# SHOW Me the Money?: Effects of Preincentives, Differential Incentives, and Envelope Messaging in an ABS Mail Survey

Jennifer Dykema<sup>1</sup>, Kristen Cyffka<sup>2</sup>, Karen Jaques<sup>1</sup>, Rae Ganci<sup>1</sup>, Kelly Elver<sup>1</sup>, John Stevenson<sup>1</sup>

<sup>1</sup>University of Wisconsin Survey Center, 4308 Sterling Hall, Madison, WI 53706

<sup>2</sup>U.S. Census Bureau, 4600 Silver Hill Rd, Washington, DC 20233

#### Abstract

As researchers increasingly use mail survey methods to collect health data, research focused on optimizing features of their design and administration in cost-effective ways are needed. We conducted two studies to examine the effects of preincentives, differential incentives, and envelope messaging on response rates and costs in a mail survey using an address-based sample. Sample members in Study 1 were randomly assigned to groups that received a preincentive of either \$2 or \$5, a second incentive of either \$0 or \$2 (sent only to nonresponders), and an envelope bearing either no message or a monetary-focused message. Results indicated that the \$5 preincentive significantly increased response rates, but neither the second incentive nor the message had an effect. Informed by the results of Study 1, Study 2 included a \$2 preincentive for all sample members, but increased the amount of the second incentive to \$5. Study 2 also tested the addition of a health-focused envelope message. While the message again had no effect on response rates, the second incentive significantly increased them. With regard to their effects on costs, while larger incentives increased response rates, their inclusion generally increased total costs and costs per complete.

**Key Words:** Mail surveys, incentives, response rates, envelope messaging

#### 1. Introduction

Recent trends have increased the likelihood that researchers concerned with measuring health outcomes will collect some part or all of their study through the mail. While declines in response rates and loss of coverage for RDD telephone surveys have compromised their ability to obtain high-quality health-related estimates (Blumberg and Luke 2012), researchers are now able to obtain random samples of households in the general population using the U.S. Postal Service's Delivery Sequence File (DSF) -- a database containing all addresses to which the post office delivers -- and address-based sampling (ABS) methods (Brick, Williams, and Montaquila 2011; Iannacchione 2011). Recent research confirms the viability of collecting health data using an ABS frame and mail survey methods (Link et al. 2008). While much is already known about ways to raise response rates for mail surveys (Dillman 2007), as researchers increasingly collect survey data through the mail, research focused on optimizing features of their design and administration in the most cost-effective manner is needed.

In their leverage-salience theory of survey participation, Groves, Singer, and Corning (2000) posit that decisions about participation are contingent upon subjective weights sample members ascribe to features of the survey request, such as the study's topic and the inclusion of incentives. These features can vary based on their perceived valence (positive or negative), the relative importance sample members attribute to them, and how salient they are made during the request to participate. Unlike intervieweradministered surveys for which we can record interaction between the interviewer and sample member, or web surveys for which we can monitor participation using paradata, we have little direct evidence about the process sample members undergo when deciding to participate in a mail survey. As illustrated in Figure 1, the process of responding to a mail survey involves many points at which sample members make decisions about their participation. At each of these points, features related to the design of the study can be made more or less salient. We examine the effects of two important features in the design of a mail survey – incentives and visual characteristics of the envelopes – on different measures of data quality including response rates and administration costs in a survey of health among households randomly sampled from two counties in Wisconsin using ABS.

### 1.1 Research on Incentives in Mail Surveys

In order to increase levels of participation, surveys frequently offer respondents incentives. A substantial literature demonstrates they are likely to be effective in increasing response rates for mailed surveys, particularly when they are prepaid (versus contingent upon the completion and return of the survey) and monetary (versus a nonmonetary gift) (Church 1993; Edwards et al. 2002; Singer and Ye 2013). Incentives can also decrease survey costs. Although the inclusion of an incentive in the first point of contact in a mail survey increases the initial costs of the survey, the incentive may ultimately reduce costs by decreasing the number of nonrespondents that require additional mailings (Beebe et al. 2005; Dykema et al. 2012).

