

WIC Infant and Toddler Feeding Practices Study-2

Review completed by NASS Sampling and Frame Development Section

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BACKGROUND

The USDA Food and Nutrition Service (FNS) administers the Supplemental Nutrition Program for Women, Infants, and Children (WIC). This program is designed to “provide federal grants to states for supplemental foods, health care referrals, and nutrition education for low-income pregnant, breastfeeding, and non-breastfeeding postpartum women, and to infants and children up to age five who are found to be at nutritional risk.”

The WIC Infant and Toddler Feeding Practices study 2 (ITFPS-2) is a longitudinal study designed to ascertain nutritional and other information of infants and children (up to six years old; one year beyond their WIC age eligibility) enrolled in the program and who aged out of the program¹. Currently FNS is requesting to extend the data collection timeframe from six to nine years old (four years beyond their WIC age eligibility) and compile information on children that withdrew from the study before they were five years old. FNS will use this information to improve their WIC services. FNS noted they “will not make generalizations beyond the study sample.”

NASS has been requested to review FNS’s Year 9 (Y9) Extension plan to extend the ITFPS-2 study age from six to nine years old (Year 9 Follow up (Y9FU) Study) and compile information on children that withdrew from the study before they were five years old (Lost to Follow-Up (L2FU) Study).

SAMPLING FRAME, SAMPLE SIZE DETERINATION AND SAMPLE SELECTION

The WIC Base Study target population are all WIC participant infants: one-day to three months old. The sampling elements are all WIC participant infants who are yet to be born (still in the womb) and are less than three months old. Data for sampled units (already born and up to 3-months old) are ascertained from the mother or primary caregiver; and WIC records, hospital and healthcare providers.

WIC uses a two-phase sample design: the first two phases to sample WIC sites before sampling infants who are yet to be born or less than three months old.

1. The first phase sampling frame comprises WIC sites.

- a. The sampling frame was stratified into 40 strata using WIC agency plan characteristics.
- b. A sample of WIC sites are selected.

¹ The original (Base) ITFPS-2 was designed to collect information for infants and children up to two years old. The data collection time frame was extended three times: the first time to increase the study age to three, then five and finally six.

2. The second phase sampling frame comprises the WIC sites selected during the first phase.
 - a. The sampling frame is screened to determine eligibility.
 - b. A sample of WIC sites are selected.
 - i. Pregnant women and mothers or caregivers enrolling an infant under three months old are identified to participate in the study.

FNS determined the target sample size of 2,805 is adequate to measure differences between 24 month old infant subgroups. The sample increases to 7,840 after adjusting for subgroups response, consent, live birth and eligibility rates.

For the first phase sampling frame, 160 sites (four per strata) were selected. For the second phase, after screening, 80 sites (two per strata) were selected. The overall sample was allocated equally: 98 samples per selected WIC site were selected.

The sample for the Y9FU Study comprises children that are still participating in the ITFPS-2 Study and are nine years old. Ten percent of the Y9FU Study sample who complete the first interview will be randomly selected (sub-sampled) for a (dietary intake) second interview.

The sample for the L2FU Study comprises children that withdrew from the ITFPS-2 Study before they were five years old and are now nine years old.

DATA COLLECTION

For the Y9FU Study sample, a presurvey letter will be mailed to the mothers/caregivers before data are collected from the mothers/caregivers via a computer assisted telephone interview (CATI) when the child is nine years old. To improve response, inaccessible mothers/caregivers will be reminded about the interview via email, mail, phone or text.

For the Y9FU Study sample, a letter and a measurement card will be mailed to the mothers/caregivers. The letter instructs mothers/caregivers to take their nine-year old child to a WIC site or a health care professional so that they can be measured (height, weight, etc.). The letter also instructs the mothers/caregivers to mail completed measurement card back to WIC.

For the Y9FU Study sub-sample, mothers/caregivers will be informed during the first interview that they will be contacted at a specific date and time for a second (dietary intake) CATI interview.

For the L2FU Study sample, data will be obtained from WIC administrative data. Correspondence and educational materials were sent to these WIC sites to enhance response to the data request.

To help mitigate non-response, quite a few measures will be taken, including educating WIC State Agencies and WIC site point-of-contacts on the Y9FU Study; sending birthday cards to

mothers/caregivers of the Y9FU Study Sample and sending nine-year old birthday cards to the nine year old children of the Y9FU sample; increasing money incentive to continue participation overtime; and text and email reminders during the data collection periods.

SUMMARY

The study authors plan to use standard design-based methods for estimation and variance estimation that will lead to confidence intervals on means and percentages, and hypothesis tests on contrasts of means and percentages. The only participants that will receive a positive weight for the Y9 interview will be those who responded to the Y9 interview. Weighting will be used to adjust for nonresponse to the initial interview and to adjust for attrition and other nonresponse that results in failure to complete the interview (in this case, the Y9 interview). For this study, 40 replicates weights will be created for the purpose of standard error calculation, and the replication approach will be a modified balanced repeated replication (BRR) method.

COMMENTS AND SUGGESTIONS

The goals of the ITFPS-2 Y9 Extension to improve WIC services were adequately explained. The Y9FU and L2FU Study samples, data collection strategies, nonresponse strategies, nonresponse weighting, and summarization seem to comprise an adequate sample plan. The following are several comments and suggestions regarding the sample plan.

Sampling Frame, Sample Size Determination and Sample Selection

1. The first phase sampling frame process to create 40 strata were not clear.
2. After the second phase WIC site selection; the selection of the mothers/caregivers within a 'window' were not clear.
3. It's not clear how the Y9FU Study subsample will be selected.

Data Collection

1. For the Y9FU Study sample, it instructs mothers/caregivers – who were just at a WIC site - to mail measurement results back to WIC. Why not drop it of at the WIC site or have the WIC site mail it back.
2. Incentives to participate in the study seems like they should work.
3. Will sampled mothers/caregivers receive a copy of the questionnaire?
4. It is not clear if the first or second interview correspondence timeframe overlap with the weight measurement card correspondence timeframe.
5. It is not clear if Y9FU Study sample interviews will occur periodically as children turn nine years old; or if there will be one designated survey period.

Summary

1. The sample size may not be effective in conducting the hypothesis tests based on the reduced sample from the base study and the content of the sample. The supplemental sample was designed to ensure participants with certain characteristics were represented. Through attrition that may no longer be the case. While it appears that hazard models of ordinal data with repeated measures have been used to impute data; it is unclear what data would be imputed.
2. Authors noted for generic characteristics with certain given percent prevalence, the projected sample sizes at age 9 years are expected to yield confidence interval half-widths ranging from 2.9 to 11.6 percentage points for 95 percent confidence intervals, and from 2.5 to 9.7 percentage points for 90 percent confidence intervals, and are expected to yield CVs ranging from 3.7 percent to 23.7 percent (for the range of estimates considered). Explicit mathematical formula for sample size calculation should be provided in terms of half-width of given confidence limit, precision, sample size and prevalence.