

# METHODOLOGY REPORT

## Delaware Contraceptive Access Now (DelCAN): Endline Survey

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## Overview of Methods

The *Delaware Contraceptive Access Now* (DelCAN) Endline survey (hereafter referred to as the Endline) was conducted to assess women's awareness and utilization of contraceptive methods in the state of Delaware. The survey was conducted by NORC at the University of Chicago and funded by a foundation focused on education and health issues. NORC was responsible for all data collection, data processing, and weighting and imputation activities that are described in this report. The survey procedures and data collection protocol were reviewed and approved by the NORC Institutional Review Board (IRB).

The purpose of the survey was to assess contraceptive use and understand reproductive health practices among women ages 18-44 in the state of Delaware and in a comparison state, Maryland. Households were selected randomly using address-based sampling (ABS) methods for this multi-mode study. Any woman aged 18-44 years old living in a sampled household was eligible to participate. The following report summarizes the methods used for the Endline study. Data collection began in February 2021 and concluded in October 2021. In keeping with the standards set forth by the American Association for Public Opinion Research (AAPOR) Transparency Initiative, the report covers the required elements that allow research consumers to assess the rigor and appropriateness of the research methodology.<sup>1</sup>

### Sample Design

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The ABS frame for each state was constructed using an extract of the United States Postal Service (USPS) computerized delivery sequence (CDS) file<sup>2</sup>, and enhanced with an age-targeted list. This design allowed NORC to attain considerably higher coverage rates for the relatively rare populations the survey targeted than would be otherwise possible. NORC geocoded the CDS, which contains essentially all households that received mail during November 2020. NORC then appended area-level demographic information from the American Community Survey (ACS) to the address frame. Next, NORC matched that address frame to a list of addresses identified by a second vendor<sup>3</sup> as likely to contain women in the target age range (18-44 years old). This procedure allowed NORC to oversample households on the frame who were flagged as likely to contain a woman in our target age range while still maintaining the coverage of the CDS.

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<sup>1</sup> See <https://www.aapor.org/Standards-Ethics/Transparency-Initiative/FAQs.aspx>

<sup>2</sup> Licensed from the vendor Valassis. The CDS may, at times, be referred to as the Delivery Sequence File (DSF).

<sup>3</sup> The second vendor was Marketing Systems Group.

In addition, we stratified the frame using data from the ACS to target women more likely to be in poverty and a member of a racial or ethnic minority. We defined the “high density” stratum, or oversample area, in each state as those Census tracts in the top decile of the proportion of population below 200% of poverty, plus the top decile of proportion non-White non-Hispanic not contained in the first. So, our “high density” stratum represented the highest concentration of poverty and minority tracts in their respective states. The list matching and area stratification steps resulted in four strata in each state: CDS-Only low density, CDS-Only high density, List low density, and List high density. NORC then oversampled addresses depending on if they were on the age-targeted list and/or in a high density poverty or minority tract by fielding a larger proportion of addresses relative to the “low” strata.

### Sample Size and Batch Releases

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The sample was designed to yield 4,000 completed interviews in Delaware and 3,000 in Maryland. When sample is prepared for a survey, statisticians organize the sample into “replicates,” which are random subsamples of the overall sample drawn for the survey. Replicates allow statisticians to manage the sample and control the release of sample in particular strata to meet study objectives, achieve targeted sample sizes, and maximize response rates. A best practice for sample release plans is to release sample replicates in “batches” (i.e., groups of replicates released simultaneously). Batch releases allow statisticians to achieve two objectives: (1) monitor whether sampling and productivity assumptions used during the sample design phase are achieved during survey fielding and (2) use the productivity rates observed during fielding to guide decisions about the size and type of future sample releases.

NORC released the first batch in February 2021 and used actual productivity rates to inform decisions about the size of subsequent sample releases. The Batch 1 sample release included approximately 70% of the sample in each state that NORC expected would be needed to achieve at least 4,000 completes in Delaware and 3,000 completes in Maryland. Actual realized yields for Batch 1 were somewhat higher than assumed, specifically for those cases from the age-targeted lists that were in low density areas. As a result, it was not necessary to release cases from age-targeted lists in low density areas in Batch 2. A grand total of 62,600 addresses were released (47,500 in Batch 1 and 15,100 in Batch 2), which represented about 90% of the original assumptions. Table 1 below provides a summary of the sample released in each state.

**Table 1.** DelCAN Endline Sample Summary

Batch	Total	CDS-Only, Low Density	CDS-only, High Density	List, Low Density	List, High Density
DE Batch 1	26,000	10,700	3,200	8,800	3,300
DE Batch 2	9,200	7,200	1,700	0	300
DE Total	35,200	17,900	4,900	8,800	3,600
MD Batch 1	21,500	8,800	3,200	7,300	2,200
MD Batch 2	5,900	2,700	2,600	0	600
MD Total	27,400	11,500	5,800	7,300	2,800

## Questionnaire

### Overview of the Questionnaire

The Endline questionnaire explored respondents’ past and current use of contraceptives, including reasons for not using contraceptives, as well as their pregnancy history, health status, and opinions on abortion. The questionnaire was offered in English and Spanish. Overall, the questionnaire items administered for Delaware and Maryland respondents were nearly identical, apart from state-specific text fills and an additional question for Delaware respondents, which asked respondents’ whether they had visited any specific health care facilities in the state. The final instruments can be found in Appendix A.

### Questionnaire Development

In October 2020, the funder provided NORC with an initial draft of the Endline questionnaire. This questionnaire was based on the DelCAN Baseline questionnaire. To facilitate analysis across two points in time (Baseline administration and Endline administration), many questionnaire items were retained from Baseline, including the items that compose the abortion list experiment (see below for additional detail). Several items from Baseline were revised or updated for clarity or for consistency with other questionnaires in the Survey of Women suite of surveys. To minimize respondent burden and maintain a similar questionnaire length to Baseline, numerous questionnaire items were removed. The new questionnaire items added to the Endline are outlined in Table 2 and the questionnaire items removed or updated between Baseline and Endline administrations are outlined in Table 3.

**Table 2.** List of New Questionnaire Items

Item Name	Item Text
AGE_PROBE	What if you had some categories? Is your age...
COVID	In the past year, has the COVID-19 (coronavirus) pandemic affected you in any of the following ways?
IUD_WHEN_INSERT	In what month and year did you last have an IUD inserted?
IUD_WHEN_REMOVE	If you are no longer using that IUD, in what month and year did you have it removed or was it expelled?
IUD_PRESSED_TO_KEEP	Did you ever feel pressured by a medical provider to keep in the IUD that you were last using or are still using?
IMPLANT_WHEN_INSERT	In what month and year did you last have an implant inserted?
IMPLANT_WHEN_REMOVE	If you are no longer using that implant, in what month and year did you have it removed?
IMPLANT_PRESSED_TO_KEEP	Did you ever feel pressured by a medical provider to keep in the implant that you were last using or are still using?
JOB_DISRUPT	In the PAST 12 MONTHS, did you leave a job or school because...?
INS_ALLYR	Did you have health insurance during all of the past 12 months?
NOINS_ALLYR	For how many of the past 12 months were you WITHOUT health insurance?
IQFP	Please rate the healthcare provider you saw most recently for birth control with respect to the following qualities.
CHARAC_BC	How important are each of the following characteristics to you in deciding which birth control method to use?
TUBAL_WHEN	In what month and year did you have the tubal sterilization or “Essure” operation?
TUBAL_REVERSAL	As things look to you now, if your tubal sterilization could be reversed safely, would you want to have it reversed? Would you say...
PRESS_IUDUSER	How much pressure did you feel from a medical provider to have the IUD inserted?
PRESS_IUD_NONUSER	Did you ever feel pressure from a medical provider to use an IUD when you would have rather used another method or no method at all?
MUCHPRESS_IUD	Thinking about the most recent time that you felt pressure from a medical provider to use an IUD, how much pressure did you feel?
PRESS_IMPLUSER	How much pressure did you feel from a medical provider to have the implant inserted?
PRESS_IMPLNONUSER	Did you ever feel pressure from a medical provider to use an implant when you would have rather used another method or no method at all?
MUCHPRESS_IMPL	Thinking about the most recent time that you felt pressure from a medical provider to use an implant, how much pressure did you feel?
BC_ANY	If you could use any birth control method you wanted, what method(s) would you use?
BC_USE	What is the main reason you are not currently using the birth control method you want to use?
FREQ_METHOD	Thinking about the past 3 months, how often did you use a method of birth control when you had penile-vaginal sex or sex that could lead to pregnancy?
DAP1	The following statements relate to your thoughts and feelings about <i>the idea of becoming PREGNANT in the next 3 months</i> . Even if you do not think you can become pregnant for partner or physical reasons, please imagine how you would feel about becoming pregnant.