In his meta-analysis of the effectiveness of incentives in mail surveys, Church (1993) also found a strong association between incentive value – which ranged in value from \$.01 to \$5 for the monetary incentives -- and increases in responses (see too Trussell and Lavarakas 2004). While response rates tend to increase with the amount, at some point diminishing returns are likely such that an increase in the amount is not associated with a significantly higher response rate or a savings in survey costs.

Incentives are also used to leverage participation from nonresponding sample members. While researchers have made use of differential incentives to convert nonresponders in in-person and telephone surveys, we are unaware of the use of differential incentives in a single-phase mail survey although several studies are instructive. For example, in a nonresponse follow-up survey sent to a randomly selected subsample of nonresponders to a health-related mail survey, Kropf and Blair (2005) experimented with varied verbal appeals and the inclusion of a \$5 cash incentive. The \$5 incentive increased participation

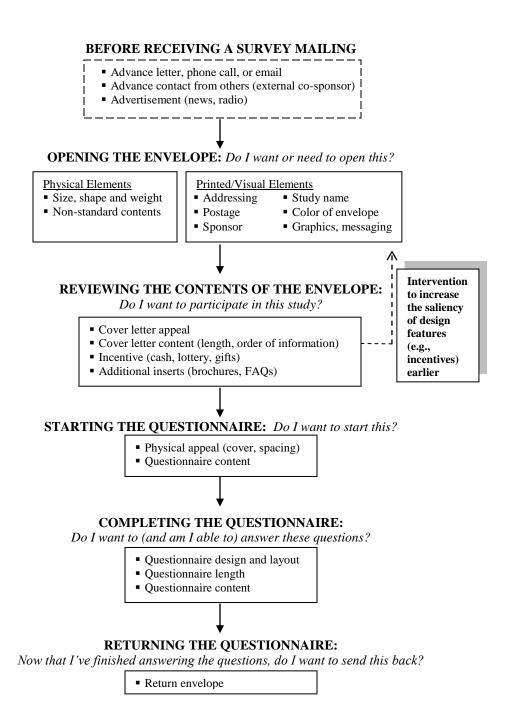


Figure 1: Respondent Decision-Making Points and Design Features in a Mail Survey

by more than 20 percentage points, compared to the group that was contacted without an incentive. Brick et al. (2011) explored the feasibility of using a two-phase ABS mail survey design. In phase one, sampled households were mailed a screening questionnaire to determine their eligibility. The second phase, which included the questionnaire, was only sent to households that completed the screening form from phase one and were deemed eligible for the study. Cases were randomly assigned to receive \$0, \$5, or \$15 with the questionnaire. Results indicated that the response rate of 83 percent achieved for the \$15 group was significantly higher 72 percent for the \$0 group, but the rate of 77 percent for the \$5 group was not statistically different from the \$0 or \$15 groups.

More research is needed to determine how varying amounts of preincentives and use of differential incentives affect response rates and costs when administered to general population samples using ABS.

### 1.2 Research on Envelope Messages in Mail Surveys

We presume that a great deal of mail is thrown out unopened or unread. The USPS Household Diary Study reported that that the percent of their panel members who "usually" do not read advertising material sent through the mail doubled from 9 percent in 1987 to 19 percent in 2010 (Mazzone and Pickett 2011). A continued challenge for researchers is ensuring that sample members take notice of their mailings. This is particularly important when mailings contain cash incentives that could be unwittingly discarded. To avoid having mailings thrown away unread, researchers have explored methods for getting their survey noticed. A substantial body of indirect evidence suggests that sample members attend to and are influenced by the visual aspects of mailings, including envelopes that are personalized, colored, larger, affixed with a first class stamp, and University sponsored (Dillman 2007; Edwards et al. 2002).

