First Mailings versus Follow-up Mailings: Do the same strategies have the same effects?

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Abstract

A number of studies have shown that stamped return envelopes elicit higher response rates than business reply or metered mail in mail surveys of physicians (Kellerman and Harold, 2001; Shiono & Klebenhoff, 1991; Urban, Anderson, and Tseng, 1993). Most studies, though, have only tested the use of postage stamps on return envelopes with the fist mailing or for the mailings over all. What impact on response rates, if any, do postage stamps have on nonresponse follow-up mailings and are they still cost-effective?

To address this issue, researchers at RTI International tested the effects of using stamped return envelopes on a series of survey mailings in a national survey of board certified physicians conducted as part of the "America's Best Hospitals" project for *U.S. News & World Report.* On the first mailing to physicians, surveys sent with a stamped return envelope achieved a 19.1% response rate compared to a 15.3% response rate for surveys sent with a business reply envelope (BRE) instead. The difference of 3.7% was statistically significant. The use of postage stamps on the first mailing was cost-effective overall, despite being more expensive for the first mailing. The increase in response rates for the stamp group reduced the number of follow-ups needed, offsetting the initial cost of the postage stamps. However, we did not find that postage stamps on return envelopes improved response rates compared to BREs on three follow-up mailings, and as a result increased costs.

The results of this study suggest that a tailored design approach that uses different strategies for different mailings within a study may be the most effective for increasing response rates while minimizing costs.

Key Words: Mail surveys, physicians, stamps

1. Introduction

Over the years, a number of methods have been investigated to increase response rates to mail surveys. These methods include pre-notification letters, incentives, reminders, survey form design, endorsement letters, sending additional surveys, shortening survey length, and delivery method. These methods have been demonstrated to have a positive impact on the level of participation in surveys with the general population (Fowler, 1993; Dillman, 2000) as well as with many specialized populations such as physicians (Kellerman and Herold, 2001). Despite these efforts, response rates for mail questionnaires, and in particular mail questionnaires of physicians have been declining over the past decade (Cull, Karen, O'Connor, Sharp, and Tang, 2005). As a result, researchers must continue to explore possible methods for increasing survey response.

A number of studies have shown that stamped return envelopes elicit higher response rates than business reply or metered mail in mail surveys of physicians (Streiff, 2001; Kellerman and Harold, 2001; Fox, 1998; Shiono & Klebenhoff, 1991; Urban, Anderson, and Tseng, 1993; Armstrong and Lusk, 1987). Most studies, though, have only tested the use of postage stamps on return envelopes with the fist mailing or for the mailings over all. In this paper, we address the following question: What impact on response rates, if any, do postage stamps have on nonresponse follow-up mailings compared to initial mailings for a physician survey, and are they still cost-effective?

There is a variety of methods that have been proven effective in increasing response rates in mail surveys. However, many of these methods such as incentives or FedEx delivery are not used in every mailing of a survey because they are

not cost effective. Incentives, for example, are typically only sent in the first mailing where they will have the biggest impact on cost. Similarly, expensive shipping methods such as USPS Priority Mail and FedEx are often reserved for follow-up waves since a majority of people will respond to the first mailing regardless of the shipping method, and using different shipping methods on each mailing can also be effective (Dillman, 2000).

To address how stamped return envelopes may have a different effect on different survey mailings (initial versus nonresponse follow-up mailings), this paper discusses two experiments aimed at increasing response rates in a cost-effective way by using stamped return envelopes compared to business reply envelopes in a national survey of board certified physicians conducted as part of the "America's Best Hospitals" project for *U.S. News & World Report*.

The authors conducted the first experiment on the three nonresponse follow-up mailings used in the 2007 America's Best Hospitals survey. The experiment was conducted on the follow-up mailings only, as opposed to all mailings, in an effort to boost a lagging interim response rate while the survey was in the field. The experiment was then repeated the following year on the initial mailing of the 2008 America's Best Hospital survey in order to compare the effects of the experiment for different mailings during the data collection process.

2. Methods

Since 1990, *U.S. News & World Report* has assessed the quality of hospitals in the United States annually in the form of lists collectively titled "America's Best Hospitals." Each year, the magazine identifies hospitals of exceptional quality from over 5,000 hospitals in the United States across a variety of medical specialties. Hospitals are assigned a composite score and ranked based on data from multiple sources. One of the primary sources of data is a survey of board-certified physicians asking them to nominate the "best hospitals" in their medical specialty.

