MODE EFFECTS OF NONRESPONSE FOLLOW-UP IN AN ESTABLISHMENT SETTING

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1. INTRODUCTION

Mode of follow-up is an important factor in reducing nonresponse and affecting data quality and survey cost. Over the last twenty years, for example, survey researchers have used certified-mail as a last attempt to convert "holdouts" in household surveys. Dillman (1978) reports that the third follow-up raises response rates 13 percentage points on the average, and that the certified mailing produces a greater relative return than any mailing that preceded it.

However, the recent trend in household surveys is to replace the final certified mail with a telephone follow-up (Dillman, 1991). This change reflects societal trends towards more single-person and dual-worker households. Such households are less likely to be at home to get certified mail during the day, but are likely to pick up the telephone in the evening. This trend is much less relevant, we argue, in an establishment setting where someone is usually at work to sign for the certified mail and telephone calls are more likely to be screened.

Thus, our hypothesis is that the certified mail in an establishment setting is at least as effective as telephone prompting. We argue that establishment respondents are more likely to react to formal communication such as certified mail that requires the recipient to acknowledge delivery by his or her signature. A competing hypothesis is that the telephone has become a more popular and accepted channel of communication in the establishment setting, and those hard-core holdouts who used to reject the mail request may now react more favorably to the telephone follow-up.

Obtaining a high response rate by a follow-up method does not necessarily guarantee the follow-up method to be adopted. The influence of "satisficing" behavior" on data quality and relative survey cost are two other important factors we investigate across follow-up methods in this paper.

2. THEORETICAL BACKGROUND

Two general theories are applicable to studying participation in follow-ups of a government-sponsored survey. People in an establishment setting respond because of social responsibility or the perception of authority. According to social responsibility attribution, people are more likely to

cooperate with government surveys because it is their responsibility and because the findings are beneficial to them (Cialdini et al., 1992). Follow-ups are successful to the extent to which refusers to the preceding mailings are persuaded to perceive participation as their social responsibility.

According to the "psychological attribution" of survey participation, Groves (1992) credits Bickman (1974), Bushman (1984), and Milgram (1974) with recognizing that people are more likely to comply with a request whose authority is legitimate. Furthermore Groves suggests that survey participation increases as the benefits of providing the desired information to a legitimate agency outweigh the impact of personal right to privacy. Participation in follow-ups of a user-oriented survey in our study may be a function of the enhanced perception of benefits that users may obtain from responding to a replacement questionnaire and of the perception of cost that they have to pay in terms of time and effort to fill out a questionnaire.

3. METHODOLOGY: SPLIT-BALLOT TEST

This analysis is based on an experimental study that was included as part of the 1993 National Survey of Users of Employment and Unemployment Statistics[1] conducted by the U.S. Bureau of Labor Statistics. We randomly selected 999 out of approximately 4,000 Employment and Unemployment Statistics (EUS) data users who either directly contacted an EUS economist during September 1992 through November 1992 or who were identified as regular users of EUS data. All 999 potential respondents received a prenotification letter. One week later, all of them received a survey packet that came with a 4-page questionnaire, a cover letter, and a business reply envelope. One week later, all received a thank-you/reminder letter. Three weeks after the initial mailing, those who had not yet responded received a replacement questionnaire, a differently worded cover letter, and a replacement business reply envelope.

Two weeks after the second follow-up, each of the remaining nonresponses was assigned to either receive certified mail follow-up or telephone prompting. The assignment of certified mail and telephone was randomized within each of the seven strata that were formed based on EUS program usage. Half the "hard core" holdouts received the third follow-up packet by certified mail, containing a

replacement questionnaire, a business reply envelope, and a cover letter. The remaining nonrespondents were contacted by telephone prompters who were intensively trained. We prepared a training agenda, drawing on insights from nonresponse conversion efforts in telephone follow-up surveys. The telephone prompter training included practice of scripted telephone prompting procedures, including appropriate reactions to specific reasons for refusal, discussion of persuasive techniques, and use of call record sheets. Approaches to locate the sample subject and find the best time to call back were also included in the training.

This experimental approach is in line with Dillman's (1991) suggestion that calls for experiments that use a comprehensive system as a base procedure and then are designed so that incremental effects can be identified. Our experimental study is also a first answer to Lyberg and Dean (1992) who called for sequential designs for reducing "hard-core holdouts." They questioned the validity of the current studies for nonresponse because of a tendency to follow-up on the easiest cases.