Another method to increase sample members' willingness to open and consider participating in a survey is to include a message (or teaser) or graphic on the outside of the envelope containing the survey mailing. While this technique has been touted by direct marketers as a strategy to increase response to promotional mailings (see Dommeyer, Elganayan, and Umans 1991 for a review), best practices in designing mail surveys have cautioned survey researchers against using these techniques precisely because they might reduce participation by increasing the likelihood that sample members will mistake a survey mailing for a commercial mailing (Dillman, Smyth, and Christian 2009).

Research examining the effects of envelope messages on responding to mail surveys has yielded mixed results. Dillman et al. (1996) provided evidence of the positive impact of envelope messaging on participation in the 1990 U.S. Census. Drawing on the social utility of the Census, they contrasted a "benefits" message (i.e., "It Pays to Be Counted in the Census") with a second message that stressed the mandatory nature of the Census (i.e., "Your Response is Required By Law"). While the benefits message did not have an impact on participation, the mandatory message significantly improved completion rates compared to a control group that did not receive a message. Dommeyer et al. (1991)

tested the message "Did you know you are entitled to more money?" in a short survey sent to home-owners eligible for a mortgage insurance refund. In contrast to a control group that did not receive a message, the message not only increased the overall response rate by 13 points, but it also brought in more younger and lower-income respondents, and decreased the amount of time it took sample members to respond.

In contrast to the positive impact of envelope messaging on responding to a mail survey, other studies have found negative or no effects. For example, Finn et al. (2004) attempted to make the non-commercial status of their study more salient by printing "Important survey on New Zealand's national identity enclosed" on the envelope. Though not significant, this message *decreased* the response rate by about 6 points compared to a control group that did not receive the message. The authors speculate that this negative effect might have resulted from the message sufficiently describing the content and purpose of the mailing, which allowed sample members to make a decision about participating in the survey without opening the envelope. Similarly, Ziegenfuss et al. (2012) reported that adding a brightly colored sticker bearing the message "\$25 incentive" had no impact on response rates or on the demographic composition of the sample in a survey of physicians.

#### 1.3 The Current Study

The purpose of the current research was to examine the effects of incentives and envelope messaging on response rates and costs when surveying a sample drawn from the general population using ABS. Leverage-saliency theory holds that features like incentives can be used as "leverage" to increase the likelihood that sample members will participate (Groves et al. 2000). An unifying objective of our two studies was to determine if we could enhance the positive effect of incentives on response rates by printing a message referring to incentive on the outside of the envelope. In this way we sought to increase the likelihood of responding by making the incentive more visible, and reducing the likelihood that the sample member would discard the mailing without ever seeing the incentive. We hypothesized that if done effectively, these features - incentives and messaging -- would increase the likelihood that the potential respondent would open the mailing, which is required for eventual participation. In addition to envelope messaging we desired to further experiment with incentive amounts. We wanted to add to the small body of research comparing preincentives of \$2 versus \$5, and in addition examine whether the \$5 is cost effective. Finally, we sought to explore some of the conditions under which a differential incentive – sent only to nonresponding sample members – might be effective.

## 2. Study 1

## 2.1 Experimental Design

Our first study was designed to assess the impact of different levels of preincentives, the inclusion of a second incentive, and envelope messaging on response rates and costs. To

test the impact of incentives and enveloping messages, we implemented a 2 x 2 x 2 factorial design, manipulating the following levels of each factor:

- 1. Amount of the preincentive: a) \$2; and b) \$5.
- 2. Amount of a second incentive: a) none; and b) \$2. Households were only eligible for the second incentive if they failed to respond to the initial mailing.
- 3. Inclusion of an envelope message: a) no message; and b) monetary-focused message ("Thank You! A cash gift is enclosed.") (see Figure 2). If relevant, the message appeared on outgoing envelope for both the initial and second mailing.