Item Name	Item Text
DAP2	The following statements relate to your thoughts and feelings about <i>the idea of having a BABY in the next year</i> . Even if you do not think you can have a baby for partner or physical reasons, please imagine how you would feel about having a baby.
PERC_INFERT	Some people are unable to get pregnant, even if they want to. How likely do you think it is that you are infertile or would have difficulty getting pregnant?
LEGAL_4PT	Do you think abortion should be:

**Table 3.** List of Revised or Removed Questionnaire Items

	Item Names		
<b>Revised Questionnaire Items</b>	ABLIST AGE ALIVE_NUM BC_CURR_B BC_SATIS BC_SWITCH BCTROUBLE BC_UNFAIR BIRTHCTL_B CLINICS	EDUC EMPLOY GENDER HLTHCARE HLTH_INS INCOME INCOME_PROBE INCOME_SELF LASTDRVISIT	MEDCARE_YN NOCONTRA NOIMPLANT NOIUDUSE NOHLTHCARE PPL_HOME PRSNL_DR RECD_DR TUBAL
<b>Removed Questionnaire Items</b>	ABRT_AVAIL ABRT_EASE ABRT_REGRET ABRT_SAFE BABY_HI BABY_HUSBAND BABY_PRVNT BABY_NOMIND BABY_TRY BABY_WGT BC_FRIENDS BIRTHCTL_M DESC_GENDER DR_FAVOR	EMERGENCY HEARD_BC HI_PAY INFOLEARNED IUDTRBLEVER LAST_SEX_F LAST_SEX_G MISCAR_NUM PP_BC PP_BC_6WKS PP_BC_WHICH PP_GETBC PP_IUDTRBL PP_IUDUSE	PREG_AGAIN PREGFEELNS PREG_LIFE PREG_NUM PREG_UNPLAN PRENATALCARE PRENATALVST PRETERM RELIG_DESC RELIGIOUS RELIG_SERV STOPBC STOPBC_YN

### Question Variation Abortion List Experiment

Sections of the questionnaire collected information about women’s experiences with, and attitudes toward, induced abortion. Based on the work of Moseson et al. (2015)<sup>4</sup>, a randomized list experiment was included within the survey design so that each respondent saw two lists of health topics, such as being diagnosed with breast cancer in the past 10 years, ever having a pap smear, or ever taking a prescription

<sup>4</sup> Moseson, H., Massaquoi, M., Dehlendorf, C., Bawo, L., Dahn, B., Zolia, Y. & Gerdt, C. (2015). Reducing under-reporting of stigmatized health events using the List Experiment: Results from a randomized, population-based study of abortion in Liberia. *International Journal of Epidemiology*, 44, 1951–1958. <http://doi.org/10.1093/ije/dyv174>

medication. One of the lists also contained the item “ever had an abortion (ended a pregnancy on purpose)”. One-half of the sample saw the abortion item in the second list (Version A) and the other half saw the abortion item in the first list (Version B). Respondents were asked to report the number of items they have experienced for each list. Table 4 shows the verbatim question variations used.

**Table 4.** Version Variable Question Text Response Options

Version	Variable	Question Text	Response Options
A	ABLIS_1A	On the following list of health experiences, how many of these have you personally experienced? You don't need to say which ones, just how many.	<ul style="list-style-type: none"> <li>▪ Ever used or taken medication for which a prescription is needed</li> <li>▪ Ever had a pap smear</li> <li>▪ Diagnosed with breast cancer in the past 10 years</li> </ul>
A	ABLIS_1B	On this next list of health experiences, how many of these have you personally experienced? You don't need to say which ones, just how many.	<ul style="list-style-type: none"> <li>▪ Ever used a birth control method (such as: pills, an IUD or implant, condoms, or the shot)</li> <li>▪ Ever had an abortion (ended a pregnancy on purpose)</li> <li>▪ Had a tubal or ectopic pregnancy in the past year</li> <li>▪ Ever had your blood pressure measured</li> </ul>
B	ABLIS_2A	On the following list of health experiences, how many of these have you personally experienced? You don't need to say which ones, just how many.	<ul style="list-style-type: none"> <li>▪ Ever used or taken medication for which a prescription is needed</li> <li>▪ Ever had a pap smear</li> <li>▪ Ever had an abortion (ended a pregnancy on purpose)</li> <li>▪ Diagnosed with breast cancer in the past 10 years</li> </ul>
B	ABLIS_2B	On this next list of health experiences, how many of these have you personally experienced? You don't need to say which ones, just how many.	<ul style="list-style-type: none"> <li>▪ Ever used a birth control method (such as: pills, an IUD or implant, condoms, or the shot)</li> <li>▪ Had a tubal or ectopic pregnancy in the past year</li> <li>▪ Ever had your blood pressure measured</li> </ul>

### Spanish Language Instrument

All revised or newly added questionnaire instructions and items were translated from English into Spanish by NORC native Spanish speakers. If an Endline questionnaire instruction or item was the same as Baseline, the Baseline Spanish translation was used.

### Questionnaire Testing

NORC Desktop Publishing Staff formatted the hardcopy self-administered questionnaires (SAQs) that were mailed to respondents. NORC IT staff programmed the web version of the survey into the Voxco data collection software. Voxco is a commercial case management system that is designed to manage



telephone, web, and mixed-mode surveys. NORC conducted extensive systematic testing of the web survey to verify that the technological aspects of the survey functioned as intended. As part of normal testing procedures, staff checked question text, skip logic, and case disposition assignment.

The SAQ was formatted to be consistent with the web survey to the extent possible (i.e., questions that were forced choice were maintained as such on the SAQ) and embedded follow-up questions were presented as indented items with arrows directing respondents in the SAQ. The SAQ had to rely on written skip instructions whereas the web survey was programmed to automatically skip to the next appropriate question based on the respondent's previous answers. The web landing page and SAQ cover each contained the same four iconic pictures for a given state, along with the study logo.

## Survey Design

### Multi-Mode Process

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Data collection involved a sequential multi-mode approach with a series of mailings and non-response follow-up activities. The data collection approach was based on recommendations made by Dillman and colleagues<sup>5</sup> and NORC's prior experience with the DelCAN Baseline surveys. All respondents were first offered the web survey; respondents who did not complete the online version were subsequently mailed a SAQ. When appropriate, email invitations were sent to those women who were rostered by the initial respondent from the household (see [Household Rostering and Procedures section](#)).

### Survey Case Flow

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In total, up to seven survey requests were attempted (Figure 1). Sampled addresses were first mailed an invitation to participate in the survey online and then a reminder postcard. Sampled addresses that did not complete the survey online were sent a second web letter. If they still did not complete online, they were mailed a SAQ with a cover letter and postage-paid business reply envelope. Then, another reminder postcard was mailed. Non-responders were then mailed a second SAQ packet. As a final attempt to secure participation, a web letter was mailed to non-responders that started the online survey but had not completed the web or an SAQ. These final letters were sent out 4 to 6 weeks before data collection closed.

