) After an advance letter is sent to each selected household informing them about the study (Attachment H1), a trained survey interviewer visits the household to collect a household roster (or screener), in order to see if someone 15-49 years of age lives there. If more than one person is 15-49 and eligible, then one person is selected at random for the main interview, using a sampling algorithm which assigns a slightly higher probability of selection to teens 15-19, Hispanics, and Blacks.

The *rotating* feature of the PSUs permits a cost efficiency of ongoing sampling and data collection operations by using the field interviewing staff and funding in an optimal manner. It further offers at any single year a full national sample for the study, albeit with standard errors of estimates larger than those of the 4-year cumulative sample.

Group quarters with special living arrangements, such as dormitories, institutions, convents, or institutional group homes (for convicts, the frail elderly, or the developmentally disabled) may be listed but will not be selected for interviewing, because they are outside the scope of a sample of the household population. Dormitory residents who otherwise live with their parents will be sampled at their parents' homes. Members of the active duty military who live in civilian housing (not on military bases) will be eligible for the sample. The NSFG is a personal, in-home survey. Telephone contacts are permitted only to arrange appointments for interviews after the screener has been conducted, and for verification interviews (Attachment K) to ensure that the household was screened and, if applicable, the selected household member completed an interview.

#### 2. Procedures for the Collection of Information

The sample size targets for the NSFG are as follows:

Sample Size Targets for NSFG Continuous Interviewing 2011-2019 with 2002 (Cycle 6) and 2006-10 sample sizes shown for comparison

	Cycle 6	4-year Continuous	4-year Continuous	4-year Continuous
	2002	2006-2010	2011-2015	2015-2019*
TOTAL	12,571	22,682	20,000	20,000
15-19	2,271	4,662	4,000	4,000
20-49*	10,300	18,020	16,000	16,000
Male	4,928	10,403	9,000	9,000
Female	7,643	12,279	11,000	11,000
Hispanic	2,712	5,132	4,000	4,000
Black	2,460	4,389	4,000	4,000
White & other	7,399	13,161	12,000	12,000

<sup>\*</sup>Subject to change based on available funding and fieldwork conditions

The sample sizes cumulated in 2015-2019 will allow more reliable national estimates for policy-relevant demographic populations, of relatively infrequent family formation activities, and of societal changes that impact the lives of children and adults, continuing the critical data collection role the NSFG has played in the past. The NSFG is the only national source of men and women's experience with adopting children and is a rich and invaluable source for information on fathers' interactions with children they live with and children they live apart from. It provides data on teen's sexual activity (or lack thereof) by age, race and Hispanic origin to augment the birth certificate information and highlight trends and differentials in birth rates. Other demographic groups that this sample size will allow to be studied more reliably include: infertile women 35 years of age and older and persons who are at potentially higher risk of HIV because of their sexual behavior.

The current contractor for the NSFG is the University of Michigan's Institute for Social Research (ISR; Mick Couper, Project Director, and Heidi Guyer, Field Director). Under the

<sup>\*\*</sup>The NSFG age range will be expanded to 15-49 beginning in September 2015.

supervision and monitoring of NCHS, ISR recruits and trains the interviewers for the NSFG and carries out the fieldwork. The main steps in the fieldwork are described below.

# Main steps in NSFG field work:

- informational brochure to all sampled households. These materials, in English and Spanish, explain who is sponsoring the NSFG, who is conducting the interviews, why the survey is being done, and the voluntary and confidential nature of the survey. NCHS staff and NSFG-trained personnel at the University of Michigan are available by phone through 800 numbers to answer any questions householders who receive the advance materials may have. The letters and informed consent materials are shown in Attachments H1-H3.
- Approximately 1 week after the advance materials are mailed, interviewers go to the sampled households. When the housing unit is found to be occupied and the there is a person (18 or older) at home, the screener interview (Attachment H4) is conducted. The purpose of the screener is to list the persons living in the household and their ages, and if one or more are 15-49 years of age, to select one. Age, race, and Hispanic origin are collected in the screener because teenagers, Blacks, and Hispanics are selected at somewhat higher rates than other persons.
- When a person 15-17 years of age is selected to be interviewed, signed parental consent is obtained before the interviewer introduces the survey to the teenager. A parent letter and consent form will be used to explain the survey to the minor's mother, father, or legal guardian, and ask for their written consent. If the parent gives consent, then the interviewer introduces the survey to the 15-17 year old, and asks whether the teenager is willing to do the survey. If the teen is willing, he or she signs the "Minor Assent" form (Attachment H3), and proceeds to the interview. If either the parent does not give consent for the interview or the minor does not assent to be interviewed, the case is treated as a refusal.