We predicted that the inclusion of following would increase response rates: \$5 versus \$2 preincentive; \$2 versus \$0 second incentive for nonresponders; and a monetary-focused message. In addition, we predicted that the \$5 preincentive would be cost-effective.

### 2.2 Sample and Data Collection

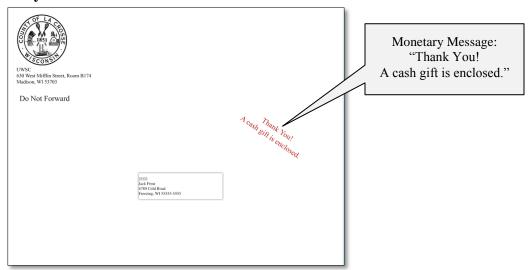
The experiment was embedded in a questionnaire conducted for the Survey of the Health of Wisconsin (SHOW). A sample of 2,608 household addresses was randomly selected from the USPS Delivery Sequence File in two counties in Wisconsin by a private vendor. The frame included residential, mail-able addresses and excluded business, seasonal, and vacant addresses. Respondents were eligible for inclusion in the study if they were between the ages of 18 and 74 and resided in one of the two targeted counties at the time of the study. Households were stratified by county and randomly assigned into eight experimental groups containing 326 households each. Materials instructed householders to have an adult between the targeted ages complete and return the survey. The survey asked about health- and community-related topics including health behaviors, food purchasing routines, and community satisfaction. The questionnaires varied slightly in length between the counties (e.g., 55 versus 78 questions). The study was approved by the Institutional Review Board at the University of Wisconsin-Madison.

Sampled households received up to three contacts by mail. The initial packet, mailed in February, 2011, contained a cover letter bearing the seal of the county, the cash preincentive, the questionnaire, and a self-addressed first-class-stamped return envelope. Materials were sent in a 10" x 13" envelope with a first-class stamp. Approximately a week after the initial mailing, all households received a reminder postcard thanking responders for participating and encouraging participation among those who had not responded. Approximately a month after the initial mailing, all nonresponders were sent

<sup>&</sup>lt;sup>1</sup> Using reverse directory search methods, the database vendor matched a householder's name to a given address. Households in the matched sample were addressed using the first and last name of the individual identified (e.g., "Frank Williams"). Households in the unmatched sample were addressed as a resident of their given municipality (e.g., "Marshfield Resident"). If a survey from the matched sample was returned as undeliverable due to the addressee (addressee not known, unable to forward, undelivered as addressed) following the first mailing, the household was addressed as "<municipality> Resident" for the second mailing.

an additional packet consisting of a cover letter, second incentive (if relevant), questionnaire, and return envelope.

## Study 1



## Study 2

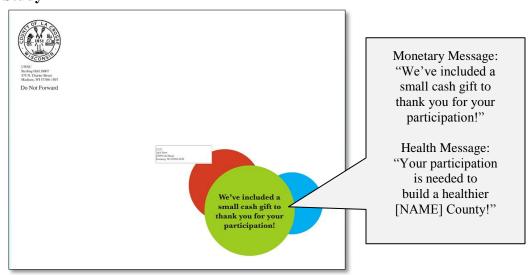


Figure 2: Envelope Messaging Used in Study 1 and Study 2

## 2.3 Analyses

#### 2.3.1 Response rate analysis

Table 1 presents response rates after the first and second mailings for each of the eight experimental groups. Response rates were calculated as the number of completed questionnaires divided by the number of eligible cases (RR1, AAPOR 2011). The overall response rate was high with 57.1 and 66.9 percent of the sample responding after the first and second mailings, respectively. Following the second mailing, response rates ranged from 61.8 percent for the group that received no message on the envelope and \$2 for a pre- and second incentive to 71.2 percent for the group that received a monetary message on the envelope, a \$5 preincentive, and a \$2 second incentive. While differences between the experimental groups for the second incentive and envelope messages were modest, the preincentive positively affected participation.