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<sup>5</sup> Dillman, D., Smyth, J. and Christian, L. 2014. *Internet, mail, and mixed-mode surveys. The tailored design method*, 4th edition. Wiley, Hoboken, New Jersey.

**Figure 1.** Survey Case Flow

NORC purposely sent three mailings leading respondents to the web survey before the first SAQ mailing. This mailing strategy was used because (1) the web survey capitalizes on programmed skip logic, (2) it reduces the chances for potential duplicate completes – one in web and one in SAQ, (3) it prompts respondents who broke off from the web to log in to complete, and (4) providing a mode choice to respondents at the beginning of data collection (e.g. web and SAQ simultaneously) is associated with lower response rates.

### Household Rostering and Procedures

Based on the American Community Survey, there are approximately 1.1 women between ages 18 and 44 per household in each state. This data informed sampling as households sometimes have more than one woman between 18 and 44 years of age. As a result, NORC employed a technique known as rostering, where women could roster other eligible women from their household for the study.

The rostering operated in the following way. First, NORC contacted women to participate in the survey through web letters or SAQ mailings. Women who completed the web survey were asked at the conclusion of the survey whether other women between the ages of 18 and 44 resided in the household<sup>5</sup>. If there were other eligible women in the household, the respondent was asked to provide their names and email addresses. An email address allowed NORC to send a survey link and unique PIN to the rostered respondents. As the \$5 cash pre-incentive was given at the household level, rostered women who completed the survey did not receive the \$5 pre-incentive, but were eligible to receive a \$10 Amazon, Target, or Walmart gift code of their choice upon survey completion.

NORC followed a similar procedure with SAQ respondents. At the end of the SAQ booklet, there was an item that asked the respondent to provide the name and email address of other women in the household.

<sup>5</sup> Ineligible respondents who were male or out of the specified age range were also asked to report any women living in the household who may be eligible.

NORC sent email invitations to women whose names and email addresses were included in this section. Those that provided only a name and not an email did not receive an email or any additional mail.

NORC used the variable Y\_FSPAWN in the dataset to identify rostered cases. There were 504 spawned cases, resulting in 112 additional completed web surveys. All spawned cases completed via the web survey as we did not send spawns an SAQ booklet, but rather emailed them an invitation to the web survey.

## Data Collection Methods

### Mailed Materials

Data collection began in February 2021. Each sampled address was randomly assigned to Question Variation List Experiment Version A or B, and this randomly assigned condition was applied to the online survey and the SAQ booklet mailings. To identify households to receive the English-only or Bilingual (English/Spanish) versions of materials, NORC created a likely Spanish flag (Y\_FSPAN) which was derived from Spanish Linguistic Isolation information available from the ACS.

Each mailing provided households with project-specific contact information should they have questions about the study. All mailed materials featured the study logo and images selected for each state. The mailings are described below. Copies of all mailed materials are included as Appendix B.

### Web Mailings

- **Web invitation letter.** Households were first sent a letter via U.S. Postal Service first class mail that asked them to complete the survey online. In addition to the letter, households received an instructional insert explaining how to access the web survey and a pre-paid, \$5 cash incentive. The letter specified that eligible respondents completing the survey would receive a \$10 Amazon, Target, or Walmart gift code of their choice. The letter also outlined the purpose of the study and provided a web link and Personal Identification Number (PIN) to access the web survey. The project email address and toll-free telephone number were provided if the respondent had questions.
- **Web reminder postcard.** Approximately one week after sending the web invitation letter, a reminder postcard was sent to all households. The postcard reminded the households that they were sent a letter and asked them to complete the survey online if they had not done so already. The postcard also provided the project email and toll-free telephone number if the respondent had questions or misplaced their assigned PIN.

- **Web reminder letter.** Approximately three weeks after the web invitation letters were mailed, a follow-up letter was mailed to non-responding households. The letter reminded the household that eligible respondents could still complete the survey online and receive a \$10 Amazon, Target, or Walmart gift code of their choice. As with all other materials, the letter provided the project email and toll-free telephone number if there were questions. The instructional insert was included in this mailing, too.
- **Final web letter.** A final web letter was mailed to non-responders who had started the survey online to prompt them to complete it. The letter encouraged the households to complete the survey online before the data collection period ended. Again, this letter mentioned the \$10 Amazon, Target, or Walmart gift code for eligible respondents who completed the survey.

### SAQ Mailings

- **SAQ Packet 1.** Households who did not complete the survey online were sent a SAQ packet that contained a cover letter asking them to complete a hard copy of the questionnaire, a copy of the questionnaire, a pre-paid \$5 cash incentive, and postage-paid business reply envelope to use when returning the completed questionnaire. The letter outlined the purpose of the study and provided an email address and toll-free telephone number if household members had questions. The letter stated that the survey would take 15 minutes to complete and provided a reminder that eligible respondents would receive a \$10 Amazon, Target, or Walmart gift code of their choice after returning a completed survey booklet.
- **SAQ reminder postcard.** Approximately one week after sending the SAQ, a reminder postcard was sent to all households that received SAQ Packet 1. The postcard thanked those respondents who had already participated and encouraged those who had not yet participated to complete the survey. It also provided an email and toll-free telephone number in case the respondent misplaced their assigned PIN should they choose to do the web version of the survey.
- **SAQ Packet 2.** This packet contained a cover letter, a copy of the questionnaire, and a postage-paid business reply envelope to use when returning the completed questionnaire. Again, the letter reminded households of the \$10 Amazon, Target, or Walmart gift code for eligible respondents who completed the survey.

Prior to all mailings, those households that had already completed the survey or were marked as undeliverable addresses were removed from the mailing list. Mailing counts and schedule are outlined in Table 5.

**Table 5.** Mail Date and Counts by State and Batch

Mailing	Batch 1			Batch 2		
	DE	MD	Mail Date	DE	MD	Mail Date
Web Invitation Letter	26,000	21,500	02/01/2021	9,200	5,900	05/21/2021
Web Reminder Postcard	26,000	21,500	02/09/2021	9,200	5,900	05/28/2021
Web Reminder Letter	23,498	19,676	03/01/2021	8,475	5,591	06/11/2021
SAQ Packet 1	21,714	18,738	03/23/2021	7,897	5,416	06/25/2021
SAQ Reminder Postcard	21,714	18,738	03/30/2021	7,897	5,416	07/02/2021
SAQ Packet 2	19,149	16,252	05/18/2021	6,887	4,770	08/06/2021
Final Web Letter	221	158	08/18/2021	36	34	09/03/2021

### Web Survey Procedures

The web invitation letter informed household members about the purpose of the study and that their household was randomly selected for participation. The letter asked for a female in the household (age 18-44) to complete the questionnaire. The letter informed potential respondents that participation was voluntary and that they could elect not to answer any questions they did not wish to answer.

The letter included the web URL and a unique Personal Identification Number (PIN) for the respondent to access the survey. A toll-free telephone number and email address were provided if respondents had questions about the study. When respondents accessed the web survey, they were taken to the landing page where they entered their PIN and were given information about the survey (Figure 2). It was here that respondents could first toggle between the English and Spanish versions of the survey, and they could do so on every subsequent screen.

**Figure 2.** Delaware Web Landing Page

[Español](#)

**Welcome to the Delaware Survey of Women!**

Researchers at NORC at the University of Chicago are asking for your help with an important study about women's health. The information you provide will help researchers better understand the methods of birth control that women use and how they feel about those methods. We will also ask about your experiences receiving reproductive healthcare and other issues related to your health and well-being.