<u>Emancipated minors</u> - 15-17 year-olds who are married, cohabiting, or living away from their parents for other reasons are rare in a sample of this size. Emancipated minors

- have been excluded from the continuous NSFG because the number of emancipated minors selected for the NSFG is so small that excluding this group is unlikely to have any noticeable impact on estimates. Using current IRB rules, however, including them would require special procedures that are too complex and too costly for the NSFG.
- (4) When a person 18-49 years of age is selected to be interviewed, the interviewer gives the selected person an Adult Consent Form (Attachment H3), which explains the survey and requests signed consent. If the selected person agrees to do the survey but refuses to sign the form, the interviewer can offer to begin the interview, and ask for a signature at the end of the interview; the interviewer may also sign for the respondent.
- (5) The interviewer gives the respondent \$40 as a "token of appreciation." The respondent can keep the incentive even if he or she does not finish the interview. (Break-offs are rare in this survey—less than 1 percent.)
- (6) Then the interview is conducted using the female or male questionnaires shown in Attachments C5 and C6, using a laptop computer. The interview is divided into two parts. The interviewer administers the first part. This use of the programmed questionnaires makes the interviewer's job easier and reduces interviewer errors because she does not need to determine question wording or routing herself by reading a paper questionnaire. In addition to producing higher quality interview data, the use of the computer also helps to protect respondent confidentiality because the laptop screen can be blanked with a single key stroke or the laptop cover can be closed if another person enters the area where the interview is being collected.
- (7) Finally, at the end of the interviewer-administered interview, the interviewer gives the respondent a set of headphones and the computer, and shows the respondent how to make simple entries on the computer. The respondent then completes a 15-20 minute ACASI section. The interviewer cannot see or hear what questions the respondent is being asked over the headphones, and cannot see or hear the answers that the respondent enters into the computer. Moreover, no one in the household can hear or see either the questions or the answers. This increased privacy has been found to increase the reporting of sensitive behaviors.

While the respondent is filling out the ACASI part of the interview, the interviewer completes the Interview Observation Form using a cellphone application (Attachment L). This formalizes the field notes that have been collected in less structured form since the 1973 NSFG, on the location where the interview was done, documenting whether there were interruptions during the interview, and the interviewer's assessment of the quality of the data. (The Interview Observation Form is filled out only by the interviewer; no questions are asked of the respondent.)

(8) At the end of the ACASI section, the respondent "locks" the computer and returns it to the interviewer. The interviewer then turns off the computer, thanks the respondent, and leaves. Once the respondent locks the interview, the interviewer cannot back up and see the respondent's answers or answers to the questions that came before ACASI.

# **Quality control**

Computer-assisted interviewing improves data quality in several ways:

- (a) <u>Interviewer errors</u> are reduced because interviewers do not have to follow complex routing instructions; the computer does it for them. Interviewer errors in following skip patterns were a principal cause of missing data in paper and pencil interviewing.
- (b) Respondent errors are also reduced with CAPI interviewing. The NSFG contract requires that selected consistency checks be programmed into the questionnaire so that inconsistent answers can be corrected or explained while the interview is still in progress. We continue to work on identifying and resolving logical inconsistencies earlier and more efficiently than in the past, to improve data quality and expedite data release.
- (c) <u>Coding and coding errors</u> are also reduced using CAPI interviewing, and this makes it possible to prepare the data for analysis faster and more accurately. In Continuous Interviewing, earlier cases (e.g., year 1) are being used to discover and correct errors before they affect later cases (e.g., year 2).
- (d) The "Verification" interview is a quality control procedure in which a random sample of 10% of both screened households and interviewed respondents are contacted (usually by telephone) after the interview to verify that the interview was conducted.

