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An Experimental Evaluation of Methods for Converting Partial interviews to Completes in an Address-Based Sample Survey

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Summary

Push-to-web surveys have emerged as a promising data collection method over the last decade. These surveys often use postal mail to request responses via the internet. However, breakoffs are a prevalent issue in the web mode that leads to incomplete data and potential bias in key survey estimates. Without the presence of interviewers to encourage cooperation, respondents are more likely to fail to complete a survey. Most studies focus on the use of a second incentive in nonresponse follow-ups, but few have considered its application of converting partial interviews to completes. We used data from an experiment conducted on the 2023 data collection of the California Health Interview Survey (CHIS). In the analysis, we divided partial interviews into two groups: sufficient partials, which completed at least 80 percent of the questionnaire, and insufficient partials, which did not meet this threshold but finished the first section of the questionnaire. We tested three methods for each group of partial interviews: 1) no reminder; 2) a reminder; 3) a reminder and a promised \$10 post-completion incentive. We found that sending an additional reminder with an incentive significantly boosted the completion/response rate among sufficient partials and insufficient partials.

Introduction

The California Health Interview Survey (CHIS) has been a mixed-mode (web and telephone) survey using an address-based sampling frame since 2019. With the implementation of the web mode in CHIS, there has been an increase in the number of breakoffs (also known as incompletes, dropouts, and partial interviews). Breakoffs are a prevalent issue in the web mode that results in missing data and potential bias in key survey estimates (Mittereder, 2019; Peytchev, 2011).

In the CHIS data collection, the completion status of adult interviews for partial interviews is categorized into two groups. One group consists of insufficient partials, which are defined as interviews that break off between Section A (basic demographics after informed consent) and the end of Section K (approximately 80 percent of the questionnaire). During post-collection data processing, CHIS normally excluded data from insufficient partials, leading to a lower response rate. The other group consists of sufficient partials, which are defined as interviews that break off after the end of Section K but before the end of the survey. CHIS uses data from sufficient partials and imputes missing data for them. Most recently, CHIS is experiencing a sharp increase in the rate of sufficient partials. For example, the rate of sufficient partial interviews in CHIS 2021 was over three times higher than in CHIS 2019 or CHIS 2020, possibly due to increased questionnaire length and the addition of sensitive topics to the end of the questionnaire.

This study has two primary goals: 1) To examine if incentives encourage insufficient partials to complete at least through Section K; 2) To explore if incentives encourage sufficient partials to complete the entire questionnaire. The experiment was conducted in CHIS 2023. We implemented three experimental arms for each type of partial interview: 1) No additional

reminder; 2) An additional reminder; 3) An additional reminder with a promised \$10 post-completion incentive.

Background

Sending a second incentive in a later contact might be a useful approach to convert partials to completes. The social exchange theory suggests that offering incentives creates a sense of reciprocity. Evidence for the effectiveness of using incentives to improve response rates is well documented in the survey literature (e.g., Dillman et al., 2014; Mercer et al., 2015). The social exchange theory might also justify the use of a second incentive to convert partials to completes. That is a second incentive might motivate the selected sample members to carefully read the follow-up survey request and subsequently complete the survey. However, sending a second incentive is not typically implemented in surveys since it rewards sample members for not completing a survey when the first incentive was provided (Dillman et al., 2014).

Recently, a few studies have started to test the use of a second incentive in nonresponse follow-ups. For example, Zhang et al. (2023) experimented with the use of a second incentive as a nonresponse follow-up strategy in the American Family Health Study, a national address-based probability sample. They found that sending a second \$5 prepaid cash incentive significantly improved the response rate by 6.7%, compared with the group that did not receive any second incentive.

Wagner et al. (2023) tested the impacts of a second incentive on response rates and the demographic composition of respondents in the American Family Health Study. They found that sending a second \$5 incentive along with a priority mailing significantly increased the response rate from 13.8% to 5.3% compared to no additional mailing or incentive. Moreover, the experimental group with a second \$5 incentive plus a priority mailing recruited higher proportions of Black and Hispanic respondents and seemed to recruit a higher proportion of individuals with some college and those with a high school degree or less.

