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MEMORANDUM FOR ACS Research and Evaluation Workgroup

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Subject: 2019 ACS Due Dates Test Report

Attached is the American Community Survey (ACS) Research and Evaluation report, “2019 ACS Due Dates Test Report.” This report evaluates the effect on self-response of using a due date in the ACS mail contact materials in the last mailing.

If you have any questions about this report, please contact Michael Risley at 301-763-6881 or Broderick Oliver at 301-763-9350.

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2019 ACS Due Dates Test



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EXECUTIVE SUMMARY

The U.S. Census Bureau primarily communicates with people in housing units sampled for participation in the American Community Survey (ACS) through five mail communications. This process produces a self-response rate of about 57 percent (Baumgardner, 2020). The Census Bureau has been proactive in maintaining this self-response rate through continuous research and experiments (U.S. Census Bureau, 2017). The 2019 ACS Due Dates Test contributes to this effort by investigating the effect of including a due date in the ACS self-response mail materials. The goal was to determine which treatment, if any, should be implemented into ACS production.

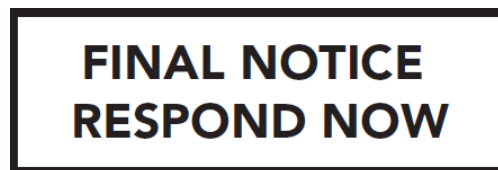
The 2019 ACS Due Dates Test consisted of a control treatment and five experimental treatments that tested a due date in the last mailing of the five possible self-response mailings that a sampled address could receive. Shown in Table E1, the due date in the experimental treatments was located on the envelope side or letter side of the pressure seal mailer, or both.¹

Table E1. Treatments in the 2019 ACS Due Dates Test

| Treatment | Location of due date on envelope side | Location of due date on letter side |
|-----------|---------------------------------------|-------------------------------------|
| Control | No due date | No due date |
| Box | No due date | Call-out Box Only |
| Envelope | Call-out Box | Call-out Box Only |
| Neutral | No due date | Call-out Box and “Neutral” Message |
| Add | No due date | Call-out Box and “Add” Message |
| Remove | No due date | Call-out Box and “Remove” Message |

See Figures E1 through E4 for images of the call-out box variations in the fifth mailing pressure seal mailer. See Table E2 for the Neutral, Add, and Remove consequence due date messages.

Figure E1. Call-out box on envelope side (Control and all experimental treatments except Envelope treatment)



¹ The “envelope side” is the opposite side of the pressure seal mailer where the address information is contained. It is not a separate envelope.

Figure E2. Call-out box on the envelope side (Envelope treatment only)

**FINAL NOTICE
RESPONSE DUE:
NOVEMBER 22, 2019**

Figure E3. Call-out box in the letter (Control)

Respond now at <https://respond.census.gov/acs>
Log in using this user ID:
OR complete and mail back your paper questionnaire.

Figure E4. Call-out box on the letter side (all experimental treatments)

Due: November 22, 2019
Respond now at <https://respond.census.gov/acs>
Log in using this user ID:
OR complete and mail back your paper questionnaire.

Table E2. Message Variations for the inside of the Fifth Mailing Pressure Seal Mailer

| Treatment | Due Date Consequence Message |
|-----------|--|
| Neutral | Respond by November 22, 2019, or a Census Bureau interviewer may come to your home to complete the survey in person. |
| Add | If you do not respond by November 22, 2019, we will add you to our schedule for a visit. |
| Remove | Respond by November 22, 2019 to be removed from our scheduled for a visit. |

The primary findings of this experiment were:

- By comparing the **Box** treatment to the **Control**, we found that adding a due date to the call-out box inside the letter *only* was not enough to increase self-response. However, by comparing the **Envelope** treatment to the **Control**, we found that adding a due date inside the letter and on the envelope side did increase self-response, which reduced data collection cost.
- Of the three treatments that included the due date in a consequence message, the **Add** and **Remove** treatments performed better than the **Control** among respondents who received the fifth mailing. However, only the **Remove** treatment remained significantly different than **Control** when the entire mailing universe was considered, which reduced data collection costs.

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- There was no evidence that the addition of a due date caused respondents to submit incomplete forms to meet the due date. No treatment was found to have a form completeness rate that was different from the **Control**.
- There was no evidence that the addition of a due date motivated the specific demographic groups examined to respond more than others. None of the experimental treatments had a demographic distribution that was significantly different from the **Control**.
- We predict a reduction in ACS production costs for both the **Envelope** treatment and the **Remove** treatment. The **Envelope** treatment is predicted to save approximately \$7 million annually and the **Remove** treatment is predicted to save \$4.3 million annually.

1. INTRODUCTION

Research has shown that when a request has a sense of urgency people are more likely to comply (Kotter, 2008; Gunelius, 2009). One way of creating a sense of urgency in a mail contact survey request is to use a due date. At the time of the test, the American Community Survey (ACS) mail contact materials did not contain an explicit deadline or due date. They did, however, contain implied due date messages such as “...please complete the survey online as soon as possible” and “Respond online today...”.

In a mail-package focus group conducted for the U.S. Census Bureau by Reingold, Inc., several participants volunteered that a stated deadline or due date would be a strong motivator for them to respond to the ACS in a timely fashion, especially when coupled with the “required by law” notice found on the ACS envelopes and letters (Reingold, 2014).

A due date may have an additional benefit. Research suggests that a due date can reduce respondent burden, if it aligns with the recipient’s mail prioritization process (Dillman, Smyth, and Christian, 2014). For example, many people sort their bills by due date, which helps them to prioritize bill payments. A survey request with no due date does not align with this prioritization process, placing an added burden on the survey recipient.

The purpose of the 2019 ACS Due Dates Test was to determine the effect on self-response of using a due date in the ACS mail contact materials in the last self-response mailing. This last mailing is a pressure seal mailer that makes a final pitch to encourage the remaining nonrespondent households to respond to the survey. The goal was to determine which treatment, if any, should be implemented into ACS production. This test determined the effect of a due date:

- In a call-out box on the “envelope side” of the pressure seal mailer.²
- In a call-out box on the “letter side” of the pressure seal mailer.³
- In a consequence message on the “letter side” of the pressure seal mailer that ties the due date to the possibility of a visit from a Census Interviewer.

2. BACKGROUND

2.1 Current ACS Data Collection Strategy

The ACS is an ongoing, nationwide survey conducted by the Census Bureau to produce detailed social, economic, housing, and demographic information. Each month, the Census Bureau sends

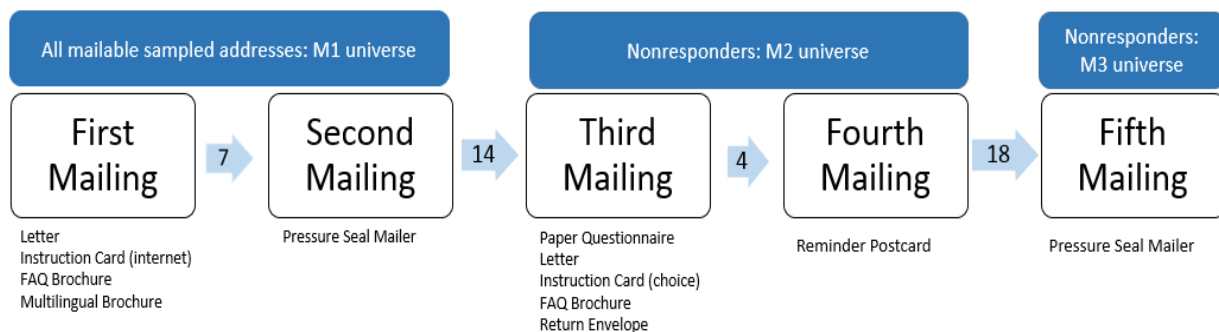
² A pressure seal mailer is a one-page document that contains a pre-applied adhesive that is folded and sealed with pressure. For detailed information about this type of mailer, see Risley, Barth, Cheza, and Rabe (2018). The “envelope side” is the side of the pressure seal mailer where the address information is contained. It is not a separate envelope.

³ The “letter side” is the non-address side where the letter is printed.

requests for survey participation to about 288,000 housing unit addresses, which is about 3.5 million addresses per year.⁴ Each monthly sample is considered a panel and is designed to be representative of the entire year and the entire sample frame. The data collection for housing units is conducted in two phases: a self-response phase, which lasts up to nine weeks, followed by a nonresponse followup phase, which lasts about four weeks.

In the self-response phase, the Census Bureau employs a mail contact strategy to encourage residents in sampled addresses to self-respond. The Census Bureau sends up to five mailings to a sampled address to motivate a self-response. See Figure 1 for a synopsis of the five mailings.⁵

Figure 1. Overview of the 2019 Production ACS Mail Contact Strategy



The days between mailings, displayed in the arrows, are approximate

The first and second mailings are sent to all mailable sampled addresses.⁶ The initial mailing package (*first mailing*) includes:

- A letter that invites recipients to participate in the ACS online and informs the recipients that they will receive a paper questionnaire in a few weeks if they are unable to or prefer not to respond online.⁷
- An instruction card that provides instructions to go online.
- A Frequently Asked Questions (FAQ) brochure.⁸

⁴ The ACS collects data for housing units and group quarters (GQs). Each year, approximately 20,000 GQs are visited to produce an annual sample of about 194,000 GQ residents. However, this project only focuses on housing unit data collection.

⁵ See the ACS Design and Methodology Report (U.S. Census Bureau, 2014) for detailed information about the ACS methodology.

⁶ The requirement for a “mailable” address in the United States is met if there is either a complete city-style address (includes a house number, street name, and ZIP Code) or rural-route address (includes a rural-route number, box number, and ZIP Code).

⁷ Prospective respondents can also complete the survey by telephone through the Telephone Questionnaire Assistance Center (TQA).

⁸ Due to the scheduled changes in ACS production materials in January 2020, this was not included in the materials used for any of the treatments for this test, including the Control.

- A Multilingual Brochure.

About seven days later, the Census Bureau mails a followup pressure seal mailer (*second mailing*) to these addresses to remind the recipients to respond online or wait for a paper questionnaire.⁹

About two weeks after the second mailing is sent, addresses from which we have received a response are removed from the address file to create a new mailing universe of nonresponders. The Census Bureau sends these nonresponders a questionnaire package (*third mailing*)—a package that includes:

- A paper questionnaire.
- An instruction card that provides instructions to go online or to return the completed paper questionnaire.¹⁰
- A FAQ brochure.¹⁰
- A return envelope.

This package is followed by a reminder postcard (*fourth mailing*), mailed about four days later.

About 18 days later, addresses from which we have received a response are again removed from the address file to create a new mailing universe of nonresponders. The remaining addresses are mailed a pressure seal mailer (*fifth mailing*); a final reminder to the recipients to respond to the survey.

The nonresponse followup operation begins between 17 to 24 days after the fifth mailing. Census Bureau representatives visit a sample of the remaining addresses and attempt to obtain a survey response through Computer-Assisted Personal Interviewing (CAPI). The CAPI operation lasts about four weeks. During this period, the Census Bureau still accepts forms completed through the self-response modes.

2.2 Literature Review

In 2014, Reingold, Inc., on behalf of the ACS, conducted a series of research studies aimed at improving the ACS mail packages and messaging. As part of this research, a series of focus groups were held to receive input on the mail materials. Several participants volunteered that a deadline would be a strong motivator for them to respond in a timely manner. Some suggested using specific dates and some suggested timeframes (Reingold, 2014).

⁹ A pressure seal mailer is a one-page document that contains a pre-applied adhesive that is folded and sealed with pressure.

¹⁰ Due to the scheduled changes in ACS production materials in January 2020, the instruction card and FAQ brochure were not included in the materials used for any of the treatments for this test, including the Control.

During the development of the experimental treatments the Census Bureau collaborated with researchers, Judd B. Kessler, of the University of Pennsylvania, and Christine L. Exley, of the Harvard Business School. They suggested that a stated due date coupled with a consequence message inspired by loss aversion theory has the potential to enhance cooperation in mail contact surveys. Loss aversion theory posits that people would rather avoid a loss than reap a reward because the pain of losing is psychologically more powerful than the pleasure of gaining.