We evaluated the effect of preincentives and envelope messaging after the first mailing by conducting a two-way ANOVA with the amount of the preincentive (\$2 versus \$5) and envelope message (no message versus monetary message) as factors. A main effect emerged for the preincentive (F(1, 2338) = 13.61, p < .001), but neither the effect for envelope messaging nor the interaction term were significant. Post-hoc comparisons (results not shown) indicated that the main effect for the preincentive was due to a higher response rate achieved for the group that received \$5 versus \$2 (60.9 versus 53.4 percent, respectively).

Results from a 2 (preincentive) x 2 (second incentive) x 2 (envelope message) ANOVA using response rates from the second mailing as the dependent variable mirrored results from the first mailing. While a main effect emerged for the preincentive (F(1, 2334) = 7.56, p < .01), neither the second incentive nor the envelope message had an impact on response rates. Nor was there a significant interaction between the incentives and messaging, suggesting that the effect of the preincentive was consistent across the other two treatments. Post-hoc comparisons (results not shown) again indicated that the main effect for the preincentive was due to a higher response rate achieved for the group that received \$5 versus \$2 (69.5 versus 64.2 percent, respectively).

## 2.3.2 Cost analysis

Costs incurred by including a message on an envelope can vary substantially as a result of the vendor, the color and size of the graphic, etc. For example, if you are already printing specialized envelopes for your study and are not changing the colors used for printing, the cost of adding a message may be close to nothing. Because envelope messaging had no effect on response rates, our cost analysis focused on how costs varied among the different incentive groups. Within experimental groups, we calculated both the total costs and costs per completed survey, considering only the variable costs incurred

<sup>&</sup>lt;sup>2</sup> Cases were classified as ineligible if they were returned marked "no such address," "no such number," or "vacant," or if the sample member indicated they were ineligible due to their age or because they lived outside of the targeted county.

for the experiment. These included the costs for postage, printing, cash incentives, and labor for envelope assembly, mailing, and data entry. We did not include fixed costs such as questionnaire design, project management, or data delivery.

**Table 1:** Effects of Preincentives, Second Incentives, and Envelope Messaging on Response Rates

	Res	ponse Ra	ates			
	Sample Size					
			Completed			
			Surveys		Response Rates	
		Not	After 1 <sup>st</sup>	After 2 <sup>nd</sup>	After 1 <sup>st</sup>	After 2 <sup>nd</sup>
Experimental Conditions	N	Eligible	Mailing	Mailing	Mailing	Mailing
Study 1						
Overall	2608	266	1338	1556	57.1	66.9
\$2 preincentive, \$0 second incentive, no message	326	35	162	199	55.7	68.4
\$2 preincentive, \$0 second incentive, monetary message	326	37	153	181	52.9	62.6
\$2 preincentive, \$2 second incentive, no message	326	30	152	183	51.4	61.8
\$2 preincentive, \$2 second incentive, monetary message	326	38	154	184	53.5	63.9
\$5 preincentive, \$0 second incentive, no message	326	33	174	206	59.4	70.3
\$5 preincentive, \$0 second incentive, monetary message	326	36	177	195	61.0	67.2
\$5 preincentive, \$2 second incentive, no message	326	19	187	213	60.9	69.4
\$5 preincentive, \$2 second incentive, monetary message	326	38	179	205	62.2	71.2
Study 2						
Overall	2616	273	1204	1513	51.4	64.6
\$0 second incentive, no message	436	50	205	248	53.1	64.2
\$0 second incentive, health message	436	31	207	245	51.1	60.5
\$0 second incentive, monetary message	436	41	204	239	51.6	60.5
\$5 second incentive, no message	436	48	205	265	52.8	68.3
\$5 second incentive, health message	436	51	203	263	52.7	68.3
\$5 second incentive, monetary message	436	52	180	253	46.9	65.9

Table 2 presents a summary of the total costs and cost per complete, collapsing across the envelope messaging treatments. Costs were highest for groups sent an initial preincentive of \$5. The \$5 preincentive plus \$2 second incentive group was most expensive, with total variable costs of \$11,068. This compared to \$10,638 for the \$5 preincentive group that did not receive the second incentive. Naturally, total costs were lower for the groups that only received \$2 for their initial preincentive: \$9,503 for the group that received the second incentive versus \$8,876 for the group that did not.