4. RESULTS
4.1 Response and Conversion Rates
We compared the final nonresponse conversion rate across follow-up methods. The nonresponse conversion rate (indicated by the ratio of the number of responses to follow-ups to the number of nonresponses prior to administering follow-ups) tells us which mode of follow-up is more effective in increasing the overall response rate.

The response figures from the National Survey of Users of Employment and Unemployment Statistics are shown in Table 4.1.1. After the second replacement questionnaire mailout, the overall response rate had already reached 75%, which is the average overall response rate for Total Design Method-based surveys (Dillman, 1978). The third and final follow-up boosted the overall response rate by 13 percentage points to approximately 88%.

The reminder/thank-you letter appeared to convert nonresponse most efficiently as can be seen from the conversion rates in the first column of Table 4.1.1. The efficiency of the reminder/thank-you letter was in part because it wasn't used on as high a percentage of "hard core" nonrespondents. This efficient conversion rate may be also due to the data collection process in which we were not able to monitor the specific effect of the reminder/thank-you letter on nonresponse conversion. Reminder/thank-you letters were sent out to all 999 initial sample subjects just one week following the initial survey

mailout. Our cut-off date to observe the effect of the reminder letter was set three days after we sent the second replacement questionnaire. We assumed that the completed questionnaires returned between three days after the reminder letter and three days after the second replacement questionnaire mailout would be reactions to the reminder/thank-you letter. We were aware that some of the response attributed to the reminder letter was certainly a direct response to the initial survey mailout. If we take this situation into consideration, we may conclude that the third and final follow-ups were more effective in converting "hard-core" holdouts. The conversion rate for the third follow-up was 46.5%, as shown in Table 4.1.1.

The nonresponse conversion by the third follow-ups is contrasted in Table 4.1.2. As we expected, certified mail was found to be as effective as telephone prompting. The nonresponse conversion rate by certified mail follow-up was four percentage points higher than by phone prompting, although this difference is not significant by t-test at alpha = .10.

This evidence argues against House and his colleagues' (1978) expectation that the relative effectiveness of certified mail may decline as its use becomes more widespread. However, it should be noted that their expectations were made 15 years ago, and presumably did not refer to establishment setting surveys. Our data support the idea that respondents at an establishment setting may be more likely to be persuaded by certified mail. Compared to household counterparts, someone (e.g., a respondent or a proxy) is usually at an establishment to sign for certified mail.

In Table 4.1.2, it is also important to note that telephone prompting converted a similar proportion of strong holdouts. Some refusers to the preceding mail follow-ups seemed to react favorably to telephone prompting. Furthermore, telephone prompters' experience with the nonrespondents they contacted suggests that verbal communication with nonrespondents allowed them to confirm whether or not participants are eligible for the survey. As can be seen in Table 4.1.2, telephone prompting located three times as many ineligibles such as "out of business" and "out of scope" as certified mail follow-up did. This evidence in part supports the substitution of telephone follow-up for certified mail (Dillman et al., 1984; Dillman, 1991).

4.2   Data Quality
4.2.1   Survey Statistics Across Follow-up Modes
Increasing the overall response rate by follow-ups does not necessarily guarantee that the quality of data is well maintained. Thus, we investigated whether responses across follow-up methods differ from each

other by examining Chi-square values for all attitudinal questions measured by the ordinal scale.

In Table 4.2.1.1, we have presented evidence that most responses to attitudinal questions do not differ across follow-up modes. At alpha = .10, only two of the 32 differences were significant. This finding is important in that either follow-up mode promises similar data quality. In Table 4.2.1.2, we have presented evidence that data from follow-up cases are not significantly different from the cases that did not require follow-up. A single difference was significant at alpha < .10. Thus our study has presented evidence that some potential nonrespondents that we could not have reached without follow-ups would not provide responses different from respondents. Caution is to be taken because our results only apply to nonrespondents who eventually responded to follow-up. Our study was not able to include about 12% of the sample, those who never responded. A replication will be further needed before more definite conclusions can be drawn.

