Does Prefilling Responses on a Longitudinal Establishment Survey Stem Sample Attrition?

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Abstract

Sample attrition occurs when the burden of participation outweighs the perceived rewards and the threat of sample attrition grows the longer a study continues. Mathematica has been conducting an annual survey of substance abuse treatment facilities since 1997. Since facilities remain in the sample for as long as they continue to provide treatment services, many have been participating for years. In 2008, for example, about half of the 17,000 facilities have been in the survey for 10 years or longer, with 95 percent having participated at least 8 out of the past 10 years. While response rates have remained strong, some facilities have begun complaining about the burden of yearly participation. To minimize burden, we conducted an experiment that involved prefilling responses to a large set of factual questions with responses from the previous year.

Although about half of the questions were prefilled in the experimental group, the average completion time was only about four minutes less than the control group. The prefill option also did not increase the response rate for the experimental group, nor did it lower the percentage of cases requiring telephone follow-up or the number of telephone attempts. The most important outcome, however, appears to have been more perceptual than factual. Hundreds of respondents took the time to tell us how "very helpful" the prefill option had been, how much it had "saved a lot of time" or how it had been "a good time-saver." Given that respondent burden in longitudinal studies includes the respondent's *perception* of the burden associated with future participation, it appears the perception of time saved in the experimental group may work to minimize future sample attrition, but it is too early to tell at this point.

Key Words: Sample attrition; longitudinal surveys; establishment surveys

1. Introduction

Sample attrition is always a concern in longitudinal studies. It occurs when the burden of participation begins to outweigh the rewards of participation. As has been noted elsewhere, the burden of participation has two components: the immediate burden and the longitudinal burden. The first component pertains to the length of the initial interview and the second pertains to the perceived burden of future interviews (Apodaca, Lea, and Edwards 1998). Looking at the impact of longitudinal burden, the Medicare Current Beneficiary Survey (MCBS) estimated that respondents' concerns over longitudinal burden resulted in a 5 percent decrease in the response rate in the 1996 MCBS.

As would be expected, the threat of sample attrition grows the longer a study continues. For example, the Michigan panel study of income dynamics, which started in 1968 and continues today, experienced 50 percent sample attrition in the 21 years between 1968 and 1989 (Fitzgerald, Gottschalk, Gottschalk, and Moffitt 1997). On the National Survey of Substance Abuse Treatment Services (N-SSATS), although the response rate has remained strong, concerns over sample attrition are beginning to arise.

N-SSATS is an annual survey of all known substance abuse treatment facilities that Mathematica Policy Research has been conducting for the Substance Abuse and Mental Health Services Administration (SAMHSA) since 1997. Although the absolute number of facilities remains fairly constant at about 17,000, the sample is not static. Each year about 14 percent of the facilities drop out and are replaced by facilities that are new or reentering the survey. This means that the vast majority of surveyed facilities from year to year are not new, and once deemed eligible, are contacted year after year. For example, of the facilities in the 2008 survey, half have been in the survey for 10 years or longer and 95 percent of these facilities have participated for at least 8 out of the past 10 years. Although the response rate has remained strong—above 90 percent for 12 of the past 13 years and 95 percent or above every year since 1999—sample fatigue appears to be setting in. Some facilities have begun complaining about the burden of yearly participation and the fact that the questionnaire has been getting longer and more burdensome, which it has. Suddenly, the reward for participating is losing ground to the burden or perceived burden of continued participation. Although a sound data collection strategy has been critical in maintaining the response rate, the promise of inclusion in SAMHSA's Online Treatment Facility Locator and the National Directory of Drug and Alcohol Abuse Treatment Programs has been the most powerful motivator.

2. The Experiment

In response to the possibility of growing sample attrition in the N-SSATS study, we considered a number of options, such as: (1) moving to a sample-based approach, (2) rotating facilities out of the study after a specified number of years, and (3) rotating facilities so that they were only surveyed every second or third year. Seeking a more minimalist change, however, we settled on experimenting with the idea of prefilling some questions with a facility's responses from the previous year, which a number of facilities had requested us to do. These facilities believed that prefilling their responses would help reduce the level of effort required to complete the questionnaire.

2.1 The Prefill Option

In reality, even if a question is prefilled, the respondent must read the response to determine whether the information is still current. If the information is not correct, the respondent must update it. Whether or not updating is needed, the respondent must press the "submit" button before moving to the next question. Thus, it was not clear whether prefilling some questions would be the time-saver that was imagined.

After some conversation, we decided to only prefill questions on the web version of the questionnaire. Prefilling questions on the mail questionnaire was too costly. We also chose not to prefill questions on the telephone survey, because we did not want to encourage responding by phone. If prefilling questions on the web version increased the

number of sample members who responded by web, this would help minimize data collection costs.