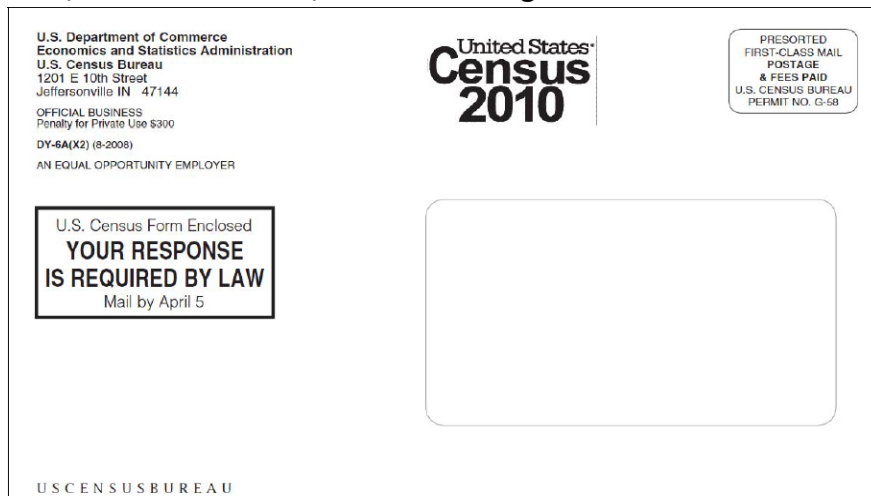
For example, telling customers that they could miss out on a great discount if they do not act now is more effective than offering them additional benefits if they act now. This reaction to loss is explained by the ownership effect. In general, people are averse to letting go of something they perceive as owning (Kahneman and Tversky, 1979; Kahneman and Tversky, 1992; Barberis, 2013; Kay, 2016).

Previous Census Bureau research, done for the decennial census, suggests that the inclusion of a due date can potentially boost survey self-response. A 2006 decennial census study found that giving people a deadline and a shorter interval (by one week) to complete the Census 2000 form led to a higher rate of mail response (Martin, 2009). The researchers believed that the effect of a compressed mailing schedule might be important for the deadline date to be effective, as it creates a sense of urgency.

The Martin (2009) study had two major shortcomings: (1) it was not able to differentiate the effects of the deadline messages from the compressed schedule, and (2) it was not able to analyze the effects of deadline messaging on the speed of mail returns. For these reasons, the Census Bureau conducted a follow-up study as part of the 2010 Census (Stokes, Reiser, Bentley, and Meier, 2011).

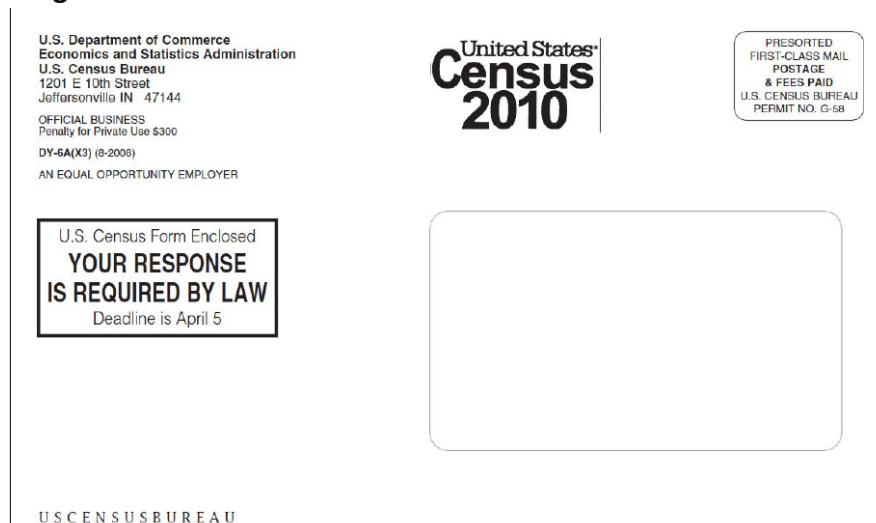
This follow-up study tested four types of deadline messages: Mild, Progressive, Nonresponse Followup (NRFU) Motivation, and Cost Savings. These themes were tested on the advance letter, the cover letter and outgoing envelope of the initial questionnaire mailing package, and the reminder postcard. As an example, the deadline message on the initial mailing outgoing envelope for the Mild, NRFU Motivation, and Cost Savings treatments is shown in Figure 2. These treatments used “Mail by April 5” as a deadline message.

Figure 2. Deadline Message on outgoing envelope for the Mild, NRFU Motivation, and Cost Savings treatments



The deadline message on the initial mailing outgoing envelope for the Progressive treatment is shown in Figure 3. This treatment used “Deadline is April 5” as a deadline message.

Figure 3. Deadline Message on outgoing envelope for the Progressive treatment



The deadline message displayed in the cover letter of the initial questionnaire mailing package for each of these themes is provided below:

- Mild: “Please complete and mail back the enclosed census form by April 5.”
- Progressive: “The deadline to complete and mail back the enclosed census form is April 5.”
- NRFU Motivation: “Please complete and mail your census form by April 5 so that you can avoid a personal visit from an interviewer.”

- Cost Savings: “Please complete and mail your census form by April 5. Mailing your census form on time saves money that would otherwise be used to follow up with you.”

Two major findings from the Stokes et al. (2011) study are provided below:

- Finding 1: The overall national-level mail return rate for the Mild, NRFU Motivation, and Cost Savings deadline message panels was significantly higher than the control.
- Finding 2: The Progressive deadline message panel’s replacement mailing return rate was significantly lower than the control.

2.3 Cognitive Testing

Prior to field testing the experimental treatments, the Census Bureau’s Center for Behavioral Science Methods (CBSM) cognitively tested the materials to assess participants’ awareness of and reaction to the due date messages and to assess if participants interpreted the “Neutral”, “Add”, and “Remove” consequence messages as intended. CBSM conducted 15 cognitive interviews in the Washington, D.C. metropolitan area between February and March of 2019.

The testing found that participants generally noticed the due date message, particularly in the callout box, and that participants interpreted the “Neutral” and “Add” consequence messages as intended. However, some participants did misinterpret the “Remove” consequence message.

The “Remove” consequence message tested read:

*Because your response is critically important to your local community and to your country, a Census Bureau interviewer may come to your home to complete the survey in person. **If you respond by November 22, 2019, we will remove you from our schedule for a visit.***

Three of the participants misinterpreted the message as saying, if they [the participant] *did not* respond, the Census Bureau would remove them from the schedule. Based upon these findings, we modified this message to increase clarity. The modified message read:

*Because your response is critically important to your local community and to your country, a Census Bureau interviewer may come to your home to complete the survey in person. **Respond by November 22, 2019 to be removed from our schedule for a visit.***

For more information about this cognitive test see Kephart et al. (Forthcoming).

3. METHODOLOGY

3.1 Experimental Design

The 2019 ACS Due Dates Test was conducted using the October 2019 ACS panel.¹¹ The monthly ACS production sample consists of approximately 288,000 mailable housing unit addresses divided into 24 nationally representative “methods panel groups” of approximately 12,000 addresses each. This test had six treatments, each randomly assigned two methods panel groups (approximately 24,000 addresses per treatment). The remaining 12 methods panel groups received production ACS materials.

For the 2019 ACS Due Dates Test, we studied the effect on self-response of using a due date in the fifth mailing—the last mailing that the remaining nonrespondent addresses receive as part of the self-response phase of data collection. Sections 3.1.1 through 3.1.6 describe the Control treatment and the five experimental due date treatments. A due date of November 22, 2019, was chosen for this test because that date was 10 days after the mail date of the mailing, November 12, 2019. This length provided enough time for the mail to arrive at the sample address, for recipients to respond by the due date, and for mail questionnaires to be received at NPC before the CAPI universe was created. Table 1 provides an overview of the placement of due dates in each treatment.

Table 1. Treatments in the 2019 ACS Due Dates Test

| Treatment | Location of due date on envelope side | Location of due date on letter side |
|------------------|--|--|
| Control | No due date | No due date |
| Box | No due date | Call-out Box Only |
| Envelope | Call-out Box | Call-out Box Only |
| Neutral | No due date | Call-out Box and “Neutral” Message |
| Add | No due date | Call-out Box and “Add” Message |
| Remove | No due date | Call-out Box and “Remove” Message |

3.1.1 Treatment 1 (Control Treatment)

In January 2020, as a result of the 2018 Mail Materials Test (Risley and Berkley, 2020), the Census Bureau updated the production ACS mail materials to improve the visual appeal of the mail materials and to better emphasize the mandatory nature of the ACS. For the 2019 ACS Due Dates Test, we preemptively used these new materials in all the treatments, as the new 2020 ACS materials would increase response prior to the fifth mailing and therefore change the universe of households that would potentially receive a due date in the fifth mailing. By using

¹¹ See Appendix A for dates of the mailout schedule for the October 2019 panel.

the 2020 ACS materials in the test, the results are closer to what we expect to occur with implementation.

All the materials in all five mailings used the updated 2020 ACS materials except for the cover of the questionnaire in the third mailing. Due to changes to a few questions, the paper size used in the ACS paper questionnaire was changed starting in January 2020. For this test, a questionnaire cover was used that was neither the 2019 production questionnaire cover nor the new 2020 ACS questionnaire cover. See Appendix B.1. The goal of this questionnaire cover was to approximate the new 2020 ACS production questionnaire cover while maintaining the 2019 paper size.

As shown in Appendix B, the fifth mailing for the Control treatment incorporated the following new elements from the 2018 Mail Materials Test:

- A call-out box on the “letter side” of the pressure seal mailer:

Respond now at <https://respond.census.gov/acs>
Log in using this user ID:
OR complete and mail back your paper questionnaire.

- A consequence message on the “letter side” of the pressure seal mailer that reads:

If you do not respond promptly, a Census Bureau interviewer may contact you with a personal visit to complete the survey.

- A call-out box on the “envelope side” of the pressure seal mailer:

**FINAL NOTICE
RESPOND NOW**

3.1.2 Treatment 2 (Box Treatment)

As shown in Appendix C, the Box treatment added a due date to the call-out box on the “letter side” of the pressure seal mailer used in the Control treatment:

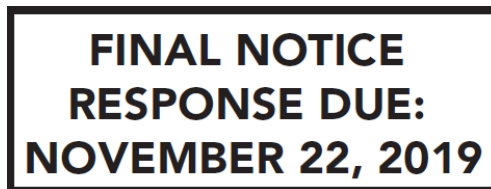
Due: November 22, 2019
Respond now at <https://respond.census.gov/acs>
Log in using this user ID:
OR complete and mail back your paper questionnaire.

The consequence message on the “letter side” of the pressure seal mailer and the call-out box on the “envelope side” were the same as in the Control treatment.

For this treatment, as well as the other four experimental treatments discussed below, all materials in the first four mailings were the same as in the Control treatment.

3.1.3 Treatment 3 (Envelope Treatment)

As shown in Appendix D, the Envelope treatment added a due date to the call-out box on the “envelope side” of the pressure seal mailer:



The rest of the pressure seal mailer was the same as the one used in the Box treatment.

3.1.4 Treatment 4 (Neutral Treatment)

As shown in Appendix E, the Neutral treatment changed the consequence message to include a direct reference to the due date while maintaining the same tone as the original message.

Neutral Message: Your response is critically important to your local community and to your country. Respond by November 22, 2019, or a Census Bureau interviewer may come to your home to complete the survey in person.

The rest of the pressure seal mailer, including a Due Date in the call-out box in the letter, remained the same as in the Box treatment.

3.1.5 Treatment 5 (Add Treatment)

As shown in Appendix F, the Add treatment also changed the consequence message to include a direct reference to the due date. The message, inspired by loss aversion theory (Kahneman and Tversky, 1979; Kahneman and Tversky, 1992; Barberis, 2013; Kay, 2016), told the recipient that they will be *added* to a schedule for a personal visit if they do not respond by the due date. The idea is that this phrasing tells recipients that if they respond they do not suffer the loss of being added to the personal visit schedule.