Verification of households confirms there was no one in the household 15-49 years of age; verification of respondents confirms that the person was interviewed and all procedures (signed a permission form, token of appreciation received, entered responses his- or herself in ACASI) were followed. (Attachment K)

- (called F2s because the interviewer uses the F2 function key) are reviewed by Contractor staff. Discrepancies in the data or F2 comments about data issues are shared with NCHS staff to determine the proper course of action. If the case warrants changing, editing of the data is performed by the Contractor. NCHS also performs regular and thorough checks of the quality of monthly data files, as it has in past NSFG survey years.
- (f) Imputation -- Approximately 650 of the most frequently used and central variables (called "Recodes") are imputed when they have missing values because the respondent refused to answer, didn't know the answer, or otherwise did not give a valid response. On most of these variables, missing data was less than 1 percent. Income had the largest percentage of missing data, with slightly more than 10% of cases with missing values. For information on the imputation procedure used by the NSFG since 2002, see Lepkowski et al., 2006 and Lepkowski et al., 2013.

Two basic types of imputation were used for these variables (out of about 6,000 variables on the data file):

- regression model-based imputation (used for most variables)
- logical imputation (for a few variables with only a handful of missing cases).

The large majority of imputations are being done by multiple regression imputation using the University of Michigan's Imputation and Variance Estimation software, which is called "IVEWARE." As in previous cycles, the public use data files have imputation "flags"—variables that show that a value was imputed--so that data users can assess for themselves whether imputation affects the estimates. Imputation rarely affects estimates in the NSFG because, as noted above, the levels of missing data are generally very low.

- (g) Estimation -- Estimation refers to the process of producing weighted numbers and percentages for the population from sample data. For each case, a weight is generated which estimates the number of persons in the population that each sampled person represents. For example, if a woman represents 5,000 women in the US household population, her sample weight is 5,000. The weight for each respondent is created in 4 basic steps:
  - inflation by the reciprocal of the probability of selection,
  - adjustment for sampling nonresponse based on the probability of completing a screener and the probability that a completed screener results in a completed interview
  - post-stratification to independent control totals within age, race/Hispanic origin,
     and sex categories, provided by the Census Bureau, and
  - trimming of a small number of extreme weights.

Probabilities of selection vary because black, Hispanic, and teenage respondents are slightly oversampled, and because selected respondents who have not completed a main interview are sub-sampled for Phase 2 of data collection). Adjustments for non-response are made by multivariate (logistic regression) methods. Post-stratification to control totals is done within cells defined by race and Hispanic origin, age, and sex.

Variances are estimated using a Taylor Series linearization approach similar to that used in the 2002 and 2006-2010 NSFGs, as described by Lepkowski et al., 2013. Codes were generated that allow data users to compute variances using Taylor Series linearization, Balanced Half-Sample Replication, or Jackknife replication methods (Lepkowski et al., 2010; Rust, 1985). A similar procedure will be used to produce the data files for 2015-19.

## 3. Methods to Maximize Response Rates and Deal with No-response

As discussed above, we use Advance Letters, highly trained interviewers; a web site; toll-free numbers at both the University of Michigan and at NCHS; customized follow-up letters to address particular concerns selected respondents may have about the survey; special

interviewer training on non-response, to encourage participation and "avert refusals"; and active survey management using daily paradata, which is data about the fieldwork, to allocate interviewer effort most cost-effectively. Our principal guidance in dealing with non-response is our experience in the 2002, 2006-2010, and 2011-2013 NSFGs, have been documented in a number of published reports (Groves et al., 2005; Groves and Heeringa, 2006; Groves et al., 2009; Lepkowski et al., 2010; Lepkowski et al., 2013).

Procedures are listed separately for non-contacts, and for refusals. For <u>non-contacts</u>, the following procedures are used:

- (a) interviewers, when listing or confirming housing units within sample segments, document units that have access impediments (e.g., locked apartment buildings, or security guards at a community entrance gate). Interviewers will schedule calls on such cases earlier in the field period than others,
- (b) observations are made by the interviewer regarding best times to reach the sampled household, and
- (c) multiple calls are made to the sampled household, at different times of the day and different days of the week.

For <u>refusals</u>, interviewers are trained to avert refusals by understanding and learning to respond to the concerns that potential respondents express. Interviewers are in ongoing contact with their supervisors, allowing interviewers to seek guidance on individual problems they encounter. Throughout this process interviewers are explicitly instructed to treat the sample person's concerns as legitimate questions that deserve thoughtful answers. Letters addressing specific respondent concerns are mailed to an individual's household with the intent of allaying these concerns (**Attachment H5**). The NSFG approach is to answer respondents' questions and to respect the decisions they ultimately make about participating in the survey. Emphatic or "hard" refusals are accepted as final.

