

## The Effect of Method of Delivery on Response to a Non-Response Follow-Up

Linda L. Dimitropoulos  
RTI International, Chicago, IL 60601

Larry N. Campbell  
RTI International, Research Triangle Park, NC 27709

Vincent G. Iannacchione  
RTI International, Washington, DC 20036

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### Introduction

This research seeks to determine whether it is cost-effective to use special delivery methods to increase response during the follow-up phase to a mail survey of beneficiaries enrolled in the Medicare Fee-For-Service plan (MFFS) (a.k.a. Original Medicare). The CAHPS (Consumer Assessment of Health Plans Study) MFFS Survey is one of three CAHPS surveys of Medicare beneficiaries conducted annually by the Centers for Medicare & Medicaid Services (CMS). The CAHPS surveys fulfill a requirement of the Balanced Budget Act of 1997 to provide information to Medicare beneficiaries on the quality of health services provided through the Original Medicare Plan and to compare this information to similar information collected from beneficiaries enrolled in Medicare managed-care health plans.

For the 2001 CAHPS-MFFS Survey, we selected a stratified random sample of 178,950 beneficiaries from more than 30.3 million Medicare FFS beneficiaries residing in the U.S. and Puerto Rico in September, 2001 who had been enrolled in Medicare for at least six months and who did not have a representative payee. The survey is conducted as a mail survey (two waves) with an inbound computer-assisted telephone interview (CATI) option. Beneficiaries who did not respond to either of the first two mailings were placed into a telephone follow-up if a telephone number could be obtained for them. Beneficiaries for whom a telephone number could not be obtained were followed up by mail. Since this is a large and expensive study to conduct, it is important to find an efficient method of conducting the mail follow-up.

The non-response follow-up to a mail survey, by telephone or special delivery mail, is the final step in the standard mail survey methodology

and has been shown to reliably boost response among non-respondents to earlier attempts (Dillman, Christenson, Carpenter and Brooks, 1974; Dillman, 1978; 2000; Heberlein and Baumgartner, 1978). In Dillman's very early work, the follow-up was conducted by certified mail which reportedly increased response rates by an average of 13%. More importantly, certified mail seemed to get response from people who were older, less educated and reported lower incomes thereby reducing non-response bias on those variables. Moore and Dillman (1980) investigated alternatives to certified mail by testing special delivery and telephone follow-up calls and found that, like certified mail, both produced a significant increase in response over first class mail. Dillman attributes the affect to the "out-of-the-ordinary" mailing procedures.

Applying a social exchange theory explanation, Dillman and others have argued that the different packaging, labeling and speed of delivery increases the perceived importance of the survey to the respondent which, in turn, increases response rates. However, since these early studies were conducted, mass marketers have flooded mailboxes with sales materials packaged in envelopes that mimic special delivery packaging and in fact are often marked "Special Delivery." Therefore it is possible that people's perceptions of what mail appears to be "important" have changed over time.

This study explored the following research questions: First, correcting for other factors known to influence response, does the use of an overnight courier or US priority mail produce a greater response rate among nonrespondents without telephone numbers than the use of regular first class mail? The literature suggests that the response rates to surveys delivered by overnight courier and US Priority mail will be higher than the response rates to surveys delivered by first class mail because both have distinctive packaging and both require special handling that insures rapid delivery to the respondent. The second research question asks whether these

comparisons will be affected by response propensity (i.e., a person’s tendency to respond, a value between 0 and 1). For example, persons with a low response propensity may be more likely to respond to overnight courier than priority mail or regular mail whereas persons with a high propensity may be equally likely to respond to any delivery mode.

Both of these questions have cost implications. If priority mail gets the same response as using the more expensive overnight couriers, then it would be more cost-effective to use priority mail. It could also be the case that people who have a low-propensity to respond may not be persuaded to respond to first class or priority mail but may respond to overnight delivery. Knowing the answer to these questions would allow us to maximize response and minimize the cost of the mail follow-up.

**Method**

A sub-sample of 6,300 cases was drawn from the pool of approximately 25,000 nonrespondents (without known telephone numbers) to the second round of the CAHPS Medicare Satisfaction Survey.

Prior to drawing the sub-sample for this study, 5,600 cases were removed from the pool because the addresses associated with these cases were comprised of PO Boxes rather than street addresses and overnight couriers do not deliver to PO Boxes.

Response propensities were calculated based on a model developed from the round one data that used a number of factors known to affect response including geographic region, urbanicity, gender, age, race, and dual-eligibility<sup>1</sup>.

The remaining 19,400 eligible cases were assigned a response propensity and were sorted into three strata reflecting low, medium and high response propensity as follows:

Response Propensity	Eligible Cases	Sub-Sample
Low (Rp <= 0.4)	2,300	2,100
Medium (0.4<Rp<0.7)	14,800	2,100
High (Rp>=0.7)	2,300	2,100
<b>Overall</b>	19,400	6,300

<sup>1</sup> Dual-eligibility refers to a respondent who is both eligible for Medicare and Medicaid.