Add Message: Because your response is critically important to your local community and to your country, a Census Bureau interviewer may come to your home to complete the survey in person. If you do not respond by November 22, 2019, we will add you to our schedule for a visit.

3.1.6 Treatment 6 (Remove Treatment)

As shown in Appendix G, the Remove treatment changed the consequence message to include a direct reference to the due date. The Remove message, a counter to the Add message and also inspired by loss aversion theory, told recipients that they will be *removed* from the schedule for a personal visit if they responded. The idea is that this phrasing tells recipients that if they respond they will gain the opportunity to not be part of the personal visit schedule.

Remove Message: *Because your response is critically important to your local community and to your country, a Census Bureau interviewer may come to your home to complete the survey in person. **Respond by November 22, 2019 to be removed from our schedule for a visit.***

3.2 Research Questions

1. What is the impact on self-response of the addition of one or more due dates?
2. What is the effect on self-response return rates of using a due date in the letter call-out box?
3. What is the effect on self-response return rates of using a due date on the envelope call-out box in addition to the due date in letter call-out box?
4. What is the impact on self-response return rates of using a due date consequence message in the body of the letter, tying the due date to the possibility of a visit from a Census interviewer, in addition to a due date in the call-out box?
5. What is the difference in self-response return rates of the respondent being told that they are being added to a schedule versus being removed from a schedule versus a neutral message?
6. What is impact on self-response rates and final response rates of each of the experimental treatments?
7. What is the impact on form completeness of using a due date?
8. What is the impact on costs, relative to current production, of implementing each of the experimental treatments?
9. Does the Due Date treatment have an effect on response distributions for particular housing and person demographics?

3.3 Analysis Metrics

We used two-tailed hypothesis tests and a significance level of $\alpha=0.1$ to test for differences between treatments.

3.3.1 Unit Response Analysis

To assess the effect of the experimental changes on self-response, we calculated the self-response return rates at selected points in time in the data collection cycle. These points in time reflect the dates of the mailings or the end of the self-response data collection period. A significant increase in self-response before CAPI would decrease the number of costly CAPI interviews that would need to be conducted. Calculating the return rates at the different points in the data collection cycle gave us an idea of how the experimental treatments would affect operational and mailing costs for the mailing after that time point if they were implemented into a full ACS production year.

We performed a pooled analysis of the five experimental treatments against Control to test the effectiveness of the due dates across all treatments. For comparison purposes, we computed a pooled self-response return rate metric for the experimental treatments from their combined data

3.3.1.1 Self-Response Return Rates

To evaluate the effect of the experimental treatments, we calculated self-response return rates. We calculated the rates for total self-response and separately for the internet, mail, and Telephone Questionnaire Assistance (TQA) modes. The self-response return rates for the initial mailing (M1) universe were calculated using the following formula:

$$\text{M1 Universe Self-Response Return Rate} = \frac{\text{Number of mailable and deliverable sample addresses that, either provided a nonblank}^{12} \text{ return by mail or TQA, or a complete or sufficient partial}^{13} \text{ response by internet}}{\text{Total number of mailable and deliverable sample addresses}^{14}} * 100$$

¹² A blank form is a form in which there are no persons with sufficient response data and there is no telephone number listed on the form.

¹³ In general, a sufficient partial internet response is one that has at least minimal information, which indicates an attempt to respond. The specific definition of a sufficient partial internet response is sensitive and for Census Bureau internal use only.

¹⁴ We remove addresses deemed Undeliverable-as-Addressed by the Postal Service if no response is received.

The self-response return rates for the universe of those that were sent the fifth mailing (M3 universe) were calculated using the following formula:

$$\text{M3 Universe Self-Response Return Rate} = \frac{\text{Number of mailable and deliverable sample addresses that were in the M3 universe and after the fifth mailing was sent either provided a nonblank}^{12} \text{ return by mail or TQA, or a complete or sufficient partial}^{13} \text{ response by internet}}{\text{Total number of mailable and deliverable sample addresses}^{14} \text{ in the M3 universe}} * 100$$

3.3.1.2 Final Response Rates

To evaluate the effect of the experimental treatments on overall response to the survey, we calculated final overall response rates as well as how each mode contributed to the overall final response rate.

The final response rates were calculated using the following formula:

$$\text{Final Response Rate} = \frac{\text{Number of eligible sample addresses that either provided a nonblank}^{15} \text{ return by mail or TQA, a complete or sufficient partial}^{16} \text{ response by internet, or a complete CAPI interview}}{\text{Total number of sample addresses eligible to reply to the survey and not sampled out of CAPI}} * 100$$

3.3.2 Form Completion Rates

There was concern that respondents might be more likely to skip portions of the survey to meet the due date. To test this hypothesis, we calculated and compared form completion rates for both the form overall and the three sections: basic demographics, housing, and detailed person. The form completion rate is a measure of the number of questions that were answered among those that should have been answered.¹⁷ Due to the effect of mode on form completion, we calculated these rates by mode and overall. The formulas used for form completion rates were:

¹⁵ A blank form is a form in which there are no persons with sufficient response data and there is no telephone number listed on the form.

¹⁶ In general, a sufficient partial internet response is one that has at least minimal information, which indicates an attempt to respond. The specific definition of a sufficient partial internet response is sensitive and for Census Bureau internal use only.

¹⁷ The number of questions that should have been answered is determined based on respondent answers and questionnaire skip patterns.

$$\text{Section Completion Rate} = \frac{\text{Number of questions answered in a section across all returns for a given mode}}{\text{Number of questions that should have been answered in a section across all returns for a given mode}} * 100$$

$$\text{Overall Form Completion Rate} = \frac{\text{Number of questions answered across all returns for a given mode}}{\text{Number of questions that should have been answered across all returns for a given mode}} * 100$$

3.3.3 Demographic Characteristics

We compared the demographic characteristics of responders in the experimental treatments to the control treatment to determine if the due date was motivating a particular demographic population to respond differently.

Shown in Table 2, the demographics examined included both household-level characteristics (*building type* and *tenure*) and person-level characteristics (*age*, *race*, *Hispanic origin*, and *educational attainment*). The person-level characteristics apply to each person in the household, not just the respondent.

Table 2. Demographic Characteristic Categories

| Demographic Characteristic | Categories |
|-----------------------------------|---|
| Building Type | One-family House Apartment Building Other residence type |
| Tenure | Owned with Mortgage Owned Free and Clear Rented Occupied without Payment of Rent |
| Age | <18 18-29 30-49 50-64 ≥64 |
| Race | White Alone Black Alone Some other Race Alone Two or More Races |
| Hispanic Origin | Of Hispanic Origin Not of Hispanic Origin |
| Educational Attainment | High School or Less Some College or Associate's Degree Bachelor's Degree or Higher |

3.3.4 Relative Cost Analysis

Significant differences in the return rates could affect printing, assembly, and postage costs, as well as costs for data capture and nonresponse followup activities. The cost differences, relative to current production, for each experimental treatment were calculated to determine how each treatment would affect costs for the ACS program.

All costs presented in this report were derived from fiscal year 2019 estimates. We used these estimates to calculate printing, assembly, and postage costs for each mailing, which were extrapolated for an annual production workload.

3.3.5 Calculation of Standard Errors

We estimated all variances using the Successive Differences Replication (SDR) method with replicate weights, the standard method used for the ACS.¹⁸ The variance for each rate and difference was calculated using the following formula.

¹⁸ See Chapter 12 of the ACS Design and Methodology document for details and references regarding the successive differences (SDR) method for variance estimation (U.S. Census Bureau, 2014).

The standard error of an estimate is the square root of the variance:

$$Var(RR_0) = \frac{4}{80} \sum_{r=1}^{80} (RR_r - RR_0)^2$$

Where:

RR_0 = rate or difference in rates estimate calculated using the full sample base weights,

RR_r = rate or difference in rates estimate calculated for replicate r .

3.3.6 Weighting

All self-response analyses, except for the relative cost analysis, were weighted using the ACS base sampling weight (the inverse of the probability of selection).¹⁹ For all calculations involving CAPI responses, the weights were adjusted with a subsampling factor, which was multiplied by the base weight. All nonresponding addresses in the initial sample were eligible for the CAPI sample, including unmailable and undeliverable addresses. Addresses eligible for CAPI were sampled at a rate of about one in three.

3.3.7 Multiple Comparison Adjustment

Some analyses in this report involved multiple comparisons. For these cases, we adjusted for the Type I familywise error rate at the 0.1 level of significance, using the Hochberg method. This procedure is an improvement upon the Bonferroni sequentially rejective procedure (Hochberg, 1988). For each results table presented in this report, the table notes provide brief information on what adjustment was performed and present the adjusted p-values. A more in-depth summary of these adjustments is provided below:

- In Table 4, Table 5, Table 6, Table 7, and Table 8, the primary metric of interest used to compare the effect of due date placement on self-response is the overall self-response return rate. Five due date placements are examined. To control the familywise error rate, we adjusted for the five sets of pairwise comparisons of self-response return rates made across the five tables for the overall self-response and then separately for each individual response mode (internet, mail, and TQA). Although the primary metric of interest is the overall self-response return rate, the rates in the individual modes help us to understand the reasons for any differences found overall.
- In Table 9, Table 10, and Table 11, we compare the three different consequence messages to each other. The primary comparison metric is the overall self-response return rate. To control the familywise error rate for this primary metric, we adjusted for the three sets of pairwise comparisons of self-response returns made across the three tables for the overall self-response and then separately for each individual response

¹⁹ Check-in rates calculated for costs analysis were not weighted because they were used to estimate workloads for analysis of data collection costs.

mode (internet, mail, and TQA) (for the reason given in the previous paragraph). We made these adjustments separately from the comparisons in Tables 4-8, as these comparisons do not test the addition of a due date.

- Table 12, Table 13, and Table 14 each contain five comparisons of the five experimental treatments to Control, overall and in each mode. Table 12 compares the self-response return rates for M3 universe, Table 13 compares the self-response returns rates for the M1 universe, and Table 14 compares the final response rates. We adjusted for the five comparisons, overall and for each mode separately within each table.
- Table 15, Table 16, Table 17, and Table 18 analyze form completeness, overall and for each mode of response. Across the four tables, there are 20 comparisons for each of the form sections (overall, basic person, housing, and detailed person). We adjusted for each of these 20 comparisons across the five tables to control the probability of making a type I error regarding the form completeness for any specific form section. It was important to adjust across mode in this case due to the form completeness in any individual mode being just as important as the overall form completeness.
- In Table 19 we compare the demographic distributions of the respondents of the five experimental treatments to the demographic distribution of the Control respondents for six demographic categories. We adjusted for these five comparisons within each category only and not across the entire table. This controls the probability of making a type I error regarding the demographic distributions for individual demographic categories.

4. ASSUMPTIONS AND LIMITATIONS

4.1 Assumptions

- A single ACS monthly sample is representative of an entire year (twelve panels) and the entire frame sample, with respect to both response rates and cost, as designed.
- A single methods panel group (1/24 of the full monthly sample) is representative of the full monthly sample, as designed.
- We assume that there is no difference between treatments in mail delivery timing or subsequent response time. The treatments had the same sample size and used the same postal sort and mailout procedures. Previous research indicated that postal procedures alone could cause a difference in response rates at a given point in time between experimental treatments of different sizes, with response for the smaller treatments lagging (Heimel, 2016).
- We assume that printing costs are comparable for the six treatments for the test.

4.2 Limitations

- Group quarters and sample housing unit addresses from remote Alaska and Puerto Rico were not included in the sample for the test, so the results of this test can only be generalized to the standard ACS housing unit sample.
- The relative cost analysis uses estimates to make cost projections. These estimates do not account for monthly variability in production costs, such as changes in staffing, production rates, or printing price adjustments. Additionally, the cost projections presented are based on differences between the experimental treatments and the Control, not between experimental treatments. So while the Envelope treatment and the Remove treatment have different estimated cost savings based on their individual estimates, statistically we did not establish a difference between the two.
- Due to the way TQA call volume is tracked, we were unable to connect calls to specific treatments. Because of this, potential increases in TQA costs are not captured in Section 5.3.
- Because the letters were designed specifically for this test, the due dates were printed as part of the letter. For implementation in production, the due dates will be printed separately from the rest of the letter in a different font because the due date varies from month to month. This will be most noticeable for the consequence message, where the entire sentence will be printed separately. The variation in font may change how respondents react to the letter that is not captured in this test.

