

## **The Effect of Repetitive Token Incentives and Priority Mail On Response to Physician Surveys**

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### **Introduction**

In the last ten years, researchers have expressed concern with the difficulty of obtaining high response rates for physician surveys. Surveyors of physicians have tried to remedy this with the use of specific survey design features previously shown to work for surveys of individuals in the general population. Some of the features that have been tried are: personalization, multiple contacts, varying postage levels, special delivery, and inclusion of incentives in one of the survey mailings. The investigation of incentives has mostly involved varying the type of incentive (cash versus non-monetary) and the size of the incentive. As ways to overcome low response, these strategies have had varying degrees of success. We suggest in this research that physicians be thought of as a special population. A number of authors have argued the need for tailored design in surveys to approach different populations and sample units in different ways to improve the likelihood that they will respond (Groves, 1998; Dillman, 2000). This study investigates the use of repetitive stimuli, priority mail and a \$10 incentive, as a component of tailored survey design for physician surveys.

Can physician surveys benefit from tailored design? Since tailoring directs the elements of survey design and implementation to account for critical differences in the population and the survey situation, this method can be used to target specific stimuli at key points in the contacts with respondents. Attributes of physicians' that tend to set them apart from other surveys of individuals include: physicians are located in private practice office settings, they receive a large number of survey requests, and the office settings have gatekeepers that may influence the receipt of any survey request. It may be questionable in many survey efforts whether the survey request is even received by the physician. One of the main problems is thinking of physicians only in terms of invoking a person response, without concern for getting through the gatekeepers or concern for the business or establishment influences (Moore et al, 1999). Physician surveys are in a sense a combination of individual person survey, and establishment survey where a division of labor may exist that keeps the desired respondent from ever getting the survey request. A key idea in tailored design is to use specific survey strategies to overcome barriers to response.

Although token incentives and special delivery mailings, with their distinctive large size, have frequently been used in physician surveys to achieve response, most often they have only been used once. That is, a switch from regular mail is made for one mailing in particular. This view of priority or special mail has had a long tradition, Heberlein and Baumgartner (1978) showed, in a meta-analysis of 98 studies, that follow-up contacts and a final special contact were features that improved response rates significantly. Similarly, it has been shown that token incentives included with the survey request, can improve the response to most surveys. While multiple contacts have been shown to be associated with increased response, the repeated use of stimuli (such as priority mail or token incentive) a second time has not been investigated with mail surveys of physicians. Conventional thinking is that repeated use of stimuli a second time is not economical or that it does not improve response beyond that which could be achieved by using it only once. The experiment presented here investigates the effect of the stimuli (repetitive priority mail and repetitive \$10 incentives) specifically in the questionnaire mailings (contact 2 and contact 4) of a 5 contact sequence. The goal is to see if there is improvement in getting the actual mail questionnaire (the survey request) through the office layers, beyond gatekeepers, directly into the hands of the physician and stimulating a completed questionnaire.

Most recently, Groves, Singer, and Corning (2000) offer "the decision to participate in a survey, as the interactive and additive resultant series of factors, some survey specific and others person specific, and still others are specific to the respondent's social and physical environment." These authors see these factors as additive with a weight and direction for a given person, moving them toward or away from cooperation with a survey request. This perspective helps explain the differential effects incentives and special mail can have on different types of respondents and under differing conditions. This leverage-saliency theory has appeal for physician surveys since this type of respondents' social and physical environment are more complex and thus exert considerable influence on the decision to participate. It also suggests that a tailored design with the repetitive use of stimuli, incentives and priority mail, may help induce cooperation in the absence of motivating factors, and takes into account how incentives and priority mail may interact and affect

gatekeepers and respondents each differently and potentially making the survey request more salient to each. Under this theory, it may be possible to discern for a given population of respondents, the combination of strategies that work most often for increasing response.

In this study we test whether repetition of priority mail and token incentives improve response rates beyond that which is achieved by their singular use. Another objective for this study was to determine if there exists an inherent cost advantage to applying the stimuli, the incentive or priority mail, in the second questionnaire mailing to only non-respondents.

