



Memorandum

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To: National Survey of Family Growth (NSFG) Team – National Center for Health Statistics

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Subject: Nonresponse Bias Analysis Plan

Background

Any survey subject to nonresponse runs the risk of nonresponse bias, defined as the difference between a statistic calculated based on the respondents and the value for the full sample. This quantity is seldom available, but there are different methods to inform the potential for nonresponse bias. As each method requires different analytic assumptions, use of multiple methods is desirable. The purpose of this memorandum is to outline the analyses we plan to conduct to gauge the impact of unit nonresponse on nonresponse bias at both the household and individual levels for the 2022 – 2029 National Survey of Family Growth (NSFG). As stipulated in Guideline 1.3.4 of Office of Management and Budget (2006), this is a requirement for any survey sponsored by the federal government that does not achieve a unit response rate of 80% or higher. Our current expectation for the NSFG is a (weighted) unit response rate of 60%.

The target population for the NSFG is men and women aged 15-49 at the time of screening. A total of 5,000 main survey completes are targeted in each NSFG data collection year. To account for ineligibility (e.g., vacancy, households without any individuals in the targeted age range) and unit nonresponse, we plan to begin data collection activities with a sample of 19,272 housing units (HUs). In the NSFG design, nonresponse occurs at two stages: gaining participation to the screening survey, in which eligibility of household members is established and sample members for the main interview are selected, and participation to the main survey to collect data from the selected sample members.

Numerous design features within a responsive design framework (Groves and Heeringa, 2006; Schouten, Peytchev, and Wagner, 2017) will be put in place to maximize response rates and minimize the risk of nonresponse bias in the 2022 – 2029 NSFG. Sampled HUs will be contacted in multiple modes across multiple data collection phases. In addition, a more intensive nonrespondent follow-up procedure (Hansen and Hurwitz, 1946; Deming, 1953) with increased incentive levels will be implemented to a subsample of nonrespondents towards the end of each quarterly sample release. A nonresponse follow-up (NRFU) will be conducted in Quarters 1 and 2 of 2022 for screener nonrespondents and for main survey nonrespondents using short mailed instruments to provide information on NSFG nonrespondents. In the next section, we briefly review the planned data collection protocol. Thereafter, we describe our proposed methods for assessing nonresponse bias.

NSFG Data Collection Protocol

Data collection activities occurring by web and face-to-face (FTF) for the quarterly sample releases will last a total of 20 weeks, and will consist of the following four phases:

1. **Phase 1: Web** (weeks 1 – 4). Sampled HUs will be contacted by mail with a prepaid incentive of \$2 to encourage them to complete the screener survey by web and continue on to the main survey, if applicable, for an additional \$40.
2. **Phase 2: FTF and Web** (weeks 5 – 12). FTF follow-up will begin for sampled HUs that have not completed the screener survey in Phase 1 and for HUs that completed the screener survey but

whose sampled individual has not completed the main survey. Transitioning cases from web to FTF contact mode does not relinquish the opportunity for the respondent to complete the screener or main survey to be completed by web, if preferred.

3. **Phase 3: FTF** (weeks 13 – 16). Analogous to Phase 2 in the 2011 – 2019 NSFG, a subsample of HUs not completing the screener survey and individuals not completing the main survey will be selected for a more intensive data collection protocol with higher incentives: an additional \$5 prepaid screening incentive and a doubled incentive of \$80 for completing the main survey.
4. **Phase 4: Mail** (weeks 17 – 20). A subsample, determined by budgetary constraints, of nonresponding HUs will be mailed a one-page eligibility survey. Similarly, a subsample of main survey nonrespondents will be mailed a one-page questionnaire that includes several questions of key importance to NSFG, and informed by the reasoned ability to be asked without the context of the main survey. Both sets of mailings will include a \$1 prepaid incentive. Note that Phase 4 is not intended to collect data for the full main survey. The primary objective of the eligibility survey is to identify additional ineligible HUs that can be removed from the denominator of response rate calculations. Data from the one-page main survey questionnaire can be used to measure nonresponse bias and inform nonresponse weighting adjustments.

Nonresponse Bias Analyses

Table 1 outlines our overall strategy for evaluating nonresponse bias, which can be categorized into three types of analysis. The first will be to examine descriptive statistics regarding response rates. The second and third will be investigations into what Little and Rubin (2019) refer to as *ignorable* and *nonignorable* nonresponse bias, respectively. The former is evidenced by observable differences in demographic characteristics and key survey outcomes that are corrected in the NSFG estimates. Analysis of ignorable nonresponse bias also offers the opportunity to assess the overall efficacy of each phase of data collection, since meaningful mitigation of nonresponse bias requires responses obtained from these to impart substantive differences on the distribution of the survey outcomes.

Nonignorable nonresponse bias is of greatest interest and generally requires special designs to measure. Our Phase 4 NRFU data collection is designed with this goal in mind. As described in Section 4 of OMB No. 0920-0314 Supporting Statement A, comparable estimates to benchmark NSFG key outcomes against are difficult to identify, either because of population coverage incompatibilities or scope (e.g., pregnancies resulting in a live birth vs. all pregnancies). We can still make use of benchmark estimates for comparisons of change over time that should be less susceptible to measurement differences across surveys.

Table 1: Three Types of Nonresponse Bias Analyses to be Conducted for NSFG 2022 - 2029.

| Analysis Type | Examples |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Descriptive Statistics on Response Rates | <ul style="list-style-type: none"> • Tables of response rates by data collection phase, pertinent sampling frame variables, paradata, and demographics • Plots of trends in response rates over quarterly sample releases |
| 2. Investigations into Ignorable Nonresponse Bias | <ul style="list-style-type: none"> • Tables comparing base-weighted demographic distributions of respondents against target population figures derived from the American Community Survey • Presentation and commentary on parameters of the response propensity model(s) utilized to adjust for unit nonresponse • Tables comparing base-weighted key outcomes of respondents from Phases 1 and 2 against respondents from Phase 3 |

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| | <ul style="list-style-type: none"> • Tables comparing base-weighted key outcomes using respondents from Phases 1 and 2 against base-weighted key outcomes using respondents from Phases 1, 2, and 3 |
| 3. Investigations into Nonignorable Nonresponse Bias | <ul style="list-style-type: none"> • Tables comparing distributions of key outcomes and demographics derived from the Phase 4 NRFU one-page questionnaire versus distributions observed for respondents in (1) Phase 3 only and (2) Phases 1, 2, and 3 combined • Compare trends in estimates to estimates of change in other surveys (e.g., from the National Health Interview Survey) |

References

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