5. RESULTS

5.1 Unit Response Analysis

As described in Section 3.1, the only differences in the materials sent in the six treatments occurred in the fifth mailing. Differences in self-response return rates prior to the fifth mailing could adversely affect the test results. A comparison of the self-response return rates for the test treatments prior to the fifth mailing showed no differences, as expected—see Appendix H. With no differences found the primary unit response analysis was performed for the universe of households that were mailed the fifth mailing (the M3 universe).

5.1.1 Research Question 1

What is the impact on self-response of the addition of one or more due dates?

Prior research suggests that a due date in the ACS mail materials can increase self-response. We performed a pooled analysis of the five experimental treatments against Control to test the effectiveness of the due dates across all treatments. Shown in Table 3, we found that the pooled experimental treatments increased self-response. This indicates that the addition of one or more due dates does motivate recipients to respond prior to the start of the CAPI operation.

Table 3. Pooled M3 Self-Response Return Rates prior to CAPI

| Mode | Pooled Experimental | | Difference | P-Value |
|-----------------------|---------------------|-------------------|------------|---------|
| | Treatments | Control Treatment | | |
| Overall Self-Response | 15.4 (0.2) | 14.0 (0.4) | 1.5 (0.4) | <0.01* |
| Internet | 8.2 (0.1) | 7.1 (0.3) | 1.1 (0.3) | <0.01* |
| Mail | 6.7 (0.1) | 6.6 (0.3) | 0.1 (0.3) | 0.74 |
| TQA | 0.6 (0.3) | 0.3 (<0.1) | 0.3 (0.1) | <0.01* |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

5.1.2 Individual Due Date Placement Effect on Response

In Section 5.1.1, we found that the addition of a due date in varying locations increased self-response in general. In this section, we will examine, which of the individual placements were effective at increasing response.

5.1.2.1 Research Question 2

What is the impact on self-response return rates of using a due date in the letter call-out box?

To answer this question, we compared the Control treatment, which does not contain a due date, to the Box treatment, which only added a due date to the letter call-out box.

Shown in Table 4, overall, there was not a difference in self-response when the due date was added to the letter call-out box. For the TQA mode, the Box treatment return rate was statistically significantly higher by 0.2 percentage points. This appears to be due to an increase in the calls received on and after the due date stated in the letter. However, since the TQA response makes up such a small portion of overall response, this difference did not affect the overall difference.

Table 4. M3 Self-Response Return Rates: Comparison of Box Treatment to Control Treatment

| Mode | Box Treatment | Control Treatment | Difference | Adjusted P-Value |
|-----------------------|---------------|-------------------|------------|------------------|
| Overall Self-Response | 14.8 (0.4) | 14.0 (0.4) | 0.8 (0.5) | 0.36 |
| Internet | 7.6 (0.3) | 7.1 (0.3) | 0.5 (0.4) | 0.52 |
| Mail | 6.7 (0.3) | 6.6 (0.3) | 0.1 (0.4) | 0.92 |
| TQA | 0.5 (0.1) | 0.3 (<0.1) | 0.2 (0.1) | 0.02* |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the five comparisons made for that mode across Table 4, Table 5, Table 6, Table 7, and Table 8. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

5.1.2.2 Research Question 3

What is the impact on self-response return rates of using a due date on the envelope call-out box in addition to the due date in letter call-out box?

To answer this question, we compared the Envelope treatment, which contained a due date in the envelope-side call-out box and the letter call-out box, to the Box treatment, which contained a due date only in the letter call-out box.

Shown in Table 5, the Envelope treatment had an overall self-response return rate that was significantly higher than the Box Treatment (1.3 percentage points higher). This was due to an increase in response in the internet mode, which was 1.4 percentage points higher for the Envelope treatment.

Table 5. M3 Self-Response Return Rates: Comparison of Envelope Treatment to Box Treatment

| Mode | Envelope Treatment | Box Treatment | Difference | Adjusted P-Value |
|-----------------------|--------------------|---------------|-------------|------------------|
| Overall Self-Response | 16.1 (0.4) | 14.8 (0.4) | 1.3 (0.5) | 0.07 |
| Internet | 8.9 (0.3) | 7.6 (0.3) | 1.4 (0.5) | 0.02 |
| Mail | 6.7 (0.2) | 6.7 (0.3) | >-0.1 (0.3) | 0.92 |
| TQA | 0.5 (0.1) | 0.5 (0.1) | <0.1 (0.1) | 0.93 |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the five comparisons made for that mode across Table 4, Table 5, Table 6, Table 7, and Table 8. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

5.1.2.3 Research Question 4

What is the impact on self-response return rates of using a due date consequence message in the body of the letter, tying the due date to the possibility of a visit from a Census Bureau interviewer, in addition to a due date in the call-out box?

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To answer this question, we compared the three treatments that added a due date consequence message (Neutral, Add, and Remove treatments) to the Box treatment, which added a due date in the call-out box but did not include it in a consequence message.

Shown in Table 6, Table 7, and Table 8, none of the three consequence messaging treatments performed statistically better than the Box treatment. There is no evidence that the addition of any of the consequence messaging was effective in motivating response compared to current messaging.

Table 6. M3 Self-Response Return Rates: Comparison of Neutral Treatment to Box Treatment

| Mode | Neutral Treatment | Box Treatment | Difference | Adjusted P-Value |
|-----------------------|-------------------|---------------|------------|------------------|
| Overall Self-Response | 14.9 (0.4) | 14.8 (0.4) | 0.1 (0.5) | 0.87 |
| Internet | 7.6 (0.3) | 7.6 (0.3) | 0.1 (0.4) | 0.86 |
| Mail | 6.7 (0.2) | 6.7 (0.3) | -0.1 (0.4) | 0.92 |
| TQA | 0.6 (0.1) | 0.5 (0.1) | 0.1 (0.1) | 0.93 |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the five comparisons made for that mode across Table 4, Table 5, Table 6, Table 7, and Table 8. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

Table 7. M3 Self-Response Return Rates: Comparison of Add Treatment to Box Treatment

| Mode | Add Treatment | Box Treatment | Difference | Adjusted P-Value |
|-----------------------|---------------|---------------|------------|------------------|
| Overall Self-Response | 15.4 (0.3) | 14.8 (0.4) | 0.6 (0.5) | 0.47 |
| Internet | 8.3 (0.3) | 7.6 (0.3) | 0.8 (0.4) | 0.22 |
| Mail | 6.5 (0.3) | 6.7 (0.3) | -0.2 (0.3) | 0.92 |
| TQA | 0.6 (0.1) | 0.5 (0.1) | 0.1 (0.1) | 0.93 |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the five comparisons made to test individual due date placements. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

Table 8. M3 Self-Response Return Rates: Comparison of Remove Treatment to Box Treatment

| Mode | Remove Treatment | Box Treatment | Difference | Adjusted P-Value |
|-----------------------|------------------|---------------|------------|------------------|
| Overall Self-Response | 15.9 (0.4) | 14.8 (0.4) | 1.1 (0.6) | 0.19 |
| Internet | 8.5 (0.3) | 7.6 (0.3) | 0.9 (0.5) | 0.16 |
| Mail | 6.9 (0.3) | 6.7 (0.3) | 0.1 (0.4) | 0.92 |
| TQA | 0.6 (0.1) | 0.5 (0.1) | 0.1 (0.1) | 0.93 |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the five comparisons made for that mode across Table 4, Table 5, Table 6, Table 7, and Table 8. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

5.1.2.4 Research Question 5

What is the difference in self-response return rates of the respondent being told that they are being added to a schedule versus being removed from a schedule versus a neutral message?

In 5.1.2.3 we found that none of the three treatments that added a consequence due date message (Neutral, Add, and Remove treatments) was significantly different than the Box treatment. Shown in Table 9, Table 10, and Table 11 there was also no significant differences between the self-response return rates for any of the treatments compared. This confirms that there is no evidence that any one of the consequence messages on their own worked any better than the other consequence messages on their own.

Table 9. M3 Self-Response Return Rates: Comparison of Neutral Treatment to Add Treatment

| Mode | Neutral Treatment | Add Treatment | Difference | Adjusted P-Value |
|-----------------------|-------------------|---------------|------------|------------------|
| Overall Self-Response | 14.9 (0.4) | 15.4 (0.3) | -0.5 (0.5) | 0.37 |
| Internet | 7.6 (0.3) | 8.3 (0.3) | -0.7 (0.4) | 0.25 |
| Mail | 6.7 (0.2) | 6.5 (0.3) | 0.1 (0.3) | 0.68 |
| TQA | 0.6 (0.1) | 0.6 (0.1) | <0.1 (0.1) | 0.83 |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after adjusting for the three comparisons for that mode across Table 9, Table 10, and Table 11. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

Table 10. M3 Self-Response Return Rates: Comparison of Neutral Treatment to Remove Treatment

| Mode | Neutral Treatment | Remove Treatment | Difference | Adjusted P-Value |
|-----------------------|-------------------|------------------|-------------|------------------|
| Overall Self-Response | 14.9 (0.4) | 15.9 (0.4) | -1.0 (0.5) | 0.15 |
| Internet | 7.6 (0.3) | 8.5 (0.3) | -0.8 (0.4) | 0.14 |
| Mail | 6.7 (0.2) | 6.9 (0.3) | -0.2 (0.4) | 0.68 |
| TQA | 0.6 (0.1) | 0.6 (0.1) | >-0.1 (0.1) | 0.83 |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after adjusting for the three comparisons for that mode across Table 9, Table 10, and Table 11. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

Table 11. M3 Self-Response Return Rates: Comparison of Add Treatment to Remove Treatment

| Mode | Add Treatment | Remove Treatment | Difference | Adjusted P-Value |
|-----------------------|----------------------|-------------------------|-------------------|-------------------------|
| Overall Self-Response | 15.4 (0.3) | 15.9 (0.4) | -0.5 (0.5) | 0.37 |
| Internet | 8.3 (0.3) | 8.5 (0.3) | -0.2 (0.5) | 0.72 |
| Mail | 6.5 (0.3) | 6.9 (0.3) | -0.4 (0.4) | 0.68 |
| TQA | 0.6 (0.1) | 0.6 (0.1) | >-0.1 (0.1) | 0.83 |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after adjusting for the three comparisons for that mode across Table 9, Table 10, and Table 11. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

5.1.3 Research Question 6

What is impact on self-response rates and final response rates of each of the experimental treatments?

As shown in Section 5.1.2 through 5.1.2.4, we did not find a difference in self-response rates for some of the individual placements of the due date. However, only one of our experiment treatments, the Box treatment, has the due date added in only a single location. To analyze the effectiveness of the combinations of different due date placements we examined each individual treatment against the Control.

For the universe of those mailed the fifth mailing, the M3 universe, three of the experimental treatments had a self-response return rate that was significantly higher than the Control treatment. As shown in Table 12, the Envelope treatment, the Add treatment, and the Remove treatment each had an overall self-response return rate that was higher than the Control treatment. In each case, the overall increase was driven by an increase in Internet and TQA response. The other two experimental treatments, the Box treatment and the Neutral treatment, did not have an overall self-response return rate that was significantly different than Control, but did have a TQA self-response rate that was significantly higher than the Control.