The existing literature focuses on the use of additional incentives in nonresponse follow-ups and provided empirical evidence of the effectiveness of the second incentive (Messer and Dillman, 2011; Wagner et al., 2023; Zhang et al., 2023). However, there is a limited understanding of the effects of using a second incentive to convert partial interviews to completes. In the survey breakoff context, the breakoff point can happen at any point of the survey. An additional incentive might perform differently depending on the progress a respondent has made in the survey. A respondent who discontinues the survey at a later section have less remaining work to be completed and experienced more respondent burden, compared to a respondent who discontinues the survey early.

Methods

The CHIS Design

The CHIS survey reflects the non-institutionalized population in California, using an address-based sample design. In each participating household, CHIS randomly selects an adult respondent using the next birthday method for within household sampling. Approximately 20,000 completed interviews are conducted annually among the sampled adults. The interview for children aged 0 to 11 is conducted with the sampled adult respondent who is the parent or guardian of the child. The adolescent (aged 12 to 17) interview is conducted with the adolescent directly, after obtaining their parent permission. CHIS conducts interviews in multiple languages including English, Spanish, Chinese (Mandarin and Cantonese dialects), Korean, Vietnamese, and Tagalog.

The Partial Experiment Design

The 2023 CHIS data collection used a sequential mixed-mode protocol (push-to-web with a telephone follow-up). In the first phase, the sequence of mailings began with an initial invitation letter with a visible \$2 cash incentive, followed by a sealed postcard reminder, a second reminder letter, and finally a second sealed postcard reminder. A survey URL, a secure access code unique to the sampled respondent, and a Frequent Asked Questions sheet were provided in the first mailing to help respondents to complete the survey online. In the second phase, CHIS used a computer-assisted telephone interviewing to contact nonresponding households where addresses can be matched to a listed telephone number, and the number of call attempts allowed in obtaining an interview was six.

The partial experiment was introduced after the second phase of the data collection. Adult sample cases who completed at least Section A (e.g. basic demographics) but remained unresolved were eligible for the experiment. Due to item sensitivity, respondents who did not complete the actual Adverse Childhood Experiences (ACE) assessment questions or questions on suicide ideation (the last few questions at the end of the CHIS adult questionnaire) did not receive a reminder letter. All eligible partial respondents were randomly assigned to one of the three experimental groups: 1) no reminder; 2) receiving a reminder; 3) receiving a reminder and a promised \$10 post-completion incentive. Each group had an approximate sample size of 1,500, as illustrated in Table 1. The reminder letters in the experiment started on April 6th 2023 and ended on November 11th 2023.

Table 1. Partial experiment sample size by experimental group and completion status.

Experimental group	Insufficient partials	Sufficient partials	Total
Reminder + \$10	1,266	292	1,558
Reminder	1,235	296	1,531
No Reminder	1,206	329	1,535

This study primarily focused on the completion rate (i.e., the number of fully completes compared to the total number of the sample) for sufficient partials and the response rate (i.e., the number of sufficient partials and completes compared to the total number of the sample) for insufficient partials. Fully completes in this report are defined as interviews that complete

the entire survey, including respondents who didn't finish the follow-up survey permission section. We also examined whether the proposed treatments improved the completeness of their response. The missing data were measured at the questionnaire section level. Each section in the questionnaire had a corresponding indicator of section completeness provided by the data collection vendor. We also reported the costs associated with each experimental group.

Results

Table 2 presents the completion rates among the sufficient partials across three experimental groups. The control group, which was not sent any additional mailings, had a 3.0% completion rate at the end of data collection. This finding demonstrates that a few respondents with sufficient partial interviews completed the survey without any additional reminder mailings. The treatment group that only received a reminder yielded a completion rate of 4.7%. Notably, the treatment group that received a reminder along with a promised \$10 post-completion incentive, achieved a substantial increase in the completion rate (14.0%). In a separate analysis, we found that the effect of sending an additional reminder with a second incentive was significantly stronger than that of only sending an additional reminder.

Table 2. Completion rates among sufficient partials by experimental group.

	n	Completion rate (%)	Chi-square p-value
Experimental group			<.001
Reminder + \$10	292	14.0%	
Reminder	296	4.7%	
No Reminder	329	3.0%	

Figure 1 illustrates the section completeness among the sufficient partials by experimental group and CHIS adult questionnaire section. The color gradation, ranging from dark red to light red, visually represents the degree of section completeness in each CHIS adult questionnaire section; a darker red indicates a higher degree of section completeness. Sections prior to Section K are omitted in Figure 1, since, by definition, sufficient partials have achieved 100% section completeness before Section K. The “No reminder” group had the lowest percentages of section completeness in the last few sections, namely Sections M, P, and Q. Notably, the “Reminder + \$10” group had the highest percentage of section completeness in Section Q.