2.2 Which Questions to Prefill

The SAMHSA Online Locator and National Directory provide detailed information about each facility. N-SSATS asks a number of factual questions for the purpose of annually updating the directory and online locator. These questions (for example, type of services offered, address, phone number, and types of payment accepted) change little from year to year. We chose not to prefill questions that ask about the number of clients served in the past year since we expect this number to change. Our goal was to encourage the facilities to check their records for their information. In the end, we settled on 34 factual questions to prefill, which represented nearly half of the items in the questionnaire.

In the web questionnaire, the selected items were designated by a "prefill" icon. The icon alerted respondents that this question was prefilled with information from the previous year. Respondents were told to review the displayed information and make changes as needed.

2.3 Selecting the Sample

Since the experiment required responses from the previous year, only those facilities that had responded to the 2007 N-SSATS were eligible. Since about 95 percent had, almost all facilities were eligible. The ineligibles were primarily new facilities or those that had refused to participate in 2007. We stratified the 2007 respondents by type of facility and whether the state had deemed the facility to be "directory eligible," and then distributed the 2007 respondents into either the treatment group or the control group.

2.4 Data Collection Procedures

The data collection procedures for both groups were identical, with the exception of the cover letter and the reminder letters. The treatment group cover letter and reminder letters informed treatment group members about the prefill option for those who responded by web. They were told that these questions would be preceded by an icon and that they were to carefully review the prefilled information for inclusion in the directory.

2.5 The Research Questions

Although over the years a number of facilities have suggested prefilling questions, that number is still quite small when compared to the total sample of 17,000 facilities. Nonetheless, we expected that offering the prefill web option could result in:

- A higher response rate for the treatment group due to the potential for this option to reduce burden
- A higher proportion of web completes in the treatment group since this option is only offered for those who completed the survey online
- A faster web completion time for the treatment group if prefilling minimizes the required response time
- Cost savings if prefilling causes a faster rate of return (e.g., a smaller second mailing and fewer cases being sent to computer-assisted telephone interviewing [CATI] for follow-up)
- Fewer telephone attempts because of the faster responding rate
- A slight loss in data quality if members of the treatment group do not carefully review the prefilled information before hitting the submit button

3. The Findings

Table 1 gives the response rates for both the treatment and control groups, as well as their percentage of web completes and web completion times. As shown, the response rates in both groups are almost identical and not in the predicted direction. The treatment group had a 97 percent response rate, while the control group had a 97.6 percent response rate. Although sample size makes this difference of less than one percentage point statistically significant, the difference is not meaningful.

Table 1: Treatment and Control Group Comparisons: Response Rate, Web Completes and Web Completion Times

Group	Response Rate[1]	Web Completes (Percentage)	Web Completion Time (Minutes)
Treatment (N= 6187)	97.0*	50.2*	32.9*
Control (N=6092)	97.6	44.5	36.8
Overall (N=12,396)	97.3	47.3	34.8

* p< .001

The percentage difference in web completes, however, provides an important difference. The treatment group's additional number of web completes, nearly six percentage points, suggests that, had this option been offered to the entire sample, the total number of additional web completes might have totaled 900 or more, representing a notable savings in data entry, editing and coding and data processing costs. The web completion times were also similar, although the average treatment group completion time was about four minutes less, indicating that prefilling the questions had resulted in a minimal reduction in response burden.

The higher percentage of web completes in the treatment group suggests some mode switching might have occurred between 2007 and 2008, shown in Table 2. While the difference was in the direction we had expected, the difference between the two groups was, again, less than one percentage point and not statistically significant (39.9 percent of the treatment group switched modes, compared to 39.5 percent of the control group).

[1] Because the experiment excludes facilities that did not respond the previous year or are new to the sample, the overall response rate is closer to 95 percent, rather than the 97 percent achieved here.

Table 2: Treatment and Control Group Comparisons: Mode Switching

Group	Changed Mode	Number of Mode Changes	Percentage Changed to Web	Percentage Changed to Mail	Percentage Changed to Phone
Treatment (N=6,037)	39.9	2,321	41.1*	31.2	27.7
Control (N= 6,081)	39.4	2,321	36.2	36.4	27.4
Total (N= 12,118)	39.7	4,642	38.6	33.8	27.6

* $p < .001$

The more interesting question, however, is not just that mode switching occurred, but how these changes were distributed among the three modes. For example, if mode shifts into web were counterbalanced by an equal number of mode shifts to phone, the net result would not be very promising, since CATI completes are, by far the most expensive data collection mode.

Looking again at Table 2, we see, oddly enough, that the two groups had the same number of mode switches: 2,321. However, whereas an almost equal percentage of control group members switched to mail and web (36.4 and 36.2 percent, respectively), a notably larger percentage of the treatment group switched to web (41.1 percent versus 31.2 switching to mail), a statistically significant difference.

3.1 Cost Savings

As noted above, increasing the number of interviews completed online represents a cost savings. We had also hoped the prefill option would generate early interest, resulting in an initially higher rate of web completions in the treatment group. Thus, we examined the number of cases that required a second mailing (about six weeks into the field period) and later, the number sent for CATI follow-up. The expectation was that the treatment group would have a smaller second mailing and a smaller percentage requiring CATI follow-up. The results are shown in Table 3. While the results are in the right direction, with the treatment group slightly ahead of the control group, the numbers are, again, almost identical, with less than one percentage point separating the two groups on both measures.