### Procedures

Using a tailored design survey (TDM) (Dillman, 2000) protocol that combines incentive use with two day priority mail, a study was conducted with the population of physicians of one large health maintenance organization (HMO) in the state of Minnesota. The sample frame for this study included all of the HMO's 1474 physicians. The protocol incorporated splitting the sample into 6 treatment groups to test the effect of repetition of stimuli, i.e. inclusion of token incentive and priority mail at key contacts compared to a non-incentive lower class postage control group. Since much previous research in mail surveys strongly shows that the more contacts made the better it is for obtaining response this research includes five contact sequences for each of 6 treatment groups. The basic description of contacts for all 6 treatment groups in the study included: (1) a first class mailed advance notification letter that announced the survey, (2) a mail contact with cover letter, 12 page booklet questionnaire, and a first class posted return envelope; (3) a mailed thank you reminder/postcard; (4) a mailed questionnaire with a new version of the cover letter and posted return envelope, sent to all non-respondents; and (5) a final telephone contact to physician practice offices for all non-respondents was implemented in the in the 5<sup>th</sup> week. The final telephone contact prompted for return of the mail questionnaire, a FAX, or telephone interview with the named physician. The experimental groups each included either 245 or 246 physicians. Physicians were randomized to each treatment, with the exception of multiple physicians with the same practice address were assigned the same incentive treatment. The experimental treatment groups can be seen in Table 1 and differed by the application of: a \$10 incentive or no incentive cash payment; and use of either first class (\$0.33) postage or U.S. postal service 2 day priority level postage (\$3.50) packaging. The timing differed for these two experimental stimuli, which were applied in either or both of the second contact by mail or the fourth contact by mail. These second and fourth contacts by mail included the

questionnaire. Table 1 displays for each treatment group the contact sequence and application of stimuli, singularly used, or used in combination, and then the combination used in repetition, compared to the control group 1.

### Results

The study overall, achieved a 62% completion rate which is comparable to other recently reported physicians studies (see Van Geest, et al, 2000; Asch et al ; 1997 and Moore, et al 2000). All groups that included one use or more of \$10 incentive (groups 2 to 6) and one use or more of priority mail showed increased response compared to the control group. This increase was found whether the two stimuli were applied together or singularly in the second mail contact or in the fourth mail contact (treatment 1 vs. 2,3,4,5,6, Table 2). Thus, we can state conclusively contacts with \$10 incentive and priority mail applied at either questionnaire mailing contacts (Table 1 and Figure 1), improves response compared to the control survey protocol (first class postage and no incentive).

*Singular use versus combined use of \$10 Incentive and priority mail stimuli.* We were interested in the effect of two-day priority mail as this postage level is considerable more expensive than first class postage, \$3.50 versus \$0.34., priority mail is distinctly different in appearance than first class mail as it uses a brightly colored large cardboard mailer. We were specifically interested in distinguishing effects of using: priority mail alone as a stimulus, using priority mail in combination with the other stimulus the \$10 token incentive, and then distinguishing the effect if the stimuli are used in combination repetitively at both questionnaire mailings of the five contact sequence. It was hypothesized that two day priority mail postage and mailer package would help to increase the importance (saliency) of the mailing and to get it directly into the hands of physicians without the gatekeepers of the practice opening the mail package. It was also thought that priority mail package would be thought of as more personal than first class mail.

Displayed in Figure 1, on the 27<sup>th</sup> day of data collection, it is apparent that the cumulative response for treatment groups 4, 5, and 6 greatly exceeds the other treatments, groups 1,2, and 3. As shown in Table 2, the differences are significant for all comparisons of groups 4,5,6 with groups 1,2, and 3, at this stage of data collection. The factor attributed to this real difference between groups is the inclusion of \$10 incentive in the first questionnaire mailing for groups 4,5, and 6. A singular use of each stimulus of \$10 incentive and priority mail, whether or not they are used together is better than not using them.

An interesting question, for cost savings, is whether application of expensive stimuli such as \$10

incentive or the higher cost two day priority mail postage level at later data collection stages recoups response? Treatment groups that used two-day priority mail at least once in the protocol with or without the incentive exceeded the control group (groups 2, 3,4,5,6 compared to 1) response rate were significantly different and exceeded the control group response rate by 14 to 21 percentage points. Treatment groups that used priority mail in combination with the \$10 incentive and varied in timing (groups 3 and 4) exceeded group 2 response rate, however, this was not a significant difference in this study (Figure 1 and Table 2). The differences experienced were no greater than 7 percentage points for these comparisons at the end of the data collection. We conclude, it doesn't make much difference which questionnaire mailing gets the stimuli as long as they get both stimuli (treatment 2 versus 3 versus 4 versus 5). Splitting the stimuli between mailings in a single use produces about the same result as applying both together in the first questionnaire contact or the replacement questionnaire contact. But if the stimuli are split, then putting the \$10 incentive in the first questionnaire mailing may be better (treatments 4 and 5 compared to treatments 3 and 2).

