

The Effect of a Pre-Due Date Reminder Letter on Nonresponse in a Business Survey

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Background

The Business and Professional Classification Report (SQ-CLASS) is conducted quarterly in order to update the sampling frame for the Census Bureau's business surveys and the Economic Census, and allows the Census Bureau to keep current with rapid changes in the marketplace caused by business births, deaths, and changes in company organization. Since many are births, they have not been selected to participate in Census Bureau business surveys before. Every quarter, a random sample of businesses is selected from a list of new or re-activated Employer Identification Numbers updated with data from the IRS. Sampled firms are mailed a letter with instructions to use an online reporting system. A follow-up reminder letter is mailed to nonrespondents after the due date. Data collected include sales/receipts, principle lines of merchandise, company organization, North American Industry Classification System (NAICS) code, and other industry-specific data (e.g., wholesale inventories).

Contact Strategy Experiments

In preparation for the 2017 Economic Census (EC17), we conducted a series of experiments embedded in our annual and quarterly business surveys. The goal is to identify effective contact strategies to increase timeliness and overall response for implementation in EC17 and in the other surveys. We realized response might be improved by varying the intervals between contacts, and the number and timing of contacts. "Follow-up contact should be timed to allow the prior contact to have its maximum impact (i.e., entering respondents' awareness and the greatest number of responses completed), but before the first contact is forgotten altogether" (Dillman et al. 2009). There will be an "additive effect," i.e., the cumulative effect of multiple contacts within a sequence (Dillman et al. 2009). For SQ-CLASS, we decided to test the effect of a reminder letter mailed out about three weeks before the due date.

Method

Design

To test the effects of the pre-due date reminder letter on response rates, we implemented a simple experimental design (pre-due date reminder letter vs. no pre-due date reminder letter). The 'no pre-due date reminder letter' condition represents the "control" group and follows previous SQ-CLASS pre-due date and post-due date collection procedures.

Participants

The sample consisted of 15,369 business who were nonrespondents as of 08/12/2014. The treatment group (N = 4,640) was randomly selected from these nonrespondents.

Materials

The pre-due date reminder letters informed respondents of their obligations to complete the SQ-CLASS and provided them with the Web address and log-in information needed to access their forms.

Procedure

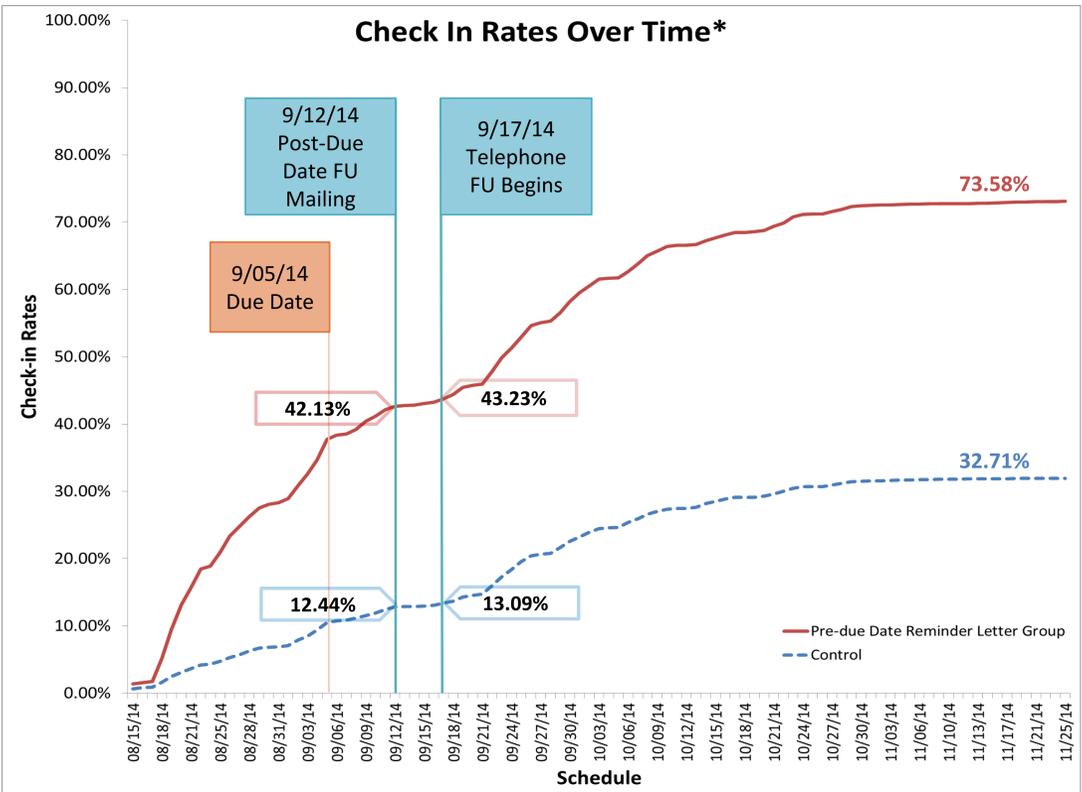
All cases in the experiment followed the normal production procedures and deadlines that are part of the SQ-CLASS data collection. However, respondents in the pre-due-date reminder conditions received a letter approximately three weeks before the SQ-CLASS due date. Respondents in the control group did not.

Analysis

Cases with check-in dates prior to 08/15/2014 and invalid cases were removed from the analysis. The covariates included: Industry (NAICS), call result, call scheduler status source, time zone, case contacted by phone.