Some topics may be sensitive for you, and you can decline to answer any question. The survey takes about 15 minutes to complete. Participation is voluntary and you may skip any questions you don't wish to answer. If you are eligible and complete the survey, we will offer you an additional \$10 gift code to your choice of Amazon, Target or Walmart. If you have questions about your rights as a survey participant before starting the survey, you may call the NORC Institutional Review Board Administrator

Please enter your personal access code listed in the invitation email/letter we sent to you and then press the "Submit" button below.

**SUBMIT**

For technical assistance, please contact NORC at [womenshealth@norc.org](mailto:womenshealth@norc.org) or (877) 396-4064.

Once respondents logged into the web survey, they were asked for their age and gender. If respondents were outside the target age range (younger than 18 or older than 44) or were not female or transgender, they were considered ineligible. Ineligible respondents were taken to the end of the survey and asked if there were any eligible women ages 18-44 in the household (i.e., household rostering procedures).

The web survey originally flagged any individual that provided a birth year outside the range of 1977 to 2003 as age ineligible, possibly excluding 44-year-old individuals with a birth year of 1976. On February 17, 2021, the survey logic was adjusted to accept 1976 as an eligible birth year. Between survey launch and this adjustment, 104 individuals with a birth year of 1976 were screened out of the survey. If a respondent contacted the study team and indicated they were eligible, their web survey was reset so they could respond to the survey. Otherwise, these individuals were excluded from further mailings and their surveys remained closed. These respondents have a disposition of ineligible in the final sample file. In consultation with the funder and the University of Maryland, NORC added a field that asked respondents for birth month to calculate age more precisely. These changes were made to the web survey on March 4, 2021.

A toll-free telephone number and project email address were listed at the bottom of each screen if respondents had questions or needed technical help. The number for the NORC Institutional Review Board Administrator was listed on the login page. Respondents could exit the survey at any time by selecting the “Save and Exit” button. This button saved their progress within the survey so that they could return to the last question answered upon logging back in.

### Self-Administered Questionnaire (SAQ) or Mailed Survey Procedures

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The SAQ was formatted as similar as possible to the web survey to reduce the potential for mode effects. In the cover letter accompanying the SAQ, respondents were informed about the purpose of the study and that their household was selected randomly for participation. Respondents were asked to complete the questionnaire and return it in the enclosed postage-paid business reply envelope. The questionnaire itself included the consent statement on the second page. On the third page, respondents were presented with descriptions and/or pictures of some key birth control methods that were referenced in the survey. The same descriptions and/or pictures were also displayed in the web survey. All respondents were required to answer the first two eligibility questions. Returned questionnaires that indicated no females or no transgender individuals ages 18-44 lived in the household were receipted as ineligible. The back cover listed instructions for returning the questionnaire to NORC in addition to the toll-free telephone number and email if they had questions.

NORC’s Telephone Survey and Support Operations (TSSO) Department processed returned SAQs. Completed and partially completed SAQs were sent to Data Services, Inc. (DSI) for data entry. DSI posted electronic data files for NORC each week using the secure file transfer protocol (SFTP) and returned the keyed booklets back to NORC. NORC provided DSI with a questionnaire crosswalk that described the variables, variable categories, and numerical descriptions of these categories to be data entered.

### Data Collection Results

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#### *Sample Disposition and Response Rates*

NORC calculated the overall response rate using the American Association for Public Opinion Research (AAPOR) Response Rate 3 (RR3) with CASRO assumptions (Table 6).<sup>6</sup> This response rate calculation is the product of the resolution rate, the screener rate, and the interview completion rate. The right-most

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<sup>6</sup> See The American Association for Public Opinion Research. 2015. Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 8<sup>th</sup> edition. [https://www.aapor.org/AAPOR\\_Main/media/MainSiteFiles/Standard-Definitions2015\\_8thEd.pdf](https://www.aapor.org/AAPOR_Main/media/MainSiteFiles/Standard-Definitions2015_8thEd.pdf)

column in Table 6 indicates the components for each rate and the formula that is used to calculate a given rate.

It is important to note that the response rate is calculated using all released sampled addresses and combines results from both data collection modes. The overall response rate summarizes the highest or most advanced data collection status a sampled address achieved during data collection. This is because cases, particularly those who advanced to receiving SAQ mailings, have been worked in multiple data collection modes and have different disposition codes by mode (e.g., a case could be unresolved in the web mode if they never responded/logged in to the survey, but resolved as an eligible household and completed interview in the SAQ mode).

Table 7 displays the number of completed surveys by mode, strata, and language. In addition, Figure 3 shows the projected and actual completes over the life of data collection.