Table 12. M3 Self-Response Return Rates: Comparison of Each Experimental Treatment to Control Treatment

| Mode | Control | Box | Envelope | Neutral | Add | Remove |
|---------------|------------|------------|-------------|------------|-------------|-------------|
| Self-Response | 14.0 (0.4) | 14.8 (0.4) | 16.1 (0.4)* | 14.9 (0.4) | 15.4 (0.3)* | 15.9 (0.4)* |
| Internet | 7.1 (0.3) | 7.6 (0.3) | 8.9 (0.3)* | 7.6 (0.3) | 8.3 (0.3)* | 8.5 (0.3)* |
| Mail | 6.6 (0.3) | 6.7 (0.3) | 6.7 (0.2) | 6.7 (0.2) | 6.5 (0.3) | 6.9 (0.3) |
| TQA | 0.3 (<0.1) | 0.5 (0.1)* | 0.5 (0.1)* | 0.6 (0.1)* | 0.6 (0.1)* | 0.6 (0.1)* |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the five comparisons to Control for that mode within Table 12. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

To understand the overall operational impact of the experimental treatments, it was important to also look at the return rates for the entire mailing universe. For the entire mailing universe, the Envelope treatment and the Remove treatment both had overall self-response return rates that were significantly higher than the Control (see Table 13).

For the Remove treatment, the TQA mode was significantly different; however, this was also true for the other three experimental treatments that were not significantly different overall. So, it is unlikely to be the sole factor in the Remove treatment increase.

Table 13. M1 Self-Response Return Rates: Comparison of Each Experimental Treatment to Control Treatment

| Mode | Control | Box | Envelope | Neutral | Add | Remove |
|---------------|------------|------------|-------------|------------|------------|-------------|
| Self-Response | 54.6 (0.4) | 55.1 (0.4) | 56.1 (0.4)* | 55.1 (0.4) | 55.3 (0.4) | 56.0 (0.4)* |
| Internet | 38.1 (0.4) | 38.0 (0.4) | 38.8 (0.4) | 38.1 (0.4) | 37.9 (0.4) | 38.6 (0.4) |
| Mail | 15.9 (0.3) | 16.2 (0.3) | 16.4 (0.3) | 16.2 (0.3) | 16.5 (0.3) | 16.5 (0.3) |
| TQA | 0.7 (0.1) | 0.9 (0.1)* | 0.8 (0.1) | 0.9 (0.1)* | 0.9 (0.1)* | 0.9 (0.1)* |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the five comparisons to Control for that mode within Table 13. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

Overall, at the end of CAPI, there was not a significant difference in the final response rates for any of the experimental treatments. The self-response portion of the final response rate was significantly higher for the Envelope treatment. For the TQA portion of the final response rate, the Box treatment, the Add treatment, and the Remove treatment were all significantly higher than the Control.

Table 14. Final Response Rates: Comparison of Each Experimental Treatment to Control Treatment

| Mode | Control | Box | Envelope | Neutral | Add | Remove |
|------------------|------------|------------|-------------|------------|------------|------------|
| Overall Response | 90.2 (0.3) | 89.9 (0.3) | 90.5 (0.4) | 89.8 (0.4) | 89.3 (0.4) | 90.5 (0.3) |
| Self-Response | 56.4 (0.4) | 56.6 (0.6) | 58.2 (0.5)* | 56.9 (0.5) | 56.6 (0.5) | 56.9 (0.5) |
| Internet | 39.2 (0.4) | 39.0 (0.5) | 40.3 (0.5) | 39.3 (0.4) | 38.7 (0.5) | 39.1 (0.4) |
| Mail | 16.4 (0.3) | 16.6 (0.3) | 17.1 (0.3) | 16.8 (0.3) | 16.9 (0.3) | 16.8 (0.3) |
| TQA | 0.7 (0.1) | 1.0 (0.1)* | 0.8 (0.1) | 0.9 (0.1) | 1.0 (0.1)* | 1.0 (0.1)* |
| CAPI | 33.8 (0.5) | 33.3 (0.6) | 32.3 (0.5) | 32.8 (0.5) | 32.7 (0.6) | 33.6 (0.5) |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the five comparisons to Control for that mode within Table 14. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

5.2 Item Response Analysis

5.2.1 Research Question 7

What is the impact on form completeness of using a due date?

There were concerns that, in order to meet a provided deadline, respondents might not complete the questionnaire as fully as they may have without a deadline. This was not found to be the case. Shown in Table 15, Table 16, Table 17, and Table 18, we compared form completeness overall, and by the internet, mail, and TQA modes. No treatment was found to be significantly different from Control for any mode for the paper questionnaire as a whole or for any individual section.

Table 15. Overall Form Completeness: Comparison of Each Experimental Treatment to Control Treatment

| Section | Control | Box | Envelope | Neutral | Add | Remove |
|-----------------|------------|------------|------------|------------|------------|------------|
| Overall | 89.7 (0.4) | 90.1 (0.4) | 90.5 (0.4) | 91.1 (0.4) | 89.8 (0.5) | 90.1 (0.4) |
| Basic Person | 97.8 (0.3) | 98.1 (0.2) | 98.3 (0.2) | 98.1 (0.3) | 98.2 (0.2) | 98.1 (0.3) |
| Housing | 95.6 (0.3) | 95.4 (0.3) | 96.1 (0.3) | 95.4 (0.3) | 95.4 (0.3) | 95.4 (0.3) |
| Detailed Person | 86.6 (0.6) | 87.2 (0.6) | 87.6 (0.5) | 88.7 (0.6) | 86.8 (0.7) | 87.3 (0.5) |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the 20 comparisons to Control made for that individual section across Table 15, Table 16, Table 17, and Table 18. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

Table 16. Internet Form Completeness: Comparison of Each Experimental Treatment to Control Treatment

| Section | Control | Box | Envelope | Neutral | Add | Remove |
|-----------------|------------|------------|------------|------------|------------|------------|
| Overall | 89.2 (0.7) | 90.0 (0.7) | 90.6 (0.6) | 91.3 (0.7) | 89.5 (0.7) | 90.1 (0.6) |
| Basic Person | 99.0 (0.4) | 99.1 (0.3) | 99.4 (0.2) | 98.9 (0.4) | 99.1 (0.3) | 99.0 (0.4) |
| Housing | 96.9 (0.4) | 97.0 (0.5) | 97.5 (0.4) | 97.2 (0.4) | 97.3 (0.3) | 97.1 (0.3) |
| Detailed Person | 85.4 (1.0) | 86.5 (0.9) | 87.2 (0.8) | 88.5 (0.9) | 85.7 (1.0) | 86.7 (0.8) |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the 20 comparisons to Control made for that individual across Table 15, Table 16, Table 17, and Table 18. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

Table 17. Mail Form Completeness: Comparison of Each Experimental Treatment to Control Treatment

| Section | Control | Box | Envelope | Neutral | Add | Remove |
|-----------------|------------|------------|------------|------------|------------|------------|
| Overall | 90.2 (0.6) | 90.1 (0.6) | 90.2 (0.4) | 90.6 (0.5) | 90.0 (0.6) | 89.8 (0.5) |
| Basic Person | 96.0 (0.5) | 96.7 (0.4) | 96.5 (0.3) | 96.9 (0.4) | 96.6 (0.4) | 96.8 (0.4) |
| Housing | 94.3 (0.4) | 93.7 (0.4) | 94.4 (0.3) | 93.7 (0.5) | 93.1 (0.4) | 93.4 (0.5) |
| Detailed Person | 87.9 (0.8) | 87.8 (0.7) | 87.9 (0.5) | 88.7 (0.6) | 87.9 (0.8) | 87.5 (0.6) |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the 20 comparisons to Control made for that individual section across Table 15, Table 16, Table 17, and Table 18. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

Table 18. TQA Form Completeness: Comparison of Each Experimental Treatment to Control Treatment

| Section | Control | Box | Envelope | Neutral | Add | Remove |
|-----------------|--------------|------------|--------------|------------|------------|------------|
| Overall | 94.6 (2.1) | 94.2 (0.6) | 95.6 (0.6) | 94.8 (1.2) | 95.3 (0.9) | 96.0 (0.5) |
| Basic Person | 100.0 (<0.1) | 99.6 (0.4) | 100.0 (<0.1) | 99.3 (0.6) | 99.8 (0.2) | 99.7 (0.2) |
| Housing | 92.9 (0.5) | 91.7 (0.6) | 91.9 (0.7) | 91.3 (1.2) | 93.1 (0.5) | 93.0 (0.6) |
| Detailed Person | 94.5 (3.5) | 94.6 (0.8) | 96.6 (0.7) | 95.5 (1.3) | 95.7 (1.4) | 96.6 (0.8) |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the 20 comparisons to Control made for that individual section across Table 15, Table 16, Table 17, and Table 18. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

5.2.2 Research Question 8

Does the Due Date treatment have an effect on response distributions for particular housing and person demographics?

As seen in Section 5.1.3, the Envelope, Add, and Remove treatments were shown to increase response. A change in the demographics of those that responded could help determine if the due date was particularly effective with certain demographic groups. However, as shown in Table 19, there was no difference in any of the response distributions of the four person demographics and the two housing demographics examined. So, while the Envelope, Add, and Remove treatments were found to increase response, it was not due to an increase in response from a specific demographic.

Table 19: Comparison of Response Distributions (in percent): Experimental Treatments versus Modified Control Treatment

| Item | Control Treatment | Box Treatment | Envelope Treatment | Neutral Treatment | Add Treatment | Remove Treatment |
|------------------------------------|-------------------|---------------|--------------------|-------------------|---------------|------------------|
| AGE | | | | | | |
| Adjusted P-value | - | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Under 18 years old | 20.9 (0.8) | 20.9 (0.7) | 23.1 (0.6) | 21.7 (0.9) | 22.1 (0.9) | 21.2 (0.8) |
| 18 to 29 years old | 14.9 (0.7) | 14.7 (0.8) | 14.6 (0.6) | 14.2 (0.8) | 13.4 (0.8) | 14.8 (0.7) |
| 30 to 49 years old | 25.2 (0.7) | 25.2 (0.8) | 26.2 (0.8) | 25.5 (0.8) | 27.8 (0.8) | 24.4 (0.7) |
| 50 to 64 years old | 22.2 (0.8) | 22.0 (0.8) | 21.4 (0.7) | 21.0 (0.8) | 21.4 (0.9) | 23.1 (0.8) |
| 65 years old or older | 16.8 (0.8) | 17.2 (0.8) | 14.6 (0.7) | 17.6 (0.8) | 15.4 (0.7) | 16.6 (0.7) |
| HISPANIC ORIGIN | | | | | | |
| Adjusted P-value | - | 0.12 | 0.46 | 0.41 | 0.41 | 0.46 |
| Hispanic or Latino | 17.0 (1.2) | 15.3 (1.1) | 17.5 (1.1) | 17.5 (1.0) | 16.4 (1.2) | 17.2 (1.4) |
| Not Hispanic or Latino | 83.0 (1.3) | 84.7 (1.1) | 82.5 (1.1) | 82.5 (1.0) | 83.6 (1.2) | 82.9 (1.4) |
| RACE | | | | | | |
| Adjusted P-value | - | 0.79 | 0.79 | 0.79 | 0.72 | 0.72 |
| White alone | 75.1 (1.4) | 74.7 (1.2) | 73.6 (1.3) | 74.5 (1.1) | 70.1 (1.2) | 73.8 (1.5) |
| Black or African American alone | 9.6 (0.9) | 9.0 (0.8) | 9.7 (0.8) | 9.1 (0.9) | 11.0 (1.0) | 8.8 (0.9) |
| Some other race alone | 11.1 (0.9) | 12.6 (0.9) | 12.8 (1.0) | 13.2 (1.0) | 14.1 (1.0) | 14.0 (1.1) |
| Two or more races | 4.2 (0.5) | 3.7 (0.5) | 3.8 (0.5) | 3.3 (0.3) | 4.8 (0.5) | 3.3 (0.4) |
| EDUC. ATTAINMENT | | | | | | |
| Adjusted P-value | - | 0.89 | 0.90 | 0.90 | 0.90 | 0.90 |
| High school equivalent or less | 45.5 (1.2) | 44.2 (1.1) | 46.2 (0.9) | 47.8 (1.0) | 46.2 (0.9) | 46.0 (1.0) |
| Associate’s degree or some college | 26.5 (0.9) | 25.9 (0.9) | 25.9(0.9) | 25.1 (0.9) | 25.3 (0.8) | 26.0 (0.9) |
| Bachelor’s degree or higher | 28.0 (1.0) | 29.9 (1.0) | 27.9 (1.0) | 27.1 (0.9) | 28.5 (0.9) | 28.1 (0.9) |
| BUILDING TYPE | | | | | | |
| Adjusted P-value | - | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| One-family house | 73.3 (1.4) | 72.1 (1.1) | 72.3 (1.3) | 74.3 (1.1) | 71.3 (1.2) | 72.4 (1.2) |
| Apartment Building | 21.9 (1.3) | 22.6 (1.2) | 22.2 (1.0) | 20.7 (1.1) | 24.2 (1.2) | 22.6 (1.0) |
| Other (boat, van, etc.) | 4.8 (0.6) | 5.3 (0.6) | 5.5 (0.6) | 5.0 (0.5) | 4.5 (0.6) | 5.0 (0.6) |
| TENURE (p-value) | | | | | | |
| Adjusted P-value | - | 0.16 | 0.21 | 0.23 | 0.23 | 0.23 |
| Owned with a mortgage | 51.2 (1.6) | 48.3 (1.4) | 49.6 (1.3) | 49.0 (1.4) | 47.1 (1.5) | 48.8 (1.1) |
| Owned free and clear | 19.0 (1.1) | 23.0 (1.2) | 19.0 (0.9) | 22.5 (0.9) | 20.9 (1.1) | 21.6 (0.9) |
| Rented | 28.6 (1.2) | 27.4 (1.4) | 29.0 (1.1) | 26.7 (1.3) | 30.4 (1.5) | 28.0 (1.1) |
| Occupied without payment of rent | 1.3 (0.3) | 1.3 (0.3) | 2.4 (0.4) | 1.7 (0.3) | 1.7 (0.3) | 1.7 (0.3) |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Distributions compared using a Rao-Scott adjusted Chi Square test. Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the five comparisons to Control for that demographic. Significance was tested based on a Rao-Scott adjusted Chi-Square test at the $\alpha=0.1$ level.