Operation	Actual Dates (after post-test)	
	Treatment	Control
Initial mail file creation	07/28/14	07/28/14
Initial mail	08/01/14	08/01/14
Pre-due date reminder file creation	08/12/14	X
Pre-due date reminder mailing	08/15/14	X
Due Date	09/05/14	09/05/14
Post-due date FU file creation	09/08/14	09/08/14
Post-due date FU mailing	09/12/14	09/12/14
Telephone Follow-up	09/17/14	09/17/14

Results

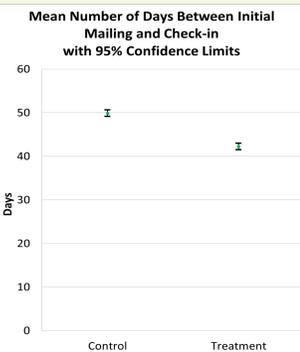


Source: Business and Professional Classification Report, 3rd Quarter 2014. *Cases with check-in dates prior to 08/15/2014 (the pre-due date reminder letter mailing) removed from analysis.

One-way ANOVA Comparing the Number of Days Between Initial Mail and Check-in

For respondents with check-in dates (N=6865), the pre-due date reminder letter significantly affected the number of days respondents took to check-in ($F(1, 6864) = 199.5, p < .0001$).

Respondents that received the pre-due date reminder letter checked-in in significantly fewer days ($M = 42.2$) than those that did not receive the extra letter ($M = 49.9$).



Check-in Propensity Before Post-Due Date Follow-up Mailing (09/12/2014)

The pre-due date reminder letter had a significant effect on check-in rates prior to the post-due date follow-up mailing, even when controlling for the other covariates. Respondents that received the pre-due date reminder letter were over twice as likely to have checked-in before 9/12/14 than those that did not receive the extra letter.

Without taking the other covariates into account, respondents that received the pre-due date reminder letter were over five times as likely to check-in before the post-due date follow-up letter mailing than those that did not receive the extra letter.

Check-in Propensity Before Telephone Follow-up (09/17/2014)

The pre-due date reminder letter had a significant effect on check-in rates prior to telephone follow-up, even when controlling for the other covariates. Respondents that received the pre-due date reminder letter were over twice as likely to have checked-in before 9/17/14 than those that did not receive the extra letter.

Without taking the other covariates into account, respondents that received the pre-due date reminder letter were over five times as likely to check-in before telephone follow-up began than those that did not receive the extra letter.

Final Response Propensity

The pre-due date reminder letter had a significant effect on final response rates, even when controlling for the other covariates. Respondents that received the pre-due date reminder letter were twice as likely to have responded than those in that did not receive the extra letter.

Without taking the other covariates into account, respondents that received the pre-due date reminder letter were nearly five and a half times as likely to respond than those that did not receive the extra letter.

Odd Ratio Estimates

Check-in Before Post-due Date Follow-up Mailing			
Model	Effect	Point Estimate	95% Wald Confidence Limits
Treatment + 5 Covariates	Treatment 1 vs 0	2.1	1.9 2.4
Treatment Alone	Treatment 1 vs 0	5.1	4.7 5.6
Check-in Before Telephone Follow-up			
Model	Effect	Point Estimate	95% Wald Confidence Limits
Treatment + 5 Covariates	Treatment 1 vs 0	2.1	1.9 2.3
Treatment Alone	Treatment 1 vs 0	5.1	4.7 5.5
Final Response			
Model	Effect	Point Estimate	95% Wald Confidence Limits
Treatment + 5 Covariates	Treatment 1 vs 0	2.0	1.1 3.8
Treatment Alone	Treatment 1 vs 0	5.5	5.1 5.9

Significant Covariates

	Industry	Call Source	Time Zone
Check-in before 9/12/14		X	
Check-in before 9/17/14		X	
Final Response	X	X	X

One-way ANOVA Comparing the Number of Calls Respondents Received

When isolated, respondents that responded and received calls (N=6514). The pre-due date reminder letter significantly affected the number of calls a case received ($F(1, 6513) = 116.7, p < .0001$).

The respondents that received the pre-due date reminder letter received significantly fewer calls ($M = 1.8$) than those that did not receive the extra letter ($M = 2.2$).

Conclusions

- The pre-due-date reminder letter was effective. It resulted in more responses before the more expensive, conventional follow-up methods began, but did not raise the overall response rate when compared to previous survey cycles.
- The pre-due-date reminder letter combined with the post-due date follow-up letter was more effective than the post-due date follow-up letter alone. This appears to confirm the idea of a cumulative effect of combined mailings.
- The shorter mean check-in time for the reminder group means that these cases received fewer telephone calls. This has Implications for responsive design in that the less expensive contact mode, mail, can be used more effectively to reduce the number of cases referred for more costly telephone follow-up.
- There appears to be a similar delay between the follow-up mailing and the spike in responses across groups. This suggests it may be better to allow a little more time for a contact to have an effect before the next contact is initiated.

Limitations and Future Directions

- We would have preferred to have selected the treatment group randomly from the total sample before initial mailing.
- We were unable to influence the telephone follow-up process or monitoring.
- We cannot tell from the data if the calls were made for nonresponse follow-up, data validation, or if the call was placed by a respondent to an analyst.
- During the majority of the analysis we looked at check-in rates, which do not indicate a completed response. Response rates were based on whether or not respondents provided the required data elements of SQ-CLASS. However, the 'satisfied by' dates were unavailable for this analysis.
- As business surveys go, SQ-CLASS is relatively brief and uncomplicated in terms of requested data, which may limit comparisons to other surveys.
- We also will be looking at these results in the broader context of the EC17, and what they would mean for effective future strategies with data collection.
- We will continue to test mail sequence variations in other surveys. We also plan to incorporate contact strategies experiments in the EC17.

Reference

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2009). *Internet, mail, and mixed-mode surveys*. Hoboken, New Jersey: John Wiley & Sons.

Source

Business and Professional Classification Report, 3rd Quarter 2014.

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