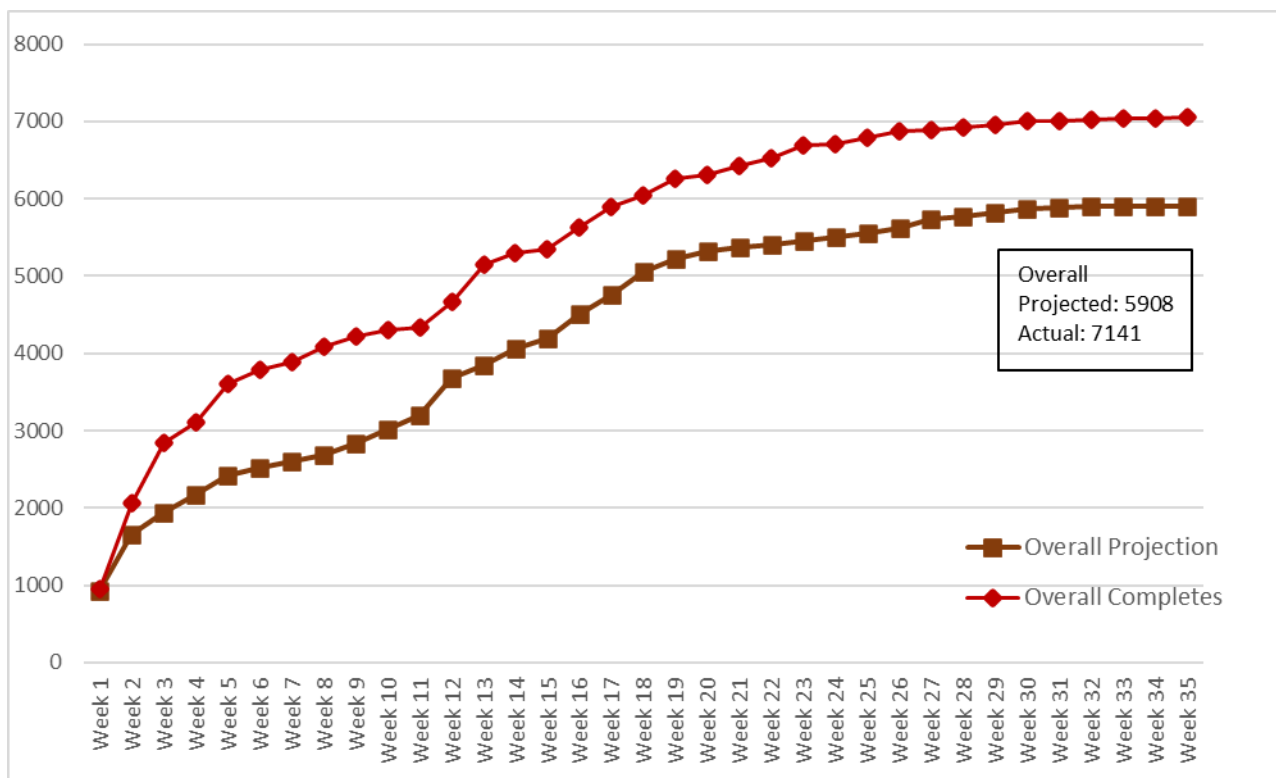
**Table 6.** Response Rates

Final Combined Key Indicators Report									
Measure		Both States		Delaware		Maryland		Definition	
<b>Released Cases</b>								Total released cases	
Cases Attempted		62,600		35,200		27,400			
<b>Current Status of All Released Cases</b>									
U2	Likely Household	44,166	70.6%	24,427	69.4%	19,739	72.0%	Cases which have not logged into web or have been mailed to and no mail has been returned/no contact has been made	
U0	Confirmed address, known household, unscreened	431	0.7%	255	0.7%	176	0.6%	Known households, unscreened	
NR	Non-residential	3,627	5.8%	1,974	5.6%	1,653	6.0%	Non-residential (Undeliverable)	
MM	Mail Received – Complete Status TBD	0	0.0%	0	0.0%	0	0.0%	Complete Status TBD - Waiting for data entry	
Log In		14,376	23.0%	8,544	24.3%	5,832	21.3%	Log-in to Survey	
J	Ineligible	6,856		4,269		2,587			
ER	Eligible Household, no Member Completes (Partial)	499		287		212		Households that have not completed any member interviews (Partials)	
	<i>Parent</i>	491		282		209		Households that have not completed any member interviews, partials (parent)	
	<i>Spawn</i>	8		5		3		Households that have not completed any member interviews, partials (spawn)	
C	Complete	7,141	102.0%	4,063	101.6%	3,078	102.6%	Members that have completed the interview	
	<i>Parent</i>	7,029		3,993		3,036		Members that have completed the interview (parent)	
	<i>Spawn</i>	112		70		42		Members that have completed the interview (spawn)	
Case Status Undetermined		0		0		0		Case needs review and category assigned	
Complete Target		7,000		4,000		3,000			
<b>Production Rates</b>									
Resolution Rate		29.4%		30.6%		28.0%		$(NR+U0+ER\ Parent+C\ Parent+J+MM) / \text{All Attempted Addresses (All Resolved Addresses / All Attempted Addresses)}$	
Residential Address Rate		80.3%		81.7%		78.4%		$(U0+ER\ Parent+C\ Parent+J+MM) / (NR+U0+ER\ Parent+C\ Parent+J+MM)$ (All Confirmed Households / All Resolved Addresses)	
Screener Completion Rate		97.1%		97.1%		97.1%		$(ER\ Parent+C\ Parent+J) / (ER\ Parent+C\ Parent+U0+J)$ (Screened households / All Confirmed Households)	
Interview Completion Rate		93.5%		93.4%		93.6%		Total C/ (Total C+Total ER) (Completed Interviews / All Eligible Screened Households)	
AAPOR Response Rate 3 (CASRO Assumptions)		26.7%		27.8%		25.4%		Resolution Rate * Screener Completion Rate * Interview Completion Rate	

**Table 7.** Completes by Mode, Strata, and Language

	Completes in DE	Completes in MD
<b>Total</b>	<b>4,063</b>	<b>3,078</b>
<i>Mode</i>		
Web	3,095	2,338
SAQ	968	740
<i>Strata</i>		
CDS-only, high	327	302
CDS-only, low	1,311	982
List, high	552	347
List, low	1,873	1,447
<i>Language</i>		
English	4,053	3,070
Spanish	10	8

**Figure 3.** Overall Projected vs. Actual Completes by Week



## Timing Analysis

Based on the performance of similar questionnaires in previous states, NORC anticipated most respondents would complete the web survey in approximately 20 minutes.<sup>7</sup> To conduct a timing analysis among web respondents, NORC selected only respondents who completed the entire web questionnaire, which was defined as having reached the last survey item – an open-ended comments field asking respondents to share any additional information they wanted to provide. Respondents did not need to provide a response in the field; they need only reach the screen to be included in this timing analysis.

NORC examined the timing data that was available in the web questionnaire. To do so, we first assessed the data for any outliers, which was defined as 3 standard deviations above the mean overall timing (the mean before excluding outliers was 22.33 minutes, and the standard deviation was 11.07 minutes). We identified 74 cases that were considered outliers (i.e., their mean interview timing was greater than 55.54 minutes).

After excluding outliers, the mean interview timing for the 4,575 cases included in the analysis was 21.51 minutes, with a standard deviation of 8.77 minutes. The median interview time was 19.38 minutes, and the modal interview time was 15.65 minutes. Statistics broken down by state, and excluding outliers, are summarized in Table 8.

**Table 8.** Delaware and Maryland Timing Analysis in Minutes

State	Mean	Median	Mode	Standard Deviation
Delaware	21.45	19.39	20.10	8.65
Maryland	21.59	19.33	14.97	8.93

## Web Breakoff Analysis

Of the 5,957 eligible survey participants who began the web survey, 92% completed it in its entirety. A total of 494 respondents who began the web questionnaire broke off or left the survey before reaching the final questionnaire item. Examining where respondents breakoff within the questionnaire can inform

<sup>7</sup> Timing data is available only for the web survey responses, not for SAQ responses. SAQ respondents could be asked to record the date and time they started and completed the survey, but that would increase respondent burden. Furthermore, it would be prone to inaccuracies as SAQ respondents would likely approximate their start and stop times, and they can start and stop the SAQ multiple times and in a variety of places which would require them to record timing data multiple times. For these reasons, SAQ timing data is not recorded, and the web timing data provides a suitable proxy for estimating time to complete the questionnaire.

future questionnaire development and assist analysts with understanding where respondents decide to end their participation.<sup>8</sup>

A web survey variable captured the last survey question filled for each respondent. NORC used this variable to identify all respondents who left the web survey prior to completing the last applicable questionnaire item (i.e., we only selected respondents who broke off while completing the questionnaire items and not the administrative information that is collected at the end of the survey). Table 9 displays the total number of breakoffs observed by questionnaire section as well as the variable(s) within the section where breakoffs occurred most often.

**Table 9.** Number of Breakoffs by Section

Questionnaire Section	Total Breakoffs (N)	Variable(s) within the Section with the Most Breakoffs
Screener	2	AGE (2)
General Health	29	HLTHCARE (14)
Past Birth Control Use	35	BIRTHCTL_INTRO (6), BCTRBL_YN (6)
Sources of Medical Care Information	20	BC_TF (8)
Demographics	71	HOME_1YR (17)
Reproductive Health	115	RECD_DR (19), CHARAC_BC_2 (19)
Current Birth Control Use	131	BC_CURR_A (26)
Past Pregnancies	87	DAPINTRO (42)
Public Policy	4	ABRT_IDENT (3)

There are many factors that contribute to breakoffs such as respondent fatigue, questionnaire complexity, use of grid-format questions,<sup>9</sup> and survey length.<sup>10</sup> Breakoffs tended to concentrate in the reproductive health and current birth control use sections of the questionnaire, which may indicate that respondents left the survey due to fatigue, as the reproductive health section is positioned in the middle of the questionnaire.

<sup>8</sup> Breakoff information either is not available or is incomplete for SAQ respondents because SAQ respondents who decide to withdraw their participation or stop responding to the hardcopy questionnaire booklet simply do not return their partially completed SAQ. Consequently, the breakoff analysis is limited to participants who broke-off from the web survey and never returned to complete the questionnaire.

<sup>9</sup> Couper, Mick P, Roger Tourangeau, Frederick G. Conrad, Chan Zhang. 2013. “The Design of Grids in Web Surveys.” *Social Science Computer Review*, 31(3):322–345

<sup>10</sup> Peytchev, Andy. 2009. “Survey Breakoff.” *Public Opinion Quarterly*, 73(1):74-97

## Data Preparation

### Data Editing and Cleaning

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The web survey was programmed with internal skip logic so that respondents would automatically be directed to the correct questions based on their previous responses. This process limits the amount of data cleaning required at the end of data collection.