Thus, from these results, timing of two-day priority mail made no significant difference when it was used only once with or without the incentive. However, using the stimuli is beneficial for response, treatment 2,3,4,5 compared to 1). What made the greatest response rate impact in this study was the use of two day priority mail combined with the \$10 incentive, applied repetitively, at both questionnaire mailing contacts, treatment 6 compared to all other groups is significantly higher (Table 3). Treatment group 6 experienced a response rate of 80.3%. This group exceeded the control group (group 1) response rate by 37.4 percentage points and the other groups (groups 2, 3, 4, and 5) by at least 14.4 percentage points.

*Cost comparisons and trade-off with response for experimental treatment groups.* Table 3 presents the cumulative variable costs of completed interviews from each stage of contact for each group. The costs comparison only represent those costs that fluctuate as a result of sample size and needed effort during data collection, therefore only variable cost are presented. As expected, group 1 is the least total cost per completed questionnaire at the end of the study and group 6 is the most costly. Of the other strategies that included a one time incentive and a one time application of priority mail, the least total cost and least cost per completed questionnaire was group 3.

## Conclusions

As hypothesized repetition of stimuli works. We believe it is because physicians are a special type of respondent, that is, they are a combination of

establishment survey and individual person survey. Although, we think this feature may account for our findings we cannot from this design be sure. All treatment groups clearly show that the use of the monetary incentive and priority mail increases response rate. In addition, the results suggest that for studies where stimuli (incentive or priority mail) are to be used only one time in a multi contact sequence, they can be applied in the later second questionnaire mailing for lower costs and attain a comparable level of response by the end of the study (Table 2). \$10 cash incentives combined with priority mail, sent in one of the questionnaire mailings of a comparable 5 contact sequence, achieves at least a 17% percentage point lead compared to the first class postage only five contact sequence (group 1 control).

This study also confirms the finding by Moore et al (1999) that the telephone follow-up contact to collect data from physicians did not work well for increasing the number of responses from physicians. No actual interview data was collected during the telephone contact and the telephone contact served only as a reminder prompt to the physicians' office. These may be important findings for investigators who are seeking to control costs and still want to achieve an acceptable response rate.

The response rates achieved in this study compare well with other physician studies. One fear surveyors might have is that an incentive may be kept by someone opening the mail other than the named respondent and may inhibit the passing of the questionnaire package to the respondent. This study is another example that questionnaire mail package, inclusive of an incentive, reaches respondents even though it passes through an office environment. Like many past studies, this study also confirms that use of a single token incentive contact within a multiple contact sequence strategy works at invoking response from busy professionals. This study also suggests a superior contact sequence because of the unusually higher response rate achieved for the treatment (group 6) that repetitively uses priority mail and incentive. Compared to another physician study that recently used \$10 cash and \$20 cash treatments in singular application strategy (see VanGeest et al (2001), this study attained a higher response rate (80.3% for \$10 applied twice with priority mail compared to 68% for \$10 and 65.2% for \$20 in the VanGeest study). It is speculated that two day priority mail in combination with the incentive, may be adding positively to the saliency or increasing the importance of the of the survey request.. These two elements together seem to be additive with a positive interaction with gatekeepers (receptionists or other office staff) to consider the mailing more personal or very important and this causes them to pass it directly to the named physician. In the minimum it may be more difficult to

dismiss. By applying the stimuli in combination in a repetitive fashion, twice to nonrespondents, the mailings may be working to enhance the survey request and increase the duration of the exposure to the request.

Calls from respondents during the study who received the incentive treatments, suggests, they do indeed see the cash incentive as a token to which they should respond. Several respondents who received the unusual treatment of double incentives in the priority mail questionnaire packages, made the effort to call the survey contractor. And, in two specific cases, they asked if they could keep the cash when they were not doing what was requested.