Guidance to interviewers in continuous interviewing is based on the research and experience cited above, and on extensive paradata collected and recorded by interviewers and other field staff. These data are summarized using logistic regression equations into a total

propensity to respond for an entire segment. These data (and case-specific observations entered into the contractor's sample management system) can be used to guide further actions on individual cases. (*Paradata are discussed further in Lepkowski et al.*, 2013.)

Incentives - Given that even the good survey practices described above are unlikely to attain an 80% response rate with the budget available to the NSFG, in Section A9, we requested OMB clearance in 2014 to continue to increase our \$40 cash incentive to \$60. Previous research (Singer E, 2002; Kulka R, 2002; Groves RM, Couper MP, Presser S, et al.; 2006; Davern M, Rockwood TH, Sherrod R, and Campbell S, 2003; Attachments D1 and D2) suggests that, for long, sensitive, in-person surveys, incentives do help raise response rates and help to control fieldwork costs when standard good survey practice is not enough.

Incentives at the \$40 level appear to be especially effective among minorities, teenagers, and low-income people. That observation is consistent with the NSFG's experience in the 2002, 2006-2010, and 2011-2013. Given that interviewer labor costs about \$25 an hour (including indirect costs and supervisor time), this \$40 amount quickly pays for itself because it saves interviewers time and maintains our average hours per completed case.

At the same time, we have also found (see **Attachment D1**) that incentives of \$80 during Phase II sampling (given to just 6% of completed interviews in 2006-2010) are necessary to increase participation from higher-income, married, or college-educated respondents. These groups may also have some distinctive behavioral patterns that would be under-represented if we did not use the follow-up to bring them into the sample.

In response to gradually and steadily declining response rates and increasing resistance rates since the 2002 NSFG, in September 2013 the NSFG launched an experiment testing a higher incentive amount in Phase 1. The experiment randomized area segments to two different treatments: the current \$40 or an experimental amount of \$60. The Phase 2 incentive was the same for both arms: all respondents received \$80 for completing the interview. Although the \$60 incentive resulted in an increased response rate in Phase 1, it did not increase overall response rates. Nor did it lead to reductions in nonresponse bias relative to the \$40 incentive. The incentive increase did result in an increased response rates in Phase I, leading to

a higher overall yield. There was not sufficient evidence to justify changing protocol to an increased incentive.

#### **Nonresponse Bias Analysis**

**Attachment M** describes our approach to measuring and managing nonresponse bias in the NSFG. Procedures to measure and reduce nonresponse bias are built into the daily paradata monitoring of the study. NSFG has the following data resources to warn us of possible nonresponse bias and allow us to act to reduce it during each quarter of fieldwork:

- The NSFG's paradata include observations from interviewers. Their observations include information such as whether the building is locked or access is blocked by other barriers, and assessments of whether the household includes children, whether the respondent is in a sexual relationship, and other characteristics that are correlated with non-response on NSFG outcome variables.
- 2) Key statistics (percent married, percent who have had a child, etc.) are tracked to see if they change when calling effort is increased.
- 3) The response rates of 12 age-race-gender groups that are strongly correlated with many NSFG estimates (e.g., Hispanic males 20-44; black females 15-19) are monitored daily. If response rates are unequal, that inequality could cause biased estimates. By monitoring response rates daily, effort can then be increased on groups with lagging response rates so, that by the end of the quarter, variation in response rates across groups is minimized.
- 4) A two-phase sampling scheme is used. At the end of 10 weeks of fieldwork, a probability sample of non-respondents is selected. Incentives are increased for the selected cases, and different fieldwork techniques are used. Response rates and sample composition can be compared before and after "phase two" of fieldwork.
- 5) Alternative post-survey adjustments for nonresponse can be compared.

These efforts build upon the 2006-2010 and 2011-2013 NSFGs, using essentially the same design, but with continuous improvements in monitoring as more information about field work is obtained to further minimize nonresponse error.

A more complete description of these activities appears in **Attachment M**.

#### 4. Tests of Procedures or Methods to be Undertaken

Given the nature and magnitude of the questionnaire changes being made for 2015, the first several weeks of interviewing in 2015 will serve as the pretest for the new span of continuous interviewing. The 2015 questionnaires will have gone through significant instrument testing at ISR and at NCHS, which should uncover and allow resolution of any issues with the interview specifications. Based on a similarly extensive period of testing prior to the 2011-2015 span of interviewing, we expect the "pretest" interviews to go well and that they will be of sufficient quality to be included in the final data files released publically. We will also ensure that average interview lengths stay within the approved limits of 80 minutes for female respondents and 60 minutes for male respondents, making question cuts or other modifications as necessary.