A series of data editing and post-processing cleaning procedures were implemented to provide the most accurate and comprehensive data files. Throughout data collection, SAS programs were run to identify any errors that occurred in the web system. This allowed the research team to reconcile inconsistencies in the data and fix system or questionnaire errors as they occurred, minimizing additional data cleaning that would be required at the end of data collection. For the SAQs, the data entry vendor was directed to enter responses as written without altering any information provided by respondents. Then, if necessary, the research team ran data cleaning steps based on the procedures established.

NORC did not implement extensive data cleaning steps for SAQ cases in which respondents entered values that were out of range. For example, if a respondent entered a response greater than the maximum possible for the variable ABLSIT\_1A (0 to 3 experiences) this was not cleaned during data processing. Likewise, if a SAQ respondent selected more than one response to a question that required them to select only one answer, the entry was not cleaned by NORC. It will appear in the data file in the format of x,y (e.g., 1, 2 if the respondent checked both response #1 and #2). NORC delivered verbatim responses as provided by the respondent (the exception being if PII was mentioned in the verbatim response; that information was redacted). Data also were not cleaned when respondents entered values inconsistent with the skip logic given. For example, if a respondent selected that they did not experience difficulties getting health care in the past 12 months for HLTHCARE, but then checked “I couldn’t afford it” for NOHLTHCARE when the respondent should have skipped NOHLTHCARE those inconsistent answers were preserved in the data file. Data cleaning of this sort is best reserved for the organization conducting data analysis so that they can adjust values to their preference and purpose of the analysis.

### Final Datasets

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At the conclusion of the Endline, NORC delivered two datasets – a sample file and an interview file. Brief descriptions of each file are provided below.

### Sample File

The sample file contains all cases selected for the Endline and includes the unique case identification number, the final outcome of the case, the state of origin, and any other relevant sample information.

### Interview File

The interview file consists of all questionnaire response data for eligible cases for the Endline as well as weights and summaries of imputed values. The variable DISP identifies the final status for each case – whether complete or partial<sup>11</sup>. In addition to response data, the interview contains relevant paradata (e.g., completion mode, completion date) for each completed case.

## Data Weighting

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For the purpose of weighting, a file was created that contained one record per sampled household, regardless of completion, plus all completed cases for secondary and tertiary women in the household. Because we do not know the *household* eligibility in cases where an ineligible respondent tried to complete the survey, all ineligible households are treated the same as never contacted households.

The weighting scheme for the Endline involved the following steps:

1. Base sampling weight ( $W_1$ );
2. Adjustment for unknown eligibility ( $W_2$ );
3. Adjustment for non-response to the questionnaire ( $W_3$ );
4. Adjustment for household size ( $W_4$ );
5. Post-Stratification ( $W_5$ )

Each individual weighting step is discussed in detail below.

### Step 1. Base sampling weight

The base weight reflects the probability of a household being selected and is equal to the inverse of the probability of selection. There are four (4) strata in each state, and each stratum has a different base weight (Table 10). Because we assume a 100% match of list sample addresses to addresses on the Delivery Sequence File (DSF), the base weight calculation assumes that all unsampled lines on the list frame (for which we know the count, but not the specific addresses of unpurchased lines) are also on the DSF. Therefore, sample lines in the four list strata receive a base weight equal to the inverse of the sum of

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<sup>11</sup> A complete is a respondent who is eligible and answered all or most of the questions about pregnancy and contraception. A partial is a respondent who is eligible but did not answer all or most of the questions about pregnancy and contraception.

the list probability and the DSF probability for the corresponding strata. Examples of the list strata vs. DSF strata base weight calculations are:

- Stratum 1 (Delaware Low Density DSF)

$$W1 = 1 / \left( \frac{DE \text{ Low Density DSF Sample Count}}{DE \text{ Low Density DSF Frame Count}} \right)$$

- Stratum 6 (Maryland Low Density List)

$$W1 = 1 / \left( \frac{MD \text{ Low Density DSF Sample Count}}{MD \text{ Low Density DSF Frame Count}} + \frac{MD \text{ Low Density List Sample Count}}{MD \text{ Low Density List Frame Count}} \right)$$

**Table 10.** Strata Definitions

Stratum	State	Minority Density	List or DSF*	Number of Completes	Base weight	Step 2 Adjustment for Incompletes
1	Delaware	Low	DSF	1,391	11.26	.2413
2	Delaware	Low	List	1,996	6.90	.2892
3	Delaware	High	DSF	368	7.21	.2435
4	Delaware	High	List	595	3.75	.3416
5	Maryland	Low	DSF	1,057	115.48	.2809
6	Maryland	Low	List	1,523	53.97	.3942
7	Maryland	High	DSF	330	46.97	.3077
8	Maryland	High	List	380	22.55	.4453

\*Note: DSF is synonymous with the computerized delivery sequence (CDS) file mentioned in the sampling section of this report.

### Step 2. Adjustment for unknown eligibility

The first adjustment to the weights consists of an adjustment to account for those cases that were unable to be contacted, and thus have an unknown eligibility status. Because the survey specifically asks for “a female in the household age 18-44”, there is no screener built into the instrument for the review of project eligibility. Therefore, W2 uses the Census Public Use Microdata Sample (PUMS 2019 1 Year) data to estimate the household eligibility. The assumption is made that list sample is 50% more productive in obtaining women of the desired age group. Completed cases received  $W2_{adj} = 1$ , as we know they are eligible. Incomplete cases received  $W2_{adj}$  according to the below calculations (these rates are shown in Table 10).

Stratum 1 (Delaware Low Density DSF)

*DE Low Density DSF Eligible Count* =

$$= DE \text{ Low Density DSF Sample Count} * \frac{PUMS \text{ Eligible HHs in DE}}{PUMS \text{ HHs in DE}}$$

$$W2_{adj} = \frac{DE \text{ Low Density DSF Eligible Count} - DE \text{ Low Density DSF Complete Count}}{DE \text{ Low Density DSF Sample Count} - DE \text{ Low Density DSF Complete Count}}$$

Stratum 6 (Maryland Low Density List)

*MD Low Density List Eligible Count*

$$= MD\ Low\ Density\ List\ Sample\ Count * \left( \frac{PUMS\ Eligible\ HHs\ in\ MD}{PUMS\ HHs\ in\ MD} + .5 * \frac{PUMS\ Eligible\ HHs\ in\ MD}{PUMS\ HHs\ in\ MD} \right)$$

$$W2adj = \frac{MD\ Low\ Density\ List\ Eligible\ Count - MD\ Low\ Density\ List\ Complete\ Count}{MD\ Low\ Density\ List\ Sample\ Count - MD\ Low\ Density\ List\ Complete\ Count}$$

**Step 3. Adjustment for interview nonresponse**

The next adjustment compensates for differences in response across subgroups for those that are eligible for the survey. Adjustment cells for this weight are defined by state and high/low density. These variables were determined by running logistic regression models defining the dependent variable as survey completion and the independent variables as known variables for all cases in the sampling frame that could be associated with differential nonresponse. Models were run using state, ACS- derived Spanish flag, high/low density, List or DSF, and presence of vendor phone number. Only state and high/low density had significant associations with completion rates, so this step used these two variables.

$$W3 = W2 * W3adj, \text{ if respondent}$$

$$W3 = 0, \text{ if nonrespondent}$$

where *W3adj* is the final non-response adjustment factor (the inverse of the estimated response rate shown in Table 11), different for each combination of state and high/low density, and defined as:

**Table 11.** Non-Response Cell Structure and Response Rates

Stratum	State	Minority Density	List or DSF	Number of Completes	Step 3 Adjustment for Non-Response	Estimated Response Rate
1	Delaware	Low	DSF	1,391	2.67	37.49%
2	Delaware	Low	List	1,996		
3	Delaware	High	DSF	368	3.21	31.20%
4	Delaware	High	List	595		
5	Maryland	Low	DSF	1,057	2.98	33.60%
6	Maryland	Low	List	1,523		
7	Maryland	High	DSF	330	4.94	20.26%
8	Maryland	High	List	380		

DE Low Density *W3adj* Example

$$W3adj = \frac{Sum\ of\ W2\ for\ Low\ Density\ Sample}{Sum\ of\ W2\ for\ Low\ Density\ Completes}$$



*Step 4. Adjustment for household size*

The final adjustment is for within household eligibility. Although up to 3 eligible females replied in each household, there is not consistent survey data for total number of eligible women in each household. Therefore, NORC again used ACS PUMS data to estimate within household eligibility, this time doing so by race/ethnicity of the household. For households with one respondent, NORC assumed the household to have the same number of eligible women as the average PUMS household with one plus eligible women in the same state and race/ethnic group. For households with two respondents, NORC assumed the household to have the same number of eligible women as the average PUMS household with two plus eligible women in the same state and race/ethnic group. This pattern was continued for the households with three eligible respondents. Table 12 shows the adjustments made.