2.1 Survey Methods

The sample for the 2007 and 20087 physician survey consisted of 3,400 board-certified physicians. Stratifying by census region (Midwest, Northeast, South, West) and medical specialty, we selected a stratified random probability sample of 200 physicians (50 from each region) for each of the 17 specialties. The 17 medical specialties represented in the sample included the following: Cancer; Digestive Disorders; Ear, Nose, and Throat; Geriatrics; Gynecology; Cardiology; Hormonal Disorders; Kidney Disease; Neurology and Neurosurgery; Ophthalmology; Orthopedics; Pediatrics; Psychiatry; Rehabilitation; Respiratory Disorders; Rheumatology; and Urology. In addition to the specialties listed above, the 2008 survey included an additional 900 pediatric specialists. Since the composition of the pediatric specialist samples are not comparable across survey years, they were analyzed separately from the primary sample.

The 2007 physician survey mailings were conducted in stages during several weeks. The stamped return envelope experiment was conducted on the final three mailings only. The initial mailing was sent via United States Postal Service (USPS) first-class metered mail. The package included a cover-letter, survey, business-reply envelope and a $2 bill as an incentive. Three weeks after the initial survey mailing, a thank-you/reminder letter was sent to the sampled physicians with another copy of survey for those who had not yet responded and a business reply envelope.

Following the first two mailings, nonresponders were randomly divided into two categories. Approximately 50% of the nonresponders were assigned to receive stamped return envelopes in any additional mailings. The other 50% were assigned to receive business reply envelopes. It was hypothesized that using a stamped envelope would be perceived as more personal than a business reply mail, which would increase response rates. Two weeks following the second mailing, we sent a USPS Priority mailing to nonresponders, along with another copy of the questionnaire, a new cover letter, and a return envelope (business reply versus stamped return envelope). Two weeks after the survey was sent via USPS Priority Mail, a fourth survey mailing was sent overnight via FedEx to the remaining nonresponders; this mailing included the questionnaire, a cover letter, and a return envelope (business reply or stamped return envelope). A final mailing was sent via USPS first-class mail approximately 4 weeks later. This mailing included the questionnaire and a personalized letter with a handwritten note and signature along with a return envelope (business reply or stamped return envelope). See ***Table 1*** for a schedule of the 2007 physician survey mailing.

Table 1. 2007 Physician Survey Mailing

Mailing	*Sent via*	*Interval*	*Type of Return Envelope*
1	USPS, first-class letter	Initial mailing	Business reply envelope
2	USPS, first-class letter	Three weeks	Business reply envelope
3	Priority mail	Two weeks	Business reply mail versus stamped envelopes
4	Federal Express	Three weeks	Business reply mail versus stamped envelopes
5	USPS, first-class letter	Five weeks	Business reply mail versus stamped envelopes

The mailing schedule for the 2008 survey was similar, however, the stamped return envelope experiment was conducted on the first mailing only. The initial survey mailing was sent via United States Postal Service (USPS) first-class metered mail. It included a cover-letter, survey, return envelope (business-reply envelope versus stamped envelope), and a $2 bill as an incentive. No other mailings from the 2008 survey were analyzed.

2.2 Experimental Conditions

2.2.1 Experiment 1: Return envelope postage, 2007 survey

To evaluate methods for improving the overall level of participation in the survey, experiments using stamped return envelopes were conducted on different survey mailings to see if subtle changes in the appearance of the return envelopes would have any impact on physician participation in the survey. The experiments are described below.

Of the 2,450 nonresponders after the first and second mailing, 50% were randomly assigned to receive a postage-paid business reply envelope. The remaining nonresponders were randomly assigned to receive either the American flag stamp or the breast cancer research stamp. See ***Table 2*** for approximate sample distributions. Chi-square tests were used to analyze the impact of these methods on response rates.

Table 2. Approximate sample distribution for postage and sticker experiment

Experimental Group	*Distribution n(%)*
Business reply envelope	1226 (50%)
American flag stamped return envelope	612 (25%)
Breast cancer stamped return envelope	612 (25%)

2.2.2 Experiment 2: Return envelope postage initial mailing, 2008

The postage experiment was repeated on the initial mailing of the 2007 physician survey. The results of the 2007 study showed no difference in effect between the breast cancer research and American flag stamp overall for the physicians, therefore only the standard postage stamp was used in 2008. For this mailing, the authors compared only two types of postage: (1) traditional postage-paid business reply mail, and (2) a standard 42-cent first-class postage stamp of an American flag. Of the 3,400 physicians in the primary sample and 900 pediatric subspecialists in the additional sample, 50% were randomly assigned to receive a postage-paid business reply envelope. The remaining 50% of sample members were randomly assigned to receive the American flag stamp. See ***Table 3*** for approximate sample distributions. Chi-square tests were used to analyze the impact of these methods on response rates.