Overall, the study presented is a good example of tailored design, where various survey design stimuli are experimentally tested. The quandary for surveyors lies in the decision of whether it is a worthwhile tradeoff to implementing higher cost stimuli without knowing the return in response. The results of this research show a low cost to increasingly higher cost contact strategies is useful for knowing how response trades-off with survey effort. It provides an indication for a population of physicians just how much specific survey design elements add in the way of increased response and for what cost. It should be noted, that the highest yielding strategy, group 6, is only \$3 per completed questionnaire more expensive than the other incentive strategies when we compare them on a per completed questionnaire basis. Treatment group 6 proves to be 3 times more expensive than group 1, from a total variable cost comparison (\$ 6,900 compared to \$ 2,313) and yields 1.9 the number of completed interviews. In other words, for every \$100 dollar spent in variable costs, strategy for group 6 yields 2.86 completed interviews whereas group 1 yields 4.5 completed interviews. Thus, we see a decreasing rate of return. This study also adds value by showing which strategies might work for establishment settings where gatekeepers intercept the mail instead of the named respondent

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**Table 1. Experimental Treatment Groups and Outcomes for the Survey of Minnesota Physicians.**

Experimental Group	2 <sup>nd</sup> Mail Contact Questionnaire Included	4 <sup>th</sup> Mail Contact Questionnaire Included	Final Response Rate
Group 1	First Class / No incentive	First Class / No Incentive	42.9%
Group 2	2 Day Priority / No Incentive	First class / \$10 Incentive	56.9%
Group 3	First Class / No Incentive	2 Day Priority / \$10 Incentive	63.0%
Group 4	2 Day Priority / \$10 Incentive	First Class / No Incentive	65.9%
Group 5	First Class / \$10 Incentive	2 Day Priority / No Incentive	63.9%
Group 6	2 Day Priority / \$10 Incentive	2 Day Priority / \$10 Incentive	80.3%

**Table 2. Response rate tests for significant differences at day 27 and at the end of data collection.**

Experimental Group Comparison	Day 27 <sup>a</sup>		End of Study <sup>b</sup>	
	Chi Sq	Pr>Chi Sq	Chi Sq	Pr>Chi Sq
1 vs 2	1.75	.184	5.48	.0192
1 vs 3	1.82	.177	17.78	<.0001*
1 vs 4	39.27	<.0001*	25.23	<.0001*
1 vs 5	23.70	<.0001*	17.46	<.0001*
2 vs 3	7.06	.0079	3.67	.0555
2 vs 4	55.10	<.0001*	7.56	.0060
2 vs 5	36.93	<.0001*	3.53	.0604
3 vs 4	25.17	<.0001*	0.71	.3980
3 vs 5	12.80	.0003*	0.00	.9719
4 vs 5	2.22	.1363	0.77	.3791
1 vs 6	67.55	<.0001*	65.83	<.0001*
2 vs 6	86.28	<.0001*	36.72	<.0001*
3 vs 6	49.63	<.0001*	18.44	<.0001*
4 vs 6	4.83	<.0001*	12.21	<.0001*
5 vs 6	13.37	<.0001*	18.70	<.0001*

<sup>a</sup> Sample size is 246, df 1, Significant at Bonferroni critical value of .0033

<sup>b</sup> Sample size is 246, df 1, Significant at Bonferroni critical value of .0023

**Table 3. Cumulative Variable Cost Per Stage of Follow-up and Experimental Group**

Experimental Group	Measures	End of Week 2	End of Week 3	End of Week 7	End of Study Week 10
Group 1.	No. Completed	5	56	102	105
	\$ total var. cost	1,231	1297	1,777	2,313
	\$ dollars/complete	246	23	17	22
Group 2.	No. Completed	11	42	127	132
	\$ total var. cost	1,420	2,259	4,662	5,411
	\$ dollars/complete	129	54	37	41
Group 3.	No. Completed	9	42	149	153
	\$ total var. cost	1,420	1,482	4,458	4,816
	\$ dollars/complete	158	35	30	32
Group 4.	No. Completed	37	125	160	162
	\$ total var. cost	4,657	4,718	4,935	5,656
	\$ dollars/complete	125	38	31	35
Group 5.	No. Completed	36	112	148	152
	\$ total var. cost	3,868	3,929	4,908	5,140
	\$ dollars/complete	107	35	29	34
Group 6.	No. Completed	49	144	193	196
	\$ total vari. cost	4,652	4,713	6,222	6,900
	\$ dollars/complete	95	96	32	35

**Figure 1. Minnesota Physician Study, Cumulative Response By Experimental Treatment Group**