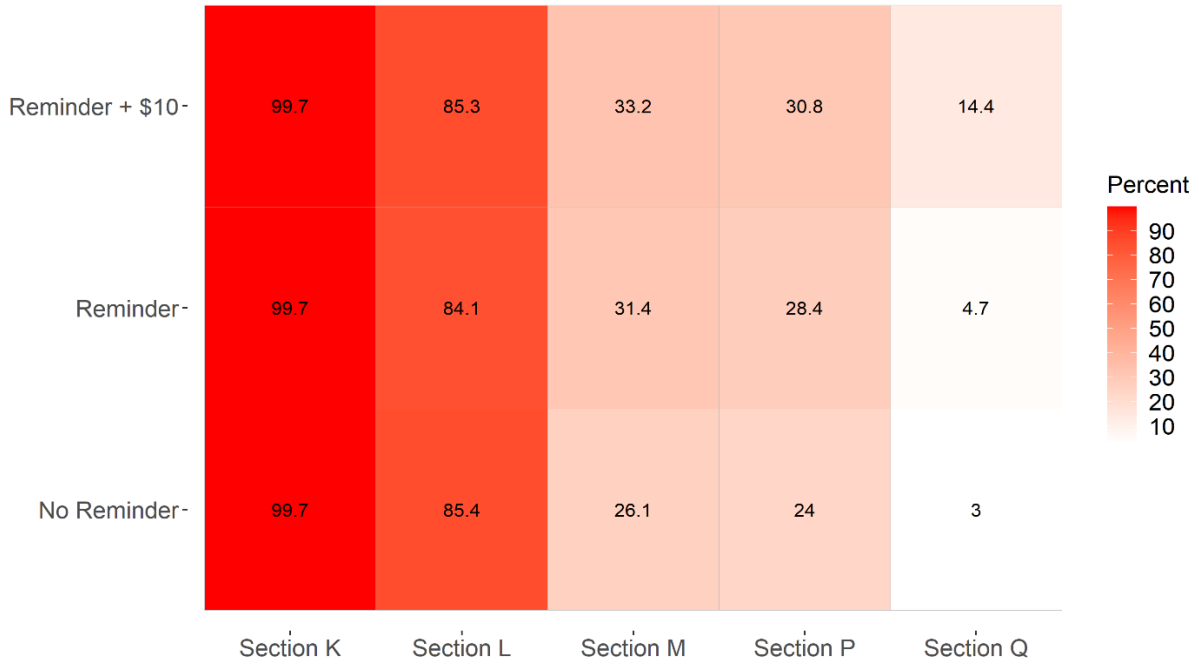


Figure 1. Section completeness among sufficient partials by experimental group and questionnaire section.

Note: The measure of the completeness of Section Q did not consider ACE assessment questions.

Table 3 presents the response rates for the insufficient partials by experimental group. The control group, which did not receive any reminders, had the lowest response rate of 3.7%. The first treatment group, which only received a reminder letter, had a high response rate of 7.3%, while the second treatment group, which received mail along with a \$10 incentive, showed the highest completion rate of 10.4%. We also tested completion rates between “Reminder + \$10” group and “Reminder only” group, the result was statistically significant (p-value = 0.007).

Table 3. Response rates among insufficient partials by experimental group.

Experimental group	n	Completion rate (%)	Chi-square p-value
Reminder + \$10	1,266	10.4%	<.001
Reminder	1,235	7.3%	
No Reminder	1,206	3.7%	

Figure 2 shows the section completeness for the insufficient partials by experimental group and questionnaire section. The section completeness was 100% for Section A across all groups, suggesting that all cases completed Section A. Overall, the section completeness reduced gradually from Section A to Section Q. The section completeness in the “No reminder” group decreased more sharply than other two treatment groups. The “Reminder + \$10” group had a

higher percentage of section completeness than the “Reminder” group in the later sections, especially after Section K.