We looked at one last cost measure—mean number of CATI call attempts. We assumed that once the telephone interviewers had explained the prefill option to the nonrespondents sent for CATI follow-up, the potential attractiveness of the prefill option might result in the need for less telephone follow-up. Again, however, the prefill option failed to cause a difference.

Table 3: Comparison of 2007 to 2008 Outcomes on Selected Cost-Related Measures

Group	Percentage of Cases in Second Questionnaire Mailing	Percentage of Cases Sent to CATI Follow-Up	Mean Number of Telephone Attempts
Treatment (N=6,187)	57.7	32.9	10.8
Control (N= 6,209)	58.0	33.6	11.1
Overall (N= 12,392)	57.8	33.3	11.2

Note: No differences of statistical significance.

Finally, we were concerned that providing prefilled questions might cause respondents to be less careful about the information they submitted. Reporting less accurate information would be problematic for the Online Locator and the National Directory. Consequently, we added a few debriefing questions to the end of the web questionnaire for the treatment group members. One question asked respondents how many of the prefilled questions they carefully reviewed before submitting their responses. As shown in Table 4, nearly 90 percent said they reviewed all of the prefilled responses and another 8.7 percent said they reviewed most of the information. Not being totally reassured, we compared the 2007 responses for all of the prefilled questions to the 2008 responses for both the treatment and control group members and documented when a change had been made. As shown in Table 5, the percentage of questions changed, or updated, was higher in the control group (16 percent) than in the treatment group (11 percent). While this might be an indicator of future problems, how it will play out is uncertain at this point.

Table 4: Treatment Group: Review of Questions

Group	Percentage Who Reviewed All	Percentage Who Reviewed Most	Percentage Who Reviewed a Few	Percentage Who Reviewed None
Treatment N=2,929	89.9	8.7	1.2	.2

Table 5: Prefill Questions: Updated Responses in 2008

Group	Percentage 2007 Prefill Responses Updated
Treatment (N=6,187)	11.0
Control (N=6,209)	16.0
Overall (N=12,396)	14.0

4. SUMMARY

Prefilling a facility's responses from the previous year did not make as big a difference as we had anticipated. On the one hand, the prefill option did not:

- Boost response rates
- Accelerate the rate of return for completed interviews
- Reduce the mean number of telephone attempts during CATI follow-up.

This lack of a meaningful difference on the response rate may be partially attributable to the already high response rate that N-SSATS enjoys (95 percent), which does not allow much room for improvement.

The fact that the rate of return for completed questionnaires did not improve may be partially attributable to the length of time that many of these facilities have been in the survey—a decade or longer. This longevity suggests that well-established routines for responding to this annual survey may already exist and that these patterns are not easily changed by the simple introduction of prefilled responses. There is also some evidence that prefilling questions may cause the facilities to be less focused on updating their factual information. At this point, however, it is too early to know if this will become an issue. So, other than increasing the percentage of web completes, which presents significant saving on this project due to all of the editing that must be completed on paper questionnaires, no other significant cost savings occurred.

On the other hand, offering the prefill option did:

- Significantly increase the proportion of web completes
- Lower the web completion times

As noted earlier, the nearly six additional percentage points of web completes could increase the number of web completes by more than 900, which would represent a notable cost saving. It would help minimize data entry, data editing and data processing costs with respect to mail questionnaires.

4.1 Perceived Burden

The most important outcome of this experiment, however, may be more perceptual than factual. At the end of the web questionnaire, for example, the treatment group was asked several debriefing questions. One asked if the respondent would like to see the prefill

option continued in the future—98.7 percent said "Yes." Moreover, hundreds took the time to tell how "very helpful" the prefill option had been. Examples of other typical comments included: "Very helpful!!!! Saved a lot of time," "Saves quite a bit of time," "a good time-saver," "This was fabulous!" and "EXTREMELY EFFICIENT." It must be remembered, however, that the average time savings was only four minutes.

As noted earlier, respondent burden in longitudinal studies has two components, the first is the immediate burden of the initial interview and the second is the longitudinal burden or the respondent's perception of the burden associated with participating in future rounds of the survey. The reality is that prefilling questions with last year's responses shortened the interview by an average of four minutes. The perception, however, appears to suggest a far greater reduction in burden. Thus, prefilling may work to minimize future sample attrition, but it is too early to tell at this point.

4.2 The 2009 N-SSATS

As a result of the experiment, the 2009 N-SSATS offered the prefill web option to all 2008 respondents. Currently, six weeks into the field period, the response rate for 2009 is almost identical to the 2008 rate, but the web completes are running about seven percentage points ahead of last year: 62.9 as opposed to 55.9 percent. At the end of the 2009 data collection, we will repeat these comparisons, using the 2008 treatment group data and the 2009 outcomes.

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