Table 3. Approximate sample distribution for postage and sticker experiment

Experimental Group	*Distribution n(%)*
Business reply envelope	2150 (50%)
American flag stamped return envelope	2150 (50%)

3. Results

3.1 Experiment 1: Return envelope postage, 2007 survey

The analyses for this experiment were limited to the 2,450 physicians who did not respond to the first or second mailings in the 2007 survey. The nonresponders were randomly assigned to one of the three groups. The three groups were not statistically different with respect to region, sex, age and years since completion of medical school. Up to three mailings were sent to these nonresponders, which we will call 2007 mailings 3, 4, and 5. ***Table 4*** shows the response rates for the three groups after each mailing. The response rate for mailing 3, is the response after that mailing only and does not include the responses from the first two mailings. Chi-square analyses did not reveal a significant effect of treatment group on response rate for any of the mailings. The results indicate that the stamped return envelopes were no more effective than business reply envelopes at increasing response rates. The added expense of stamped return envelopes indicates that it is not a cost-effective strategy for follow-up mailings in this sample.

Table 4. Response Rates for Return Envelope Postage Experiment

		Return Envelope Condition	
Data Collection Phase	*Business Reply*	*Traditional Stamp*	*Breast Cancer Stamp*
Mailing 3			
Response Rate	10.3%	9.8%	9.1%
		p=.693	
Mailing 3 & 4			
Cumulative RR	22.8%	22.2%	23.0%
		p=.729	
Mailings 3,4, & 5			
Cumulative RR	25.5%	26.0%	26.3%
		p=.905	

It was also hypothesized that the breast cancer stamps might have a larger impact with women compared to men and with oncologists compared to other specialists. To compare differences between men and women, we limited the analyses to only those sample members who received a stamped return envelope (n = 1,224). An analysis of variance showed no differences between the groups for males versus females, F (3, 1223) = 0.21, p=*.8925*).

We then limited the analyses to sample members who were oncologists to determine if there was a difference in response for this group between the two types of stamps. However, only 74 oncologists were included in the follow-up mailings. Table 5 shows the cumulative response rate for the three follow-up mailings for oncologists by the two experimental groups.

Table 5. Response Rates for Stamp Experiment on Oncologists

	Breast Cancer Stamp	*American Flag Stamp*
Mailings 3,4, & 5 (n=)		
Cumulative Response Rate	44.1%	24.3%
	p=.0823	

There was a marginally significant difference between response rates for those who received the breast cancer stamps and those who received the American flag stamps, $\chi^2(1, N = 74) = 3.02$, $p < .10$, with breast cancer stamps eliciting higher response rates. There was no difference in response rates between the two types of stamps for any other specialties.

3.2 Experiment 2: Return envelope postage initial mailing, 2008

A total of 3,400 physicians in the primary sample and 900 pediatric subspecialists were included in the first mailing. However approximately 20% of the sample had bad addresses and were undeliverable. These cases were removed from the analysis. As a result only 2,644 physicians in the primary sample and 831 in the pediatric specialist sample were included in the analysis. ***Table 6*** shows the response rates for the full 2008 sample, the primary sample only, and for the pediatric subspecialty sample only.

Table 6. Response Rates for Return Envelope Postage Experiment

	Return Envelope Condition	
Data Collection Phase	*No Stamp*	*Traditional Stamp*
Mailing 1, full sample (n=3475)		
Response Rate	15.4%	19.1%
		p=.004
Mailing 1, Primary sample (n=2644)		
Response Rate	13.9%	18.5%
		p=.001
Mailings 1, Additional sample (n=831)		
Response Rate	20.0%	20.9%
		p=.774

There was a significant effect for stamped envelopes for the full sample, $\chi^2(1, N = 3475) = 8.30$, $p < .05$, with stamped envelops eliciting higher response rates. The effect was more pronounced when the sample was limited to physicians in the primary sample only, $\chi^2(1, N = 2644) = 10.14$, $p < .05$. There was not a significant effect for the additional sample of pediatric specialists, $\chi^2(1, N = 831) = 0.25$, $p > .05$.

For the initial mailing to the primary sample, the postage costs for the surveys returned via business reply were calculated as $77.28, which is the number of returned surveys (184) multiplied by 42 cents. The cost for the stamped return group was $554.82, which was the size of the sample (1,321) multiplied by 42 cents. The difference in cost for labor, materials and other factors between the two groups was negligible. Therefore the use of stamped return envelopes increased the response rate by 4.6%, while increasing costs by less than $500. In addition, some of these costs are recovered by not needing to send follow-up mailings to the additional 4.6% of the sample.

4. Summary and Discussion

The results of the study provided some interesting results for researchers concerned about identifying cost-effective strategies for increasing response rates on mail surveys with physicians. We conducted two experiments focused on evaluating the use of stamps on return envelopes for the initial survey mailing versus follow-up survey mailings on response rates by physicians to a survey being conducted for the "America's Best Hospitals" project.