**Table 12.** Within Household PUMS Estimates for W4 Adjustment

Number of Eligible Survey Respondents	Household Race/Ethnicity	Source of PUMS Estimate	Delaware PUMS Estimate	Maryland PUMS Estimate
1	Unknown	Average # Eligible Women in HH with 1 plus Eligible Women	1.10	1.13
1	American Indian/Alaska Native non-Latino (AIAN NL)	Average # Eligible Women in AIAN NL HH with 1 plus Eligible Women	1.00	1.04
1	Asian non-Latino	Average # Eligible Women in Asian/Hawaiian Pacific Islander NL HH with 1 plus Eligible Women	1.07	1.11
1	Hawaiian/Pacific Islander non-Latino	Average # Eligible Women in Asian/Hawaiian Pacific Islander NL HH with 1 plus Eligible Women	1.00	1.00
1	African American non-Latino	Average # Eligible Women in African American NL HH with 1 plus Eligible Women	1.11	1.16
1	Latino	Average # Eligible Women in Latino HH with 1 plus Eligible Women	1.12	1.20
1	White non-Latino	Average # Eligible Women in White non-Latino HH with 1 plus Eligible Women	1.08	1.07
1	Multiple/Other non-Latino	Average # Eligible Women in Multiple/Other non-Latino HH with 1 plus Eligible Women	1.47	1.43
2	Unknown	Average # Eligible Women in HH with 2 plus Eligible Women	2.14	2.16
2	American Indian/Alaska Native non-Latino (AIAN NL)	Average # Eligible Women in AIAN NL HH with 2 plus Eligible Women	2.00	2.00
2	Asian non-Latino	Average # Eligible Women in Asian/Hawaiian Pacific Islander NL HH with 2 plus Eligible Women	2.00	2.28

Number of Eligible Survey Respondents	Household Race/Ethnicity	Source of PUMS Estimate	Delaware PUMS Estimate	Maryland PUMS Estimate
2	Hawaiian/Pacific Islander non-Latino	Average # Eligible Women in Asian/Hawaiian Pacific Islander NL HH with 2 plus Eligible Women	2.00	2.00
2	African American non-Latino	Average # Eligible Women in African American NL HH with 2 plus Eligible Women	2.27	2.14
2	Latino	Average # Eligible Women in Latino HH with 2 plus Eligible Women	2.00	2.14
2	White non-Latino	Average # Eligible Women in White non-Latino HH with 2 plus Eligible Women	2.14	2.10
2	Multiple/Other non-Latino	Average # Eligible Women in Multiple/Other non-Latino HH with 2 plus Eligible Women	2.12	2.33
3	Unknown	Average # Eligible Women in HH with 3 plus Eligible Women	3.05	3.26
3	American Indian/Alaska Native non-Latino (AIAN NL)	Average # Eligible Women in AIAN NL HH with 3 plus Eligible Women	3.00	3.00
3	Asian non-Latino	Average # Eligible Women in Asian/Hawaiian Pacific Islander NL HH with 3 plus Eligible Women	3.00	3.11
3	Hawaiian/Pacific Islander non-Latino	Average # Eligible Women in Asian/Hawaiian Pacific Islander NL HH with 3 plus Eligible Women	3.00	3.00
3	African American non-Latino	Average # Eligible Women in African American NL HH with 3 plus Eligible Women	3.00	3.17
3	Latino	Average # Eligible Women in Latino HH with 3 plus Eligible Women	3.00	3.40
3	White non-Latino	Average # Eligible Women in White non-Latino HH with 3 plus Eligible Women	3.13	3.11
3	Multiple/Other non-Latino	Average # Eligible Women in Multiple/Other non-Latino HH with 3 plus Eligible Women	3.00	3.53

$W4a$  was calculated as:

$$W4a = W3 * W4adj, \text{ if respondent}$$

$$W4a = 0, \text{ if nonrespondent}$$

$$\text{where } W4adj = \frac{\text{PUMS Within Household Eligibility}}{\text{Number of Completes in HH}}$$

We compare the total weights with the number of eligible women in each state based on the 2019 PUMS data. In order to have the weights total the estimated number of eligible women in each state, we multiply

the household size adjusted weights by  $\frac{\text{Total PUMS target population}}{\text{Total weights}}$ . These ratios were 1.51 in Delaware and 1.28 in Maryland. Tables 13a and 13b summarize the pre-raking weights.

**Table 13a.** Summary of Weights Variables – Delaware

Weights Variables	N	Min	Q1	Mean	Median	Q3	Max	Sum
Wt1	35,275	3.75	6.90	8.84	11.26	11.26	11.26	311,661
Wt2	31,006	1.28	2.00	3.04	2.72	2.72	11.26	94,183
Wt3	4,350	12.02	18.42	21.65	18.42	30.02	30.02	94,183
Wt4a	4,350	12.02	19.82	23.70	19.82	32.31	44.17	103,081
Wt4	4,350	18.18	29.97	35.84	29.97	48.86	66.80	155,894

**Table 13b.** Summary of Weights Variables – Maryland

Weights Variables	N	Min	Q1	Mean	Median	Q3	Max	Sum
Wt1	27,445	22.55	46.97	75.09	53.97	115.48	115.48	2,060,980
Wt2	24,858	10.04	14.45	29.24	21.28	32.45	115.48	726,759
Wt3	3,290	111.30	160.64	220.90	160.64	343.71	343.71	726,759
Wt4a	3,290	116.09	171.56	247.19	186.67	367.08	491.51	813,245
Wt4	3,290	149.03	220.26	317.34	239.64	471.26	630.99	1,044,041

### Step 5. Post-Stratification

The implementation of post-stratification weights consists of a two-part process, first imputation and then raking. The imputation step prepares for the raking process by imputing values for all missing raking variables.

NORC used hot-deck imputation method to impute the missing values for nine variables (see Table 14). Hot deck imputation is a cost-efficient imputation method that protects relationships between variables that are observed in the non-missing data. The method and program used have been used for many other NORC studies, including the Survey of Doctorate Recipients and the National Immunization Survey. The percentage of missing values imputed ranges from 1.66% to 15.10%, which is not atypical when imputing for several demographic variables. The amount of missing data is only over 10% for income and children under 18 in the household, and if we were interested in imputing individual values, we would consider multiple imputation. However, NORC is only imputing to categories, so hot deck is appropriate despite these rates of imputation.