5.3 Cost Analysis

What is the impact on costs, relative to current production, of implementing each of the experimental treatments?

5.3.1 Impact of Treatments

A difference in response at certain times in the data collection cycle could affect data collection costs. For this experiment, we were only concerned with the time point before the start of the CAPI operation, since the treatments are identical until the fifth mailing. As shown in Table 13, two of the experimental treatments, the Envelope and Remove treatments, had a self-response return rate that was significantly higher than the Control before CAPI. This difference affects the data collection costs by reducing the CAPI workloads and associated costs.

Differences in return postage and data capture costs can be determined by examining the internet and mail return rates at closeout. As shown in Table 20, no difference in internet or mail rates were found for any of the experimental treatments. Therefore, there is no difference estimated for the cost of data capture or return postage. We saw an increase in the TQA rates; however, but this is only a measure of the calls that ended in a response. Due to the way TQA calls are recorded, it was not possible to connect potential increases in total call volume to specific treatments. Because of that, potential increases in TQA costs are not captured in this analysis.

Table 20. M1 Self-Response Return Rates at Closeout: Comparison of Each Experimental Treatment to Control Treatment

| Mode | Control | Box | Envelope | Neutral | Add | Remove |
|---------------|------------|------------|------------|------------|------------|------------|
| Self-Response | 59.9 (0.4) | 59.9 (0.4) | 60.6 (0.4) | 60.1 (0.4) | 60.0 (0.4) | 60.1 (0.4) |
| Internet | 41.6 (0.4) | 41.1 (0.4) | 41.9 (0.3) | 41.4 (0.4) | 41.0 (0.4) | 41.2 (0.4) |
| Mail | 17.6 (0.3) | 17.7 (0.3) | 17.9 (0.3) | 17.8 (0.3) | 18.0 (0.3) | 17.8 (0.3) |
| TQA | 0.8 (0.1) | 1.0 (0.1)* | 0.9 (0.1) | 0.9 (0.1) | 1.0 (0.1)* | 1.0 (0.1)* |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result after being adjusted for the five comparisons to Control for that mode within Table 20. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.

5.3.2 Estimated Cost Impacts

In addition to differences in workloads, data capture, and postage, a difference in the mail materials themselves could potentially impact cost. However, in this test there was no additional cost associated with the experimental changes. So, the only impact on cost is predicted for the two treatments shown to impact workloads, the Envelope treatment and the Remove treatment.

As shown in Table 21, the implementation of both treatments would result in cost savings for the ACS program. The larger savings are predicted for the Envelope treatment, with an estimate annual savings of approximately \$7 million²⁰.

Table 21: ACS Annual Total Cost Estimates: Comparison between Control and Other Treatments

| Treatment | Estimate of the Cost Difference from Control |
|--------------------|---|
| Box Treatment | \$0 |
| Envelope Treatment | \$(7,005,000) |
| Neutral Treatment | \$0 |
| Add Treatment | \$0 |
| Remove Treatment | \$(4,302,000) |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test, CBDRB-FY21-ACSO003-B0024
 Note: Negative values are denoted with parentheses and indicate a cost savings.

As stated in Section 5.3.1, this does not include any changes in TQA cost related to an increase in call volume. As shown in Table 20, there was not an increase in TQA response for the Envelope treatment, but there was for the Remove treatment. If we assume that an increase in TQA response indicates an increase in call volume, we expect the estimate of cost savings for the Envelope treatment to remain unchanged, but the cost savings for the Remove treatment would likely be lower.

6. CONCLUSIONS

The 2019 ACS Due Date Test examined five different variations on the use of a due date in the fifth and final ACS mailing sent to sampled households during the self-response phase of ACS data collection. Two variations on the placement of the due date were tested, along with three variations on the wording used to describe the consequences of not responding by the due date. Our objective was to determine if any of these experimental treatments increased self-response; and if so, replace the then current fifth mailing materials with this treatment.

In terms of the placement, adding a due date to the call-out box inside the pressure seal mailer did not increase self-response (Box treatment). However, adding a due date to the call-out box inside the letter in combination with a due date in the call-out box on the envelope side did increase self-response (Envelope treatment).

Of the three treatments that tested the variations on consequence messaging, the Add and the Remove treatments performed better than the Control treatment among those who received

²⁰ Since a difference between the Envelope and Remove treatments was not tested, the difference in savings is only estimated and not statistically proven.

the fifth mailing. However, only the Remove treatment remained significant when examining the entire mailing universe and therefore reduced cost.

In terms of operational impact, a reduction in ACS production costs was predicted for both the Envelope treatment and the Remove treatment. The larger cost reduction is estimated for the Envelope treatment, which is predicted to save approximately \$7 million annually. This prediction does not account for an increase in call volume to TQA. However, since the Envelope and Remove treatments were never directly compared and a difference was not established, it is possible the actual savings will be lower.

There was no evidence that the due date motivated respondents to provide incomplete information in order to make the due date. None of the experimental treatments were found to have a form completeness rate that was different from the Control.

While the increase in self-response return rates suggest the due date motivated response, none of the experimental treatments had a demographic distribution that was different from the Control. So, we are unable to gain an insight into who the due date motivated to respond.

7. REFERENCES

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Appendix A. 2019 Mailing Schedule for the 2019 October Production Panel


Table 22. 2019 October Production Panel Mailing Schedule

| Mailing | Mailout Date |
|----------------------------------|---------------------|
| First Mailing | 09/26/19 |
| Second Mailing | 10/03/19 |
| Third Mailing | 10/18/19 |
| Fourth Mailing | 10/22/19 |
| Fifth Mailing | 11/12/19 |
| Due Date Stated in Fifth Mailing | 11/22/19 |
| Start of CAPI | 12/02/19 |

Appendix B. Control Treatment

B.1 Cover of Questionnaire used in all treatments

13199013




United States[®]
Census
Bureau


The American Community Survey

Start Here

You have two ways to respond:


Respond online today at:
<https://respond.census.gov/acs>

OR

Complete this form and mail it back as soon as possible.

Your response is required by law.

The American Community Survey is conducted by the U.S. Census Bureau. This survey is one of only a few surveys for which all recipients are required by law to respond. The U.S. Census Bureau is required by law to protect your information.

 **If you need help or have questions about completing this form,** please call **1-800-354-7271.**

Telephone Device for the Deaf (TDD):
Call 1-800-582-8330.

¿NECESITA AYUDA? Llame sin cargo alguno al **1-877-833-5625.**

For more information about the American Community Survey, visit our website at: <https://www.census.gov/acs>

➔ **Please print today's date.**

| | | |
|----------------------|----------------------|----------------------|
| Month | Day | Year |
| <input type="text"/> | <input type="text"/> | <input type="text"/> |

➔ **Please print the name and telephone number of the person who is filling out this form.** We will only contact you if needed for official Census Bureau business.

Last Name

First Name MI

Area Code + Number

| | | | |
|----------------------|----------------------|---|----------------------|
| <input type="text"/> | <input type="text"/> | - | <input type="text"/> |
|----------------------|----------------------|---|----------------------|

➔ **How many people are living or staying at this address?**


- **INCLUDE** everyone who is living or staying here for more than 2 months.
- **INCLUDE** yourself if you are living here for more than 2 months.
- **INCLUDE** anyone else staying here who does not have another place to stay, even if they are here for 2 months or less.
- **DO NOT INCLUDE** anyone who is living somewhere else for more than 2 months, such as a college student living away or someone in the Armed Forces on deployment.

Number of people

➔ **Fill out pages 2, 3, and 4 for everyone, including yourself, who is living or staying at this address for more than 2 months. Then complete the rest of the form.**


FORM **ACS-1(DDT)**
(05-06-2019)

OMB No. 0607-0810
OMB No. 0607-0936



B.2 No Due Date in “Letter Side” Call-Out Box

NO TEXT - PERFORATED AREA

 **United States[®]
Census**
Bureau

U.S. Census Bureau
Washington, DC 20233
Office of the Director

A message from the Director of the U.S. Census Bureau:

The U.S. Census Bureau has sent you several requests to complete the **American Community Survey**. If you have not already done so, now is the time to respond.

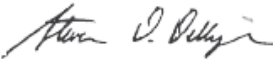
Respond now at <https://respond.census.gov/acs>
Log in using this user ID:
OR complete and mail back your paper questionnaire.

Your response is required by law.

If you do not respond promptly, a Census Bureau interviewer may contact you with a personal visit to complete the survey. If you would like to complete the survey by telephone or need assistance, please call our toll-free number (1-800-354-7271).

Thank you.