Crossover study of sexual orientation question from NHIS: As noted in supporting statement, part A, the NSFG will include a crossover study of the NHIS question on sexual orientation relative to the current NSFG question. This study, involving a 50-50 random split of respondents, will begin in September 2015, and will assess the distributions based on questions placed in the identical location within ACASI. The study is expected to continue at least through September 2017, at which point results will be evaluated. Once findings from the cross-over study have been assessed, it is likely the NSFG will then continue with the NHIS question for 100% of the respondents, as this question has been developed, tested and iteratively refined at NCHS (Dahlhamer et al., 2014; Ward et al., 2014).

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

The statistical consultants (on NSFG sample design, variance estimation, and statistical methods) for NCHS are:

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The NSFG sample selection, data collection, and receipt/approval of contract deliverables are supervised for NCHS by:

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# LIST OF ATTACHMENTS

#### A. Authorizing legislation

- A1. National Survey of Family Growth, National Center for Health Statistics
- A2. Office of Family Planning, Office of Population Affairs
- A3. Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH
- A4. Children's Bureau, ACF
- A5. Assistant Secretary for Planning and Evaluation, HHS

Division of HIV/AIDS Prevention, CDC

Division of Sexually Transmitted Disease Prevention, CDC

Division of Reproductive Health, CDC

- A6. Office of Planning, Research, & Evaluation, ACF
- A7. Division of Cancer Prevention and Control, CDC
- A8. Division of Birth Defects and Developmental Disabilities, CDC

#### B. 60-day Federal Registry Notice

- B1. 60-Day Notice for the National Survey of Family Growth, 2015
- B2. Public Comment on 60-Day Notice

#### C. NSFG Questionnaires, 2013 and 2015

- C1. 2013 Female CAPI-lite
- C2. 2013 Male CAPI-lite
- C3. 2015 Female CAPI-lite showing markup of substantive revisions since 2013
- C4. 2015 Male CAPI-lite showing markup of substantive revisions since 2013
- C5. 2015 Female CAPI-lite clean version
- C6. 2015 Male CAPI-lite clean version
- C7. Summary of questionnaire changes for 2015

#### D. Memoranda from other offices and agencies

- D1. NCHS Public Affairs Office
- D2. Healthy People 2020 Health Objectives on Family Planning, HIV, STDs
- D3. Office of Population Affairs
- D4. NICHD, NIH
- D5. Children's Bureau, ACF, DHHS
- D6. OASPE (Office of the Assistant Secretary for Planning and Evaluation)
- D7. Office of Planning, Research, & Evaluation, ACF, DHHS
- D8. Division of HIV/AIDS Prevention, CDC
- D9. Division of Sexually Transmitted Disease Prevention, CDC
- D10. Division of Cancer Prevention and Control, CDC
- D11. Division of Birth Defects and Developmental Disabilities, CDC
- D12. Division of Reproductive Health
- D13. Office of Adolescent Health, DHHS

# E. Consultation outside the agency

- E1. Report of the NSFG Review Group for the NCHS Board of Scientific Counselors, April, 2010
- E2. Report on Nov 15-17 visit to CDC
- E3. Agenda for the 2012 NSFG Research Conference
- E4. Summary materials from Nov 2013 ACA Advisory Workshop
- E5. Summary materials from Apr 2014 Advisory Workshop

#### F. Partial list of publications from the Survey

- F1. List of publications from the 2002 NSFG
- F2. List of publications from the 2006-2010 NSFG

#### G. A Review of the Use of Incentives in the NSFG

- G1. Incentive Use Experiments in the NSFG
- G2. 2013-14 incentive experiment and results memo

#### H. Respondent Materials for the NSFG

- H1. Advance Household and Advance Respondent Letters
- H2. Brochures and Letter of Authorization.
- H3. Consent Forms
- H4. Screener Questionnaire
- H5. Letters to Address Respondent Concerns and Avert Refusals
- I. IRB Approval Form for NSFG Protocol #2011-11
- J. Justifications for Sensitive Questions in the Self-Administered (ACASI) part of the NSFG

#### K. Verification Questionnaires

- K1. Screener Verification
- K2. Main Interview Verification
- L. Interviewer Observation Form
- M. Non-Response Bias Analyses for the continuous NSFG

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