**Table 14.** Summary of Imputed Data

Variable	Percent Imputed		
	Delaware	Maryland	Both
Age	0%	0%	0%
Nativity	1.66%	2.10%	1.85%
Education	1.95%	2.43%	2.16%
Employment	2.41%	2.86%	2.60%
Marital Status	2.67%	3.04%	2.83%
Race/Ethnicity	3.49%	4.10%	3.76%
Housing Tenure	5.56%	6.26%	5.86%
Children Under 18 in Household	12.51%	14.65%	13.43%
Income	15.10%	14.13%	14.69%

Raking is performed on the post-imputation dataset in order to achieve representativeness of the target population across variables of interest, and to reduce bias in the survey estimates. NORC tested numerous designs, including the full design, which is defined as inclusion of all nine raking variables, each specified with the original and preferred number of categories. (i.e., two for most variables, but five for age, three for race/ethnicity, and four for the combination of education and income). The final raking design includes 8 variables as shown in Table 15. This set of variables represents the optimal design based on several criteria, including design effect, and weight distribution.<sup>12</sup>

**Table 15.** Raking Variables

Variable	Categories
Age	18-24, 25-29, 30-34, 35-39, 40-44
Education * Income	Some college or less, <75k; Some college or less, 75k+; Bachelor's degree+, <75k; Bachelor's degree+, 75k+
Race/Ethnicity	African American non-Latino, White non-Latino, All Other
Nativity	Born in US or Territories, Born Outside of US
Marital Status	Now Married, Not Currently Married
Children Under 18 in Household	One or More Children Under 18 in HH, No Children Under 18 in HH
Housing Tenure	Own, Rent/Other
Employment	Currently Employed, Not Currently Employed

While in the absence of any further objectives the full design would be preferred, it was necessary to consider other factors. In addition to the goal of controlling on as many important dimensions as possible,

<sup>12</sup> Because we do not publish any survey estimates it was not necessary to adjust any margins of error for the design effect. We do publish the design effect due to weighting and this is reported in Table 16.

we identified the key objectives of limiting and maintaining a consistent design (and therefore consistent precision of estimates) in the study.

**Table 16.** Design Effect

Delaware	Maryland
1.85	1.86

The final weighting design adjusts for disagreement between the sample and population distributions for important demographic variables, while providing a consistent method across states and minimizing the design effect. Relative to the full design as a baseline, the proposed design achieves reduced variability, and maintains reasonable consistency across other metrics, striking an appropriate balance between bias reduction and variability. Tables 17a and 17b show the final descriptive statistics on WT5 for Delaware and Maryland.

**Table 17a.** Summary of Final Weight Variable - Delaware

Delaware							
N	Min	Q1	Mean	Median	Q3	Max	Sum
4,350	3.34	15.39	35.84	25.63	45.00	348.19	155,894

**Table 17b.** Summary of Final Weight Variable – Maryland

Maryland							
N	Min	Q1	Mean	Median	Q3	Max	Sum
3,290	31.75	138.16	317.34	226.06	386.41	3,722.31	1,044,041

## Deliverables

The following data files and supporting documents were delivered to the funder.

- Interview and sample data files in three formats with variable and value labels applied – SAS/SPSS/STATA.
- Codebook
  - The codebook provides a list of variables by order of appearance in the questionnaire as well as an alphabetical list of variable definitions.

- The variable labels and value labels are provided along with frequency counts.
- The codebook also provides means tables for all continuous variables.
- Final Key Indicators (KI) Report

For more information about the study, please contact:

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## Strengths and Limitations of the Study

### Strengths

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The Endline collected valuable information about birth control use among women residing in Delaware and Maryland, including the types of birth control methods used, any problems experienced, access to healthcare services, and key demographic information. Strengths of the study include the survey sampling design, choice of multiple incentives, and multiple data collection modes.

#### *Sample Design and Size*

The ABS sample design allows for probability sampling at the household level as the probability of selection is known for each sampled address. Enhancing the CDS with age-targeted lists results in sampling and data collection efficiencies in that addresses that are thought to have a greater likelihood of housing an age-eligible woman can be sampled at a higher rate relative to addresses that are not flagged as such. Rostering households allowed us to recruit additional women to complete the survey while realizing operational and financial efficiencies. Additionally, the large number of survey responses targeted and achieved by the Endline study will increase the power of analyses in addition to allowing for analyses that may have not had sufficient power otherwise.

#### *Expanded Incentive Protocol*

To ensure that the incentives offered appeal to a diverse population, NORC offered respondents a \$10 gift code to their choice of Amazon, Walmart, or Target.

Previous research conducted by the Pregnancy Risk Assessment Monitoring System (PRAMS) survey indicates that a variety of post-incentives appeals to a broader swath of respondents<sup>13,14</sup>, and a consumer report from 2016 noted that the use of Amazon was not widespread in lower income and minority neighborhoods<sup>15</sup>. Furthermore, the Arizona, New Jersey, and Wisconsin Survey of Women Baseline experienced success with these gift card offerings.

The process by which incentives were disbursed remained largely the same as the DelCAN Baseline with the exception of an additional question added to collect the respondent's incentive choice. Respondents on the web received the incentive code on-screen and they also could elect to receive it by email. SAQ respondents could request the incentive code via email or mail. For mailed incentive codes, a printed barcode was added to the incentive mailing that would allow women to redeem their code at any point of purchase.

### Multimodal Survey

The Endline involved two sequential modes of data collection – web followed by SAQ. The web survey represents a relatively quick and efficient way to collect survey data from respondents who are connected to the internet. Moreover, the web survey allows for real-time data quality checks and automated skip logic which enhances data quality and reduces respondent burden. However, not all sampled households are willing or able to complete via the web. The ability to mail a hardcopy SAQ to web non-responders allows respondents who cannot or will not participate by web an avenue to complete the survey and it addresses concerns about non-response bias (should only web surveys be offered) and survey coverage.

### Limitations

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The questionnaire was offered in English and Spanish and was self-administered. These language and literacy requirements may have excluded non-English or non-Spanish speakers/readers as well as women with low literacy rates. Additionally, by nature of the ABS methodology used, populations without an address, such as those experiencing homelessness, were likely excluded.

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<sup>13</sup> Dykema, Jennifer, John Stevenson, Chad Kniss et al. 2012. Use of Monetary and Nonmonetary Incentives to Increase Response Rates among African Americans in the Wisconsin Pregnancy Risk Monitoring System. *Maternal and Child Health Journal*, 16(4):785-91.

<sup>14</sup> Shulman, Holly B., Denise V. D'Angelo, Leslie Harrison, et al. The Pregnancy Risk Assessment Monitoring System (PRAMS): Overview of Design and Methodology. *American Journal of Public Health*, 108(10):1305-13.

<sup>15</sup> Ingold, David and Spencer Soper (2016). Amazon Doesn't Consider the Race of Its Customers. Should It?. *Bloomberg*, April 21, 2016.

## Obstacles Encountered and Solutions Implemented

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### *USPS Delays*

In February 2021, large snowstorms occurred across the country, leading to delays in mail delivery and subsequently, initial survey activity. NORC took prompt action and worked with its printing vendor to receive mail tracking reports that showed the percentage of a mailing that had been scanned at its destination USPS facility. This allowed NORC to monitor approximately how many respondents had received a mailing and adjust the mailing schedule when needed. For example, the web reminder letter for Batch 1 was originally scheduled to be mailed two weeks after the web reminder postcard, but the tracking reports allowed NORC to make informed decisions about survey activity and delay the mailing by one week to allow respondents whose mail was delayed by the snowstorms the opportunity to complete the survey prior to including them in the web reminder mailing. NORC continued to employ this strategy when general USPS delays were experienced in late winter and early spring 2021.

### *COVID-19*

Since the outbreak of novel coronavirus in early spring of 2020, NORC has taken additional precautions to protect staff and account for production difficulties caused by the ongoing COVID-19 pandemic. We extended the data collection period to allow mailed materials to return over a longer period and offered many opportunities to complete remotely.



# Appendices

## Appendix A – Formatted Questionnaire

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*See attachment*

## Appendix B – Mailing Materials

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*See attachment*