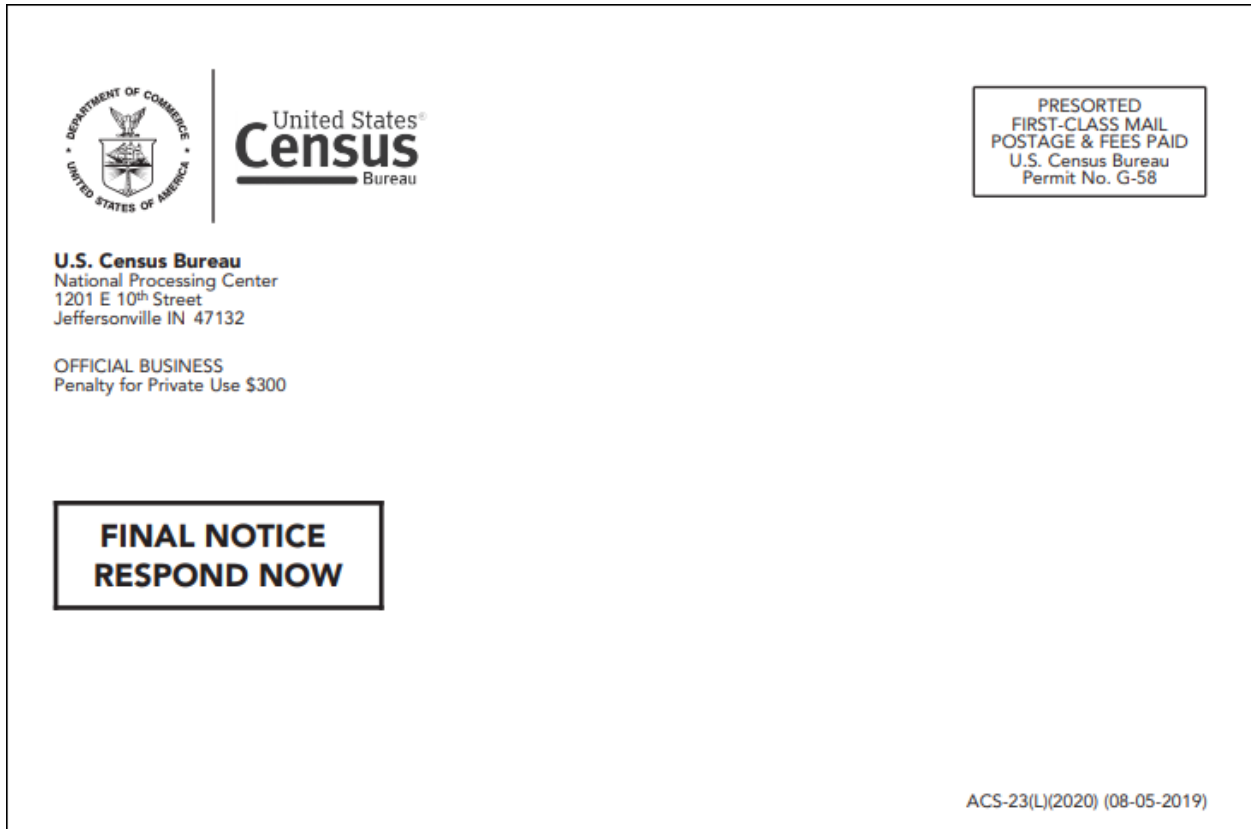
Sincerely,


Steven D. Dillingham

census.gov


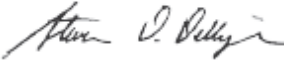
NO TEXT - PERFORATED AREA

B.3 No Due Date in “Envelope Side” Call-Out Box

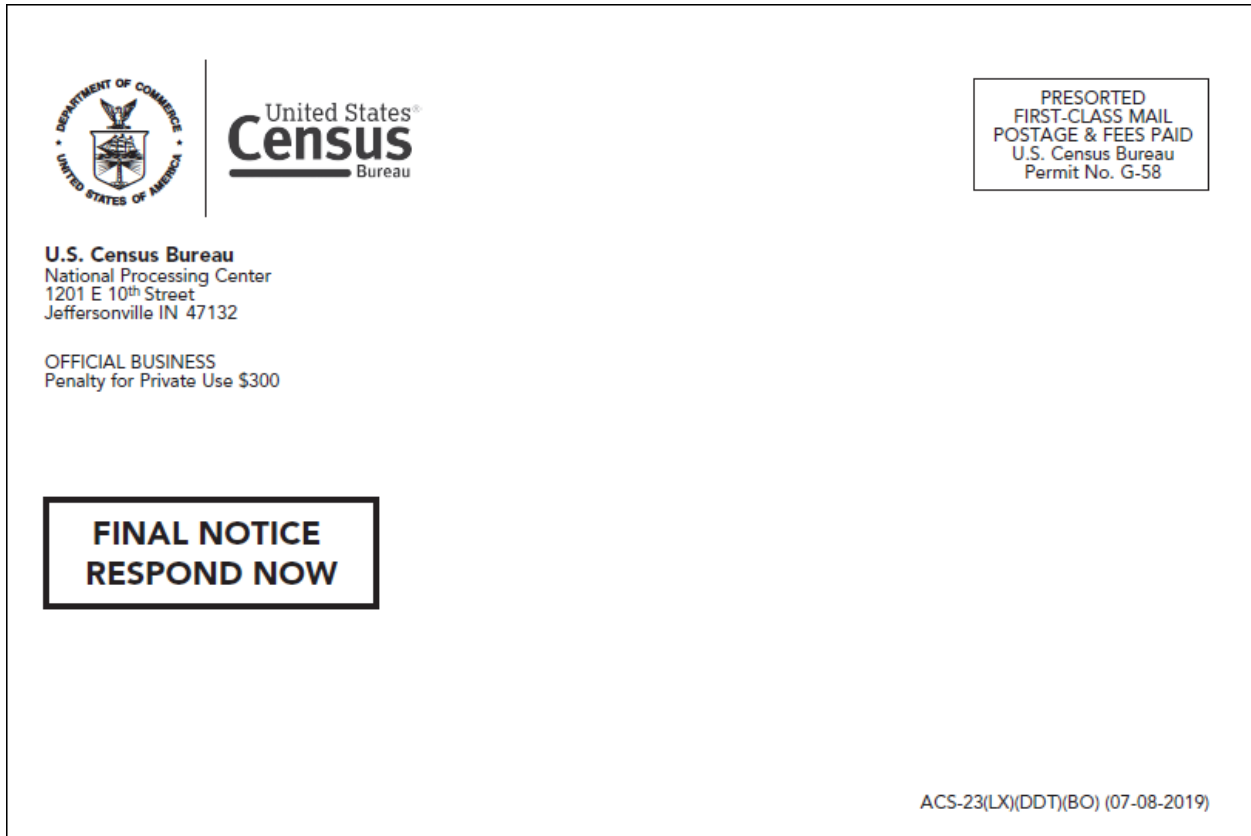


Appendix C. Box Treatment

C.1 Due Date in “Letter Side” Call-Out Box


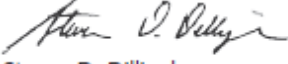
| | |
|--|---------------------------|
| NO TEXT - PERFORATED AREA | |
| NO TEXT - PERFORATED AREA | NO TEXT - PERFORATED AREA |
|  United States[®] Census Bureau | |
| <p>U.S. Census Bureau Washington, DC 20233 Office of the Director</p> <p>A message from the Director, U.S. Census Bureau ...</p> <p>The U.S. Census Bureau has sent you several requests to complete the American Community Survey. If you have not already done so, now is the time to respond.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"><p>Due: November 22, 2019 Respond now at https://respond.census.gov/acs Log in using this user ID: OR complete and mail back your paper questionnaire.</p></div> <p>Your response is required by law.</p> <p>If you do not respond promptly, a Census Bureau interviewer may contact you with a <u>personal visit to complete the survey</u>. If you would like to complete the survey by telephone or need assistance, please call our toll-free number (1-800-354-7271).</p> <p>Thank you.</p> <p>Sincerely,</p>  Steven D. Dillingham | |
| NO TEXT - PERFORATED AREA | NO TEXT - PERFORATED AREA |
| census.gov | |
| NO TEXT - PERFORATED AREA | |

C.2 No Due Date in “Envelope Side” Call-Out Box




Appendix D. Envelope Treatment

D.1 Due Date in “Letter Side” Call-Out Box

| | | |
|---|--|---------------------------|
| NO TEXT - PERFORATED AREA | | |
| NO TEXT - PERFORATED AREA |  United States[®] Census Bureau | NO TEXT - PERFORATED AREA |
| <p>U.S. Census Bureau Washington, DC 20233 Office of the Director</p> <p>A message from the Director, U.S. Census Bureau ...</p> <p>The U.S. Census Bureau has sent you several requests to complete the American Community Survey. If you have not already done so, now is the time to respond.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"><p>Due: November 22, 2019 Respond now at https://respond.census.gov/acs Log in using this user ID: OR complete and mail back your paper questionnaire.</p></div> <p>Your response is required by law.</p> <p>If you do not respond promptly, a Census Bureau interviewer may contact you with a personal visit to complete the survey. If you would like to complete the survey by telephone or need assistance, please call our toll-free number (1-800-354-7271).</p> <p>Thank you.</p> <p>Sincerely,</p>  Steven D. Dillingham | | |
| NO TEXT - PERFORATED AREA | NO TEXT - PERFORATED AREA | |
| NO TEXT - PERFORATED AREA | | |

D.2 Due Date in “Envelope Side” Call-Out Box



United States[®]
Census
Bureau

U.S. Census Bureau
National Processing Center
1201 E 10th Street
Jeffersonville IN 47132

OFFICIAL BUSINESS
Penalty for Private Use \$300


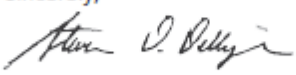
**FINAL NOTICE
RESPONSE DUE:
NOVEMBER 22, 2019**

PRESORTED
FIRST-CLASS MAIL
POSTAGE & FEES PAID
U.S. Census Bureau
Permit No. G-58

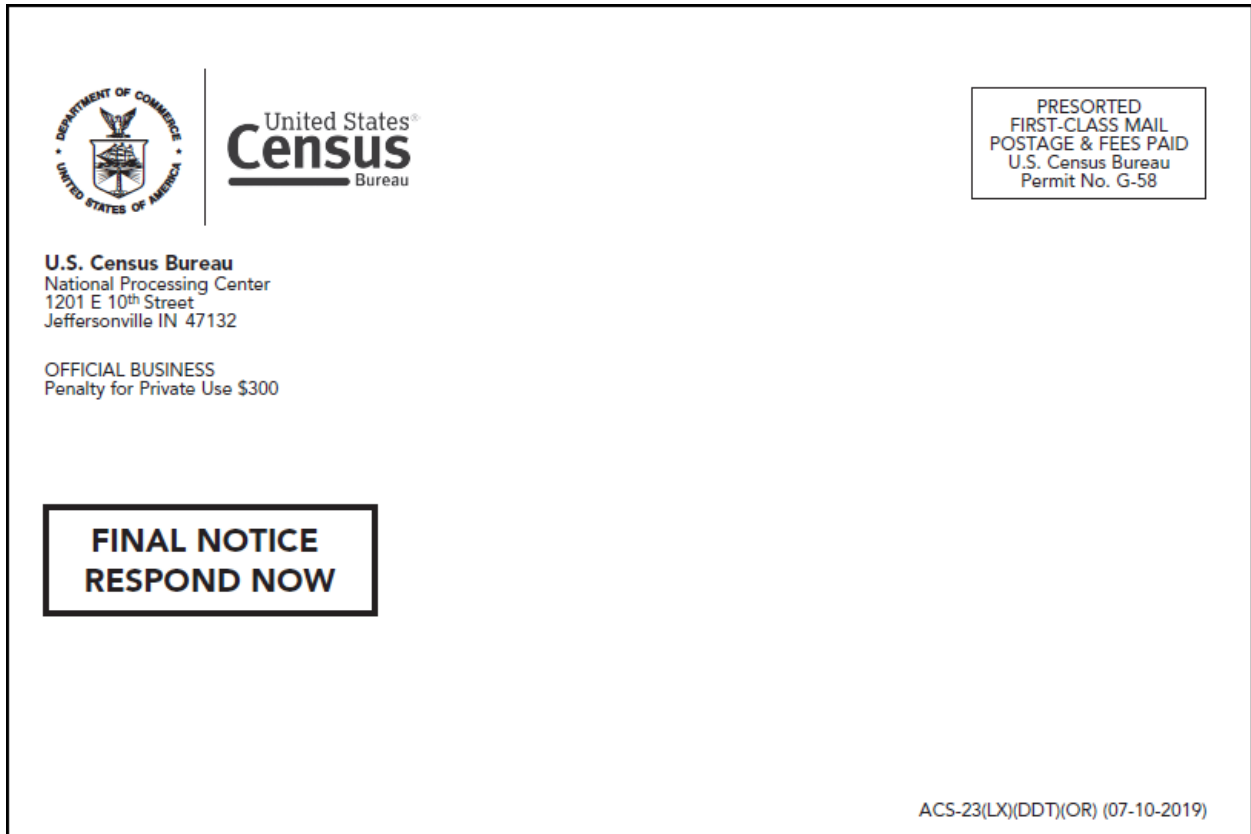
ACS-23(LX)(DDT)(BOD) (07-10-2019)