4.2.2   Satisficing Behavior

"Satisficing" behavior refers to those responses that provide an adequate but incomplete answer when a substantial cognitive effort is needed to answer a question (Blair and Chun, 1992; Krosnick, 1991; Simon, 1957; Simon and Stedry, 1968). Replicating DeLeeuw and Hox's (1988) hypothesis, but using a different measure, we hypothesized that the final follow-up respondents would react to the increased pressure by completing the questionnaire as fast as possible without much thought. Satisficing behavior will be evaluated by the correlation of measures (Kendall's Tau b) of related concepts in the survey. This measure is based on the number of concordant and discordant pairs of observations and uses a correction for tied pairs. It assumes both variables are on an ordinal scale. The higher the correlation between related measures, the less one behaves satisficingly.

In Tables 4.2.2.1, 4.2.2.2, and 4.2.2.3, we have presented Kendall's Tau b that measures the relationship between four measures and indexes. Measure 1 is a respondent's overall satisfaction with statistics; Measure 2 is a respondent's overall satisfaction with service; Measure 3 is an index of data quality operationalized by three items; and Measure 4 is an index of service quality operationalized by 12 items. As we expected, within a subsample excluding follow-up responses (See Table 4.2.2.1), the relationships between Measure 1 and Measure 2 (.50), between Measure 1 and Measure 3 (.42), and between Measure 2 and Measure 4 (.47) are

moderately correlated. The remaining measures are weakly but significantly related to each other, suggesting that satisficing behavior is rarely observed.

As Kendall's Tau b coefficients from telephone prompting follow-up (Table 4.2.2.2) are compared with the above measures, all telephone prompting specific coefficients are near or greater than coefficients pertaining to the larger sample that excludes follow-up responses. Our hypothesis is therefore not confirmed, indicating telephone-prompted respondents were no more likely to behave satisficingly than respondents to the preceding mailings. They may, in fact, have answered more carefully, as suggested by generally higher coefficients between important relationships than those within the non-follow-up sample.

To assess a "satisficing" hypothesis with certified mail follow-ups, we compared their Kendall's Tau b coefficients (See Table 4.2.2.3) with the non-follow-up sample (See Table 4.2.2.1). Our hypothesis is again not confirmed. Most of Kendall's tau within certified mail follow-up responses are near or greater than those within the non-follow-up sample. Certified mail follow-up respondents have completed the questionnaire with enough thought.

4.3   Cost Comparison

Critical decisions concerning the use of follow-ups are not only made on the expected response rate and data quality, but also on cost, which is the issue to which we now turn. Not everyone is in a position to afford certified mail follow-ups, telephone prompting, or computer-assisted telephone follow-up. Follow-ups involve a series of activities that can be classified into labor and non-labor factors, as suggested by Clayton (1989).

Major cost categories for certified mail and telephone prompting follow-ups are presented in Table 4.3.1. Following Clayton's suggestion, we have constructed a simple linear additive cost model. The labor factors we have included in the cost model are training of telephone prompters and certified mailers, telephone prompting, and certified mailouts. The non-labor factors are telephone charges, postage charges, and cost for documents. Overall, certified mail was more expensive than telephone prompting follow-ups.

Furthermore, the per unit cost of *responses* to certified mail follow-up is 19% more than that of responses to telephone prompting follow-ups (i.e. $13.78 compared to $11.58) (see Table 4.3.2). Also, the per-unit cost of follow-up *contacts* by certified mail is 62% more than that of telephone prompting follow-ups (i.e., $11.45 compared to $7.08). These data indicate that certified mail obtained somewhat

higher (but not significantly higher) nonresponse conversion rate than telephone prompting, but at significant additional cost.

5. CONCLUSIONS

Our evidence shows that certified mail follow-up in an establishment setting increases response rates as effectively as telephone prompting and rarely affects data quality. Satisficing behavior observed within certified mail responses do not significantly differ from those revealed within telephone prompted responses or from the sample that does not include follow-up responses. However, the potential gain in nonresponse conversion by certified mail comes at significant additional cost, which may be reduced by using telephone prompting follow-ups.

Our evidence rejects House and his colleagues' (1978) expectation that the effectiveness of certified mail follow-up would decline. Certified mail is found still to be effective 15 years after their publication. However, our finding should be qualified. When considering the use of certified mail, one should consider certain features of a survey, such as the target sample characteristics (e.g., establishment vs. household, homogeneous vs. general population), and the perceived cost and benefit of participation in follow-ups. The success of the certified mail follow-up in our survey is in part the result of our survey being in an establishment setting and the tangible benefits of participation that some strong holdouts perceived. Participants at establishments were more likely to be available to sign for certified mail than household counterparts.