The 19,400 cases were sorted by strata, and then state and geographic unit within strata to achieve a geographic dispersion of cases. A stratified systematic sub-sample of 2,100 cases was selected from each stratum (n = 6,300). Selections were alternated among delivery modes: Overnight Courier, US Priority Mail, and First Class mail such that each mode should receive 2,100 selections or 700 per stratum. There was no way to know *a priori* if those assigned to a low response propensity would respond at all or if those assigned a high propensity would respond to any type of mailing they received. Therefore, persons in the low and high response propensity groups were over-sampled to be able to detect differences in response rates of five percent or more with 80 percent power. The sub-sampled cases were assigned a unique identifier to differentiate the cases selected for the evaluation from the 18,700 cases that were not selected for the evaluation. All of the cases that were not sub-sampled were sent a survey by US Priority Mail.

**Results**

*Table 1* below presents the overall weighted response rates by method of delivery and response propensity. The overall response rate for the experiment was 16.8 percent (981 completed surveys). A logistic regression using response to the follow-up survey (yes or no) as the outcome and method of delivery and response propensity as predictors of response found that there was no significant interaction between method of delivery and response propensity (Wald F = 1.43, df 4, 6025 p < .84). As expected, there was a significant main effect for response propensity (Wald F = 53.54, df 2, 6025 p < .0001). Those who were assigned a low response propensity were less likely to respond (11.5%) than those assigned a medium response propensity (15.7%) who were, in turn, less likely to respond than those who were assigned a high response propensity (19.9%). There was also a significant main effect for method of delivery (Wald F = 192.94, df 2, 6025, p < .000). The response from those who received the survey by overnight courier were more than twice (26.6%) as likely to respond as those who were sent the survey by First Class mail (11.9%) or US Priority Mail (11.9%).

We calculated the odds ratios to compare the relative likelihood that a person in the follow-up would respond to the survey based on the method of delivery alone (without regard to response propensity). The odds ratios show that those who received the survey via overnight courier were 2.7 times more likely to respond than persons in either of the other two groups. We also calculated the

predicted marginals which show the percent response that we can expect based on delivery method alone. If we mail the survey using First Class mail we can expect a 12% response. We can also expect a 12% response from the nonrespondents who receive the package via US Priority mail. However, if we use an overnight delivery method, we can expect a 27% response.

*Table 2* uses the cost of packaging and postage for using First Class mail as the base unit of cost and displays the relative cost of mailing the surveys by US Priority mail or overnight courier along with the expected rate of return. At the time of this mailing, January 2002, the average cost of using US Priority mail was 4.4 times the cost of First Class mail. On the other hand, the average cost of using the overnight courier was 5.72 times the cost of First Class mail. However, the use of the overnight courier yielded a response rate that was 2.25 times the response<sup>2</sup> expected from either of other two methods of delivery.

**Table 1. Follow-up Response Rates by Delivery Method and Response Propensity<sup>1</sup>**

Delivery Method	Response Propensity			Overall
	Low	Medium	High	
First Class Mail	8.6% (1.1%)	10.8% (1.2%)	14.2% (1.3%)	11.9% (0.7%)
US Priority Mail	6.7% (1.0%)	10.7% (1.2%)	15.0% (1.4%)	11.9% (0.8%)
Overnight Delivery	19.3% (1.6%)	25.5% (1.7%)	30.4% (1.7%)	26.6% (1.0%)
Overall	11.5% (0.7%)	15.7% (0.8%)	19.9% (0.9%)	16.8% (0.5%)

<sup>1</sup> Standard errors shown in parentheses.

<sup>2</sup> This ratio, 2.25, was confirmed statistically, using a logistic model where the variable for method of mailing was found to be statistically significant

**Table 2. Relative Costs and Expected rate of Return**

Method of Delivery	Relative Cost	Predicted Rate of Return
First Class	1.00	12%
USPM	4.40	12%
Overnight	5.72	27%

**Discussion**

The results of this study provide clear evidence that the type of special delivery used has an impact on response, regardless of response propensity. The most important finding is that US Priority Mail, a method of mailing considered a low-cost alternative to overnight delivery couriers, did not produce an increase in response over the use of First Class mail. Although, the packages were not inside the standard cardstock envelopes but rather were in large (9x13) white envelopes with the US Priority mail tape across the width of the envelope, this finding was unexpected based on early studies which reported that US Priority mail, by virtue of the perceived extra effort, and additional cost invested in using this method of delivery would yield a higher rate of return over regular First Class mail.

This finding may be peculiar to the Medicare population. It is more likely that these findings indicate that people’s perceptions of what constitutes “special” delivery have changed. Although, US Priority mail has distinctive markings and frequently uses cardstock envelopes that mimic those of the overnight couriers, it may not be perceived as very “special” any more. The packaging that was once perceived as distinctive is now commonly used by direct marketing firms to get people to respond to their marketing appeals. The sheer volume of this type of packaging may have caused people to become desensitized to its appearance. In addition, US Priority mail is delivered by the regular letter carrier and arrives in the regular mail. Thus, the only feature that may remain to distinguish US Priority mail from First Class mail is the cost—US Priority mail costs more than First Class mail. A package delivered by a delivery service or an overnight courier is still perceived as important because it is not merely dropped in the mailbox, it is delivered to the door. This distinction seems to be clearly important to the population surveyed for this study.

Although there has been discussion regarding the effect that September 11, 2001 and the following anthrax mailings may have affected US

Priority mail service for many months, we have no reason to believe that these events had any impact on our findings. The main survey was mailed on September 12, 2001 and the follow-up mailing in which this study was embedded was mailed in January of 2002. Amid concerns about the impact the respondents' fear of receiving mail would have on response rates, this survey's overall response rate increased by 4 percent that year over the previous year.

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