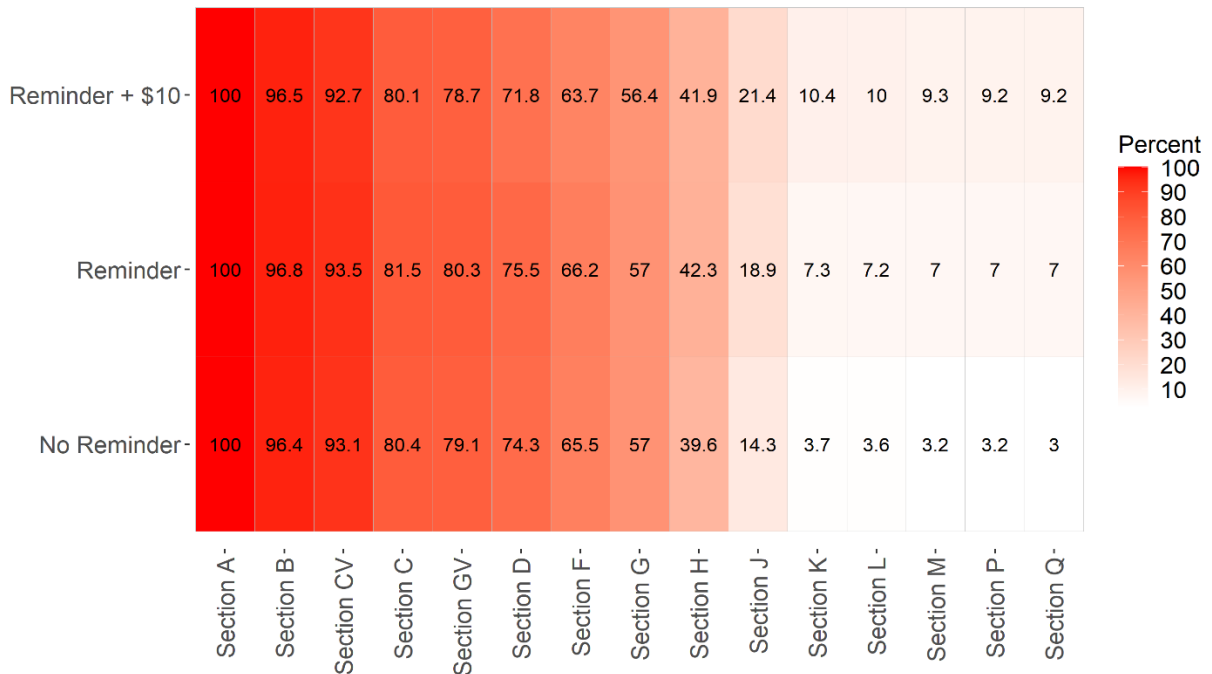


Figure 2. Section completeness among insufficient partials by experimental group and questionnaire section.

Note: The measure of the completeness of Section Q did not consider ACE assessment questions.

Table 4 presents the costs for the sufficient partials and insufficient partials by experimental group. Among the sufficient partials, the “Reminder” group was more expensive than the “Reminder + \$10” group in terms of the total costs per complete (\$29.60 vs \$19.97). However, sending an additional \$10 incentive to insufficient partials yield higher costs per complete / sufficient partial than only sending an additional \$10 incentive.

Table 4. Costs for the sufficient partials and insufficient partials.

	Reminder	Reminder + \$10
Sufficient partial		
No. completes	14	41
Costs per complete	\$29.60	\$19.97
Insufficient partial		
No. completes and sufficient partials	90	132
Costs per complete / sufficient partial	\$19.22	\$23.43

Note: The control group (no reminder) does not have any additional costs.

Discussion

We experimentally evaluated the use of sending a second incentive to convert partial interviews to completes. We found that sending a second incentive significantly improved the completion rate for the sufficient partials and had lower costs per complete. Sending a second incentive to the insufficient partials also significantly improved the response rate, while the costs per complete / sufficient partial was \$4.21 more expensive than sending a reminder letter only.

This study has several limitations. First, we mainly focus on the nonresponse and section completeness. Future research should further examine if sending a second incentive reduces nonresponse bias. Second, the cutoff point between sufficient partials and insufficient partials is set arbitrarily at Section K. Future research should explore the optimal cutoff point that yields best data collection results.

In summary, sending an additional reminder with a \$10 post-incentive to sufficient partials is a promising approach to obtain a higher number of completes. If the budget is available, sending a second incentive to the insufficient partials could also improve the response rate.

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