The findings of the first experiment indicated that the use of stamped return envelopes compared to business reply envelopes did not improve response rates in nonresponse follow-up mailings. The one exception was that for oncologists the use of breast cancer research stamps (which donate 6 cents to medical research) was associated with an increase in response rates compared to standard stamps. However, the sample for this group was small and the results cannot be generalized. It is believed that the difference was due to the fact that breast cancer was a personally relevant topic to these physicians and thus positively influenced their participation behavior.

Consistent with previous survey research and contrary to the first experiment, the findings of the second experiment indicated that overall physicians who received stamped envelopes (compared to business reply) were more likely to respond to the survey. However, this finding was not found to be true for the subset of pediatric specialists in the sample.

These results underscore the need to examine the impact of different strategies on different aspects of the mailing and different types of sample members. The use of stamped return envelopes was effective in the first mailing with the primary sample, but was not effective with pediatric specialists and did not generate the same effect on nonresponse follow-ups.

It is also important to look at the cost implication of different strategies. While the use of stamps on the first survey mailing to physicians in the primary sample increased costs by about $500, it also increase response rates by 4.6%. The increase in response rate will likely offset the additional cost of the stamps because fewer follow-up mailings will be needed. On the other hand, for the follow-up mailings, the stamped return envelopes did not differ from business reply

envelopes on follow up mailings. Therefore the benefit did not outweigh the cost. Using business reply envelopes instead of stamped envelopes in future following up mailings will allow for cost savings that can be applied towards other strategies for increasing response.

The fact that the stamped envelopes in the first mailing were not effective for pediatric specialists compared to the primary sample of physicians is interesting. It is unclear why this result is the case. One explanation is that the pediatric specialists were more likely to respond than the primary sample members. Therefore the subtle difference in appearance of the envelope did not have as much of an effect.

Similarly it is unclear why the stamped envelopes were effective in the first mailing, but not in follow-up mailings for a similar sample. One explanation is that the nonresponders who received the follow-up mailings were the most reluctant sample members and therefore the use of a stamp did not have as significant of an impact. Another explanation is that the third and fourth follow-up mailings were sent by Priority and FedEx which might have overshadowed the effect of the stamped envelope.

A limitation of this study was that the initial survey mailing and the nonresponse follow-up mailings that were examined were not part of the same survey cycle. We initiated the first experiment on the follow-up mailings in an effort to boost lagging response rates in the middle of the data collection period. Since business reply envelopes had been used in the previous mailings, it was also hypothesized that the novelty of the stamped return envelope would have an added effect than if a stamped envelope had been used in the first two mailings. However, contrary to the literature, stamped return envelopes did not increase response rates on the follow-up mailings. Therefore we wanted to continue the experiment on the next year of the survey to see if stamped return envelopes had an impact on the first mailing. Since the sample members in the first experiment were different than the sample members in the second experiment it is impossible to draw direct comparisons between the two experiments. The effect of stamped response rates on different populations should be further investigated in an effort to understand what strategies are effective on what populations.

References

Armstrong, J. S., & Lusk, E. J. (1987). Return postage in mail survey: A meta analysis. *Public Opinion Quarterly, 51*, 233-248.

Cull, W., O'Connor, K.G., Sharp S., and Tang, S. S. (2005). Response Rates and Response Bias for 50 Surveys of Pediatricians. *Health Services Research,* 40, 213-225.

Dillman, D. A. (2000). Mail and Internet surveys: The tailored design method. 2nd ed. New York, NY: John Wiley & Sons.

Fowler, FJ, Jr. (1993). Survey research methods, 2nd ed. Newbury Park, CA: Sage Publications, Inc.

Fox R. J., Crask M. R., & Kim, J. (1988). Mailed survey response rate: A meta-analysis of selected techniques for inducing response. *Public Opinion Quarterly,* 52, 467-491.

Kellerman, S. E., & Herold, J. (2001). Physician Response to Surveys: A Review of the Literature. *American Journal of Preventive Medicine,* 20, 61-67.

Streiff M. B, Dundes L., & Spivak J. L. (2001). A mail survey of United States hematologists and oncologists: A comparison of business reply versus stamped return envelopes. *Journal of Clinical Epidemiology,* 54, 430–2.

Shiono P. H, & Klebanoff, M. A. (1991). The effect of two mailing strategies on the response to a survey of physicians. *American Journal of Epidemiology,* 134(5), 539–42.

Urban N., Anderson G. L. , Tseng A. (1993). Effects on response rates and costs of stamps vs business reply in a mail survey of physicians. *Clinical Epidemiology,* 46(5), 455–9.