Appendix E. Neutral Treatment

E.1 Due Date in “Letter Side” Call-Out Box and a “Neutral” Message


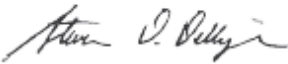
| | | |
|---------------------------|--|---------------------------|
| NO TEXT - PERFORATED AREA | | |
| NO TEXT - PERFORATED AREA | <div style="text-align: center;"> United States[®] Census Bureau</div> <p>U.S. Census Bureau Washington, DC 20233 Office of the Director</p> <p>A message from the Director, U.S. Census Bureau ...</p> <p>The U.S. Census Bureau has sent you several requests to complete the American Community Survey. If you have not already done so, now is the time to respond.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"><p>Due: November 22, 2019 Respond now at https://respond.census.gov/acs Log in using this user ID: OR complete and mail back your paper questionnaire.</p></div> <p>Your response is required by law.</p> <p><u>Your response is critically important to your local community and to your country.</u> Respond by November 22, 2019, or a Census Bureau interviewer may come to your home to complete the survey in person.</p> <p>If you would like to complete the survey by telephone or need assistance, please call our toll-free number (1-800-354-7271).</p> <p>Thank you.</p> <p>Sincerely,  Steven D. Dillingham</p> <p style="text-align: right;">census.gov</p> | NO TEXT - PERFORATED AREA |
| NO TEXT - PERFORATED AREA | | |

E.2 No Due Date in “Envelope Side” Call-Out Box

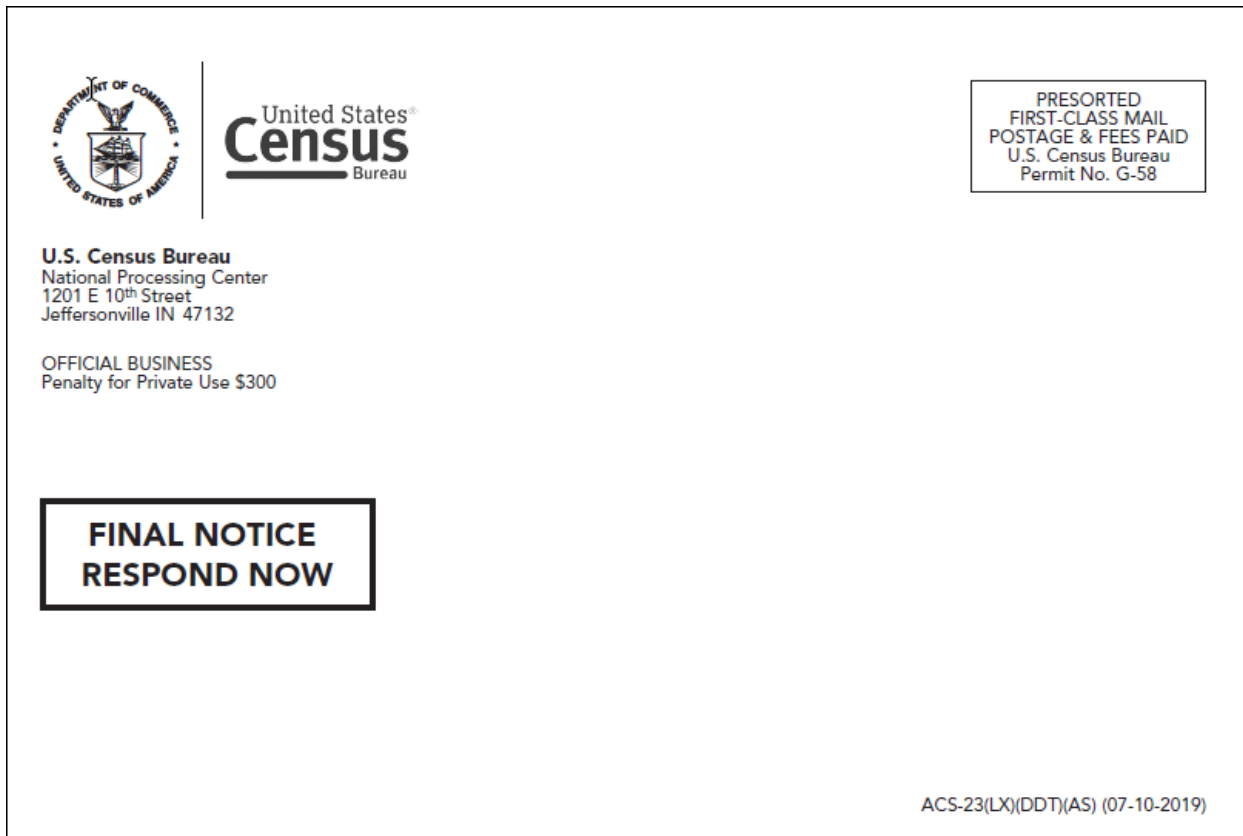


Appendix F. Add Treatment

F.1 Due Date in “Letter Side” Call-Out Box and an “Add” Message


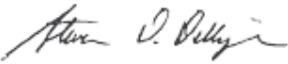
| | | |
|---|--|---------------------------|
| NO TEXT - PERFORATED AREA | | |
| NO TEXT - PERFORATED AREA |  United States[®] Census Bureau | NO TEXT - PERFORATED AREA |
| <p>U.S. Census Bureau Washington, DC 20233 Office of the Director</p> <p>A message from the Director, U.S. Census Bureau ...</p> <p>The U.S. Census Bureau has sent you several requests to complete the American Community Survey. If you have not already done so, now is the time to respond.</p> | | |
| <div style="border: 1px solid black; padding: 5px;"><p>Due: November 22, 2019 Respond now at https://respond.census.gov/acs Log in using this user ID: OR complete and mail back your paper questionnaire.</p></div> | | |
| <p>Your response is required by law.</p> <p>Because your response is critically important to your local community and to your country, a Census Bureau interviewer may come to your home to complete the survey in person. If you do not respond by November 22, 2019, we will add you to our schedule for a visit.</p> <p>If you would like to complete the survey by telephone or need assistance, please call our toll-free number (1-800-354-7271).</p> <p>Thank you.</p> <p>Sincerely,</p>  Steven D. Dillingham | | |
| NO TEXT - PERFORATED AREA | NO TEXT - PERFORATED AREA | |
| census.gov | | |
| NO TEXT - PERFORATED AREA | | |

F.2 No Due Date in “Envelope Side” Call-Out Box

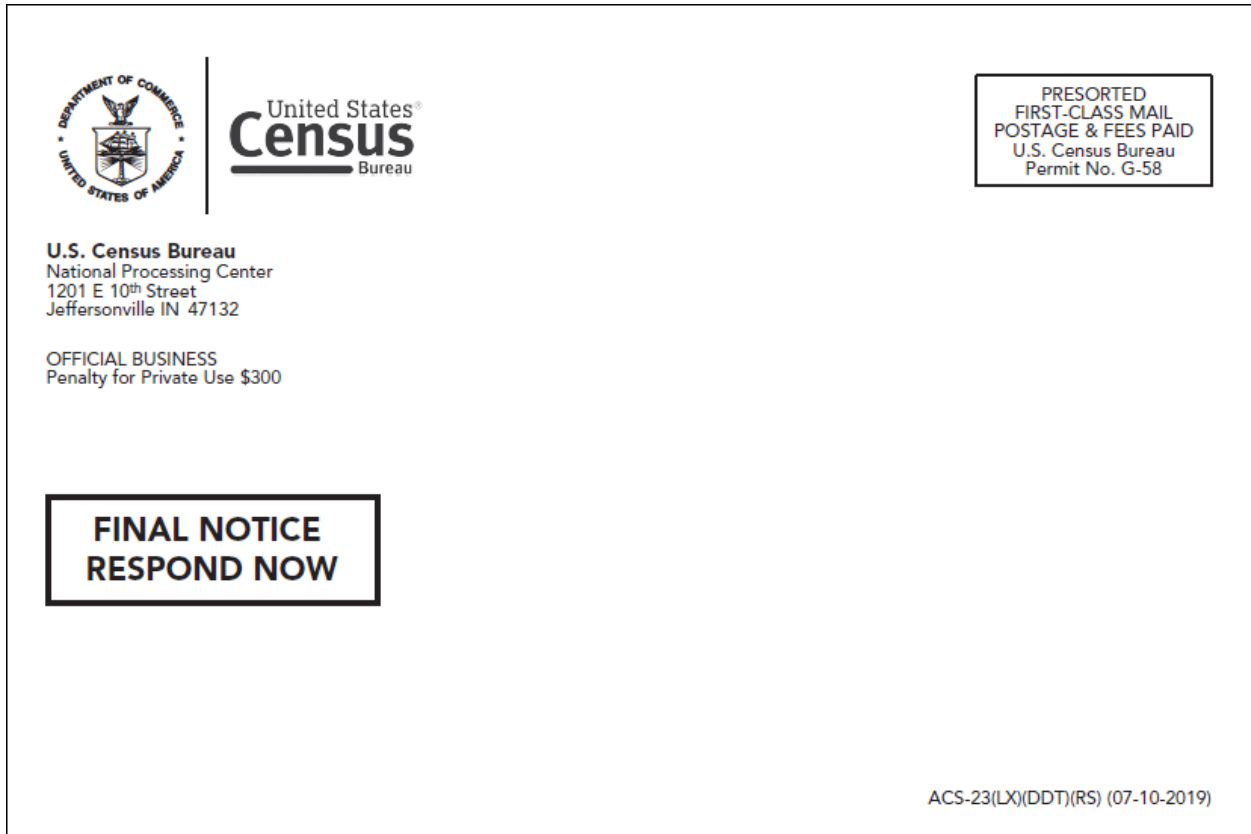


Appendix G. Remove Treatment

G.1 Due Date in “Letter Side” Call-Out box and a “Remove” Message

| | | |
|---------------------------|---|---------------------------|
| NO TEXT - PERFORATED AREA | | |
| NO TEXT - PERFORATED AREA | <div style="text-align: center;"> United States[®] Census Bureau</div> <p>U.S. Census Bureau Washington, DC 20233 Office of the Director</p> <p>A message from the Director, U.S. Census Bureau ...</p> <p>The U.S. Census Bureau has sent you several requests to complete the American Community Survey. If you have not already done so, now is the time to respond.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"><p>Due: November 22, 2019 Respond now at https://respond.census.gov/acs Log in using this user ID: OR complete and mail back your paper questionnaire.</p></div> <p>Your response is required by law.</p> <p>Because your response is critically important to your local community and to your country, a <u>Census Bureau interviewer may come to your home to complete the survey in person.</u> Respond by November 22, 2019 to be removed from our schedule for a visit.</p> <p>If you would like to complete the survey by telephone or need assistance, please call our toll-free number (1-800-354-7271).</p> <p>Thank you.</p> <p>Sincerely,  Steven D. Dillingham</p> <p style="text-align: right;">census.gov</p> | NO TEXT - PERFORATED AREA |
| NO TEXT - PERFORATED AREA | | |

G.2 No Due Date in “Envelope Side” Call-Out Box



Appendix H. Return Rates for the M1 Universe before the Fifth Mailing

There was no significant difference between the experimental treatments and the Control treatment prior to the fifth mailing. This indicates, that at least in terms of size, the universe that received each treatment in the fifth mailing is comparable.

Table 23. M1 Self-Response Return Rates prior to Fifth Mailing

| Mode | Control | Box | Envelope | Neutral | Add | Remove |
|---------------|----------------|------------|-----------------|----------------|------------|---------------|
| Self-Response | 46.5 (0.4) | 46.7 (0.4) | 46.7 (0.4) | 46.6 (0.3) | 46.3 (0.4) | 46.7 (0.4) |
| Internet | 34.1 (0.4) | 34.0 (0.4) | 33.8 (0.4) | 33.9 (0.4) | 33.2 (0.4) | 33.8 (0.4) |
| Mail | 11.9 (0.3) | 12.2 (0.3) | 12.4 (0.3) | 12.2 (0.2) | 12.5 (0.3) | 12.3 (0.2) |
| TQA | 0.5 (0.1) | 0.6 (0.1) | 0.5 (<0.1) | 0.5 (0.1) | 0.6 (0.1) | 0.6 (0.1) |

Source: U.S. Census Bureau, American Community Survey, 2019 ACS Due Dates Test

Note: Minor additive discrepancies are due to rounding. Standard errors are in parentheses. An asterisk (*) indicates a statistically significant result. Significance was tested based on a two tailed t-test at the $\alpha=0.1$ level.