Establishment respondents also appeared to perceive that the benefits that they, as users of federal statistics, might obtain from participation in follow-ups outweighed the cost of time and cognitive effort they had to invest. Overall, our study suggests that *situational* factors of a survey should be studied more carefully to increase response rate and maintain data quality at an optimizing cost by using appropriate follow-up methods.

NOTES

1   The survey's purpose was to measure user satisfaction by the discrepancy between the user's expectations of an organization's services and the user's perception of the organization's performance along five key factors: tangibles, data quality, dependability, assurance, and empathy.

We developed the data collection process based on a user-friendly questionnaire that was tested by cognitive methods including focus groups, think-aloud interviews, and a pilot test. With the exception of the experimental variations in the third and final follow-ups, most of Dillman's Total Design Method recommendations were followed closely. Two modifications to TDM were made. First, the front cover of the questionnaire was not illustrated with graphics because of the limited space, and the stationery size was the ordinary 8 1/2 by 11. Second, the reminder/thank-you postcard was replaced by a reminder/thank-you letter because in-house constraints allowed letter production only.

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<Table 4.1.1> Nonresponse Conversion

Mailing	Conversion Rate (%)	Overall Rate (%)	N*
Prenotice (Day 1)			999
1st mailout (Day 8)	28.65	28.65	998
Reminder (Day 15)	50.87	65.24	978
2nd mailout (Day 29)	28.53	75.77	970
3rd follow-up (Day 43)			
Certified mail	48.21		
Phone Prompting	44.44		
Overall	46.45	87.68	950
Close-out (Day 71)			

* The sample size(N) declined as ineligibles were uncovered through the data collection process.

<Table 4.1.2> Conversion by Follow-ups

	Certified mail	Phone prompting	Total
Completed	54	44	98
Nonresponse	63	70	133
Ineligible	5	15	20
Contacted	117	114	231
Conversion rate*	48.2%	44.4%	46.5%

* Conversion rate = {Completed/(Contacted - Ineligible)}.

<Table 4.2.1.1> Response across *Certified Mail and Telephone Prompting Follow-ups*

Number of Questions	Chi-Square	p-value
30/32 (94%)		n.s.*
2/32 (6%)		
Q7	4.76	<.10
Q11	3.12	<.08

* "n.s." indicates "not significant" at alpha < .10.

<Table 4.2.1.2> Response across *Follow-ups and the Subsample without Follow-ups*

Number of Questions	Chi-Square	P-value
31/32 (97%)		n.s.*
1/32 (3%)		
Q11	5.86	<.06

* "n.s." indicates "not significant" at alpha < .10.

<Table 4.2.2.1> Relationships (Kendall's Tau b) *within a subsample excluding follow-up responses*

		(2)	(3)	(4)
Satisfaction with Statistics	(1)	.50	.42	.28
Satisfaction with Service	(2)		.26*	.47
Data Quality	(3)			.39
Service Quality	(4)			

* An asterisk indicates it is significant at alpha < .0005. Others are significant at alpha < .00005.

<Table 4.2.2.2> Relationships (Kendall's Tau b) *within a telephone prompting follow-up responses*

		(2)	(3)	(4)
Satisfaction with Statistics	(1)	.55	.61	.37*
Satisfaction with Service	(2)		.43*	.53
Data Quality	(3)			.38*
Service Quality	(4)			

* An asterisk indicates it is significant at alpha < .005. Others are significant at alpha < .0005.

<Table 4.2.2.3> Relationships (Kendall's Tau b) *within certified mail follow-up responses*

		(2)	(3)	(4)
Satisfaction with Statistics	(1)	.57	.41*	.45
Satisfaction with Service	(2)		.30**	.63
Data Quality	(3)			.37
Service Quality	(4)			

* An asterisk indicates it is significant at alpha < .0001.
** Double asterisks indicate it is significant at alpha < .05. Others are significant at alpha < .0005.

<Table 4.3.1> Cost Comparison

	Certified mail		Telephone prompting	
	Hours	Cost($)	Hours	Cost($)
Labor				
Training	1	16	13	208
Phone			8	128
Mailout	23	368	4	64
Non-labor				
Phone			7	87
Postage		330		17.25
Documents		30		5.75
Total	24	$744	32	$509.50

<Table 4.3.2> Unit Cost

	Certified Mail		Telephone Prompting	
	Cases	Per unit($)	Cases	Per unit($)
Response	54	13.78	44	11.58
Contact	65	11.45	72	7.08