Looking at cost per complete, the increased cost of adding the second incentive varied dramatically depending upon the amount of the initial preincentive. Among sample members initially receiving \$2, an additional \$2 increased cost per complete by more than \$2, from \$23.36 to \$25.89. Among sample members initially receiving \$5, cost per complete actually decreased slightly with the inclusion of the \$2 second incentive, from \$26.53 to \$26.48. Comparing cost per complete for the \$5 versus \$2, we find that while the \$5 preincentive does increase response rates significantly, it does not fully offset the cost required for including the second incentive.

**Table 2:** Effects of Incentives on Costs

		Cost		
	Response Rates		Per	
Experimental Conditions	(After 2 <sup>nd</sup> Mailing)	Total	Complete	
Study 1			_	
Overall	66.9	\$40,085	\$25.37	
\$2 preincentive, \$0 second incentive	65.5	8,876	23.36	
\$2 preincentive, \$2 second incentive	62.8	9,503	25.89	
\$5 preincentive, \$0 second incentive	68.8	10,638	26.53	
\$5 preincentive, \$2 second incentive	70.3	11,068	26.48	
Study 2				
Overall	64.6	\$38,834	\$25.67	
\$2 preincentive, \$0 second incentive	61.7	17,810	24.33	
\$2 preincentive, \$5 second incentive	67.5	21,024	26.92	

## **3. Study 2**

Informed by the results from Study 1, we modified aspects of the incentive structure and the envelope messages for Study 2. In Study 1, the level of the second incentive was either **equal to or less than** the amount of the initial preincentive. In Study 2 we sought to test a second incentive that was **larger than** the original preincentive. To do so, we limited the amount of initial preincentive to \$2 and increased the amount of second incentive to \$5. The message in the first study was small and primarily text-based. To intensify the potential effect of the message, we replaced the plain text message with a colorful and eye-catching geometric design as a backdrop (see Figure 2). Finally, drawing on research that indicates health-related studies tend to yield high response rates (see, for example, Groves, Presser, and Dipko 2004; Heberlein and Baumgartner 1978), we also tested a health-focused message in addition to the monetary-focused message.

<sup>&</sup>lt;sup>3</sup> Even though the \$5 preincentive in Study 1 yielded significantly higher response rates than the \$2 preincentive, because of cost constraints, we had to limit our comparison of the effect of including a larger second incentive to using only a \$2 preincentive.

#### 3.1 Experimental Design

To test the impact of a second incentive and enveloping messaging in Study 2, we implemented a  $2 \times 3$  factorial design. All sample members received a \$2 preincentive, but then we manipulated the following factors:

- 1. Amount of a second incentive: a) none; and b) \$5. Households were only eligible for the second incentive if they failed to respond to the initial mailing.
- 2. Inclusion and content of the envelope message: a) no message; b) monetary-focused message ("We've included a small cash gift to thank you for your participation!"); and c) health-focused message ("Your participation is needed to build a healthier La Crosse County!") (see Figure 2). If relevant, the message appeared on the outside envelope for both the initial and the follow-up mailing.<sup>4</sup>

We predicted that while the inclusion of a second incentive of \$5 for nonresponders would increase response rates, it would not be cost-effective, and that a message referring to either the incentive or health-related nature of the study would increase response rates over not receiving a message.

## 3.2 Sample and Data Collection

Study 2 had a very similar design to Study 1. It was fielded as part of a mail survey conducted for SHOW, and included the same three contact attempts: a first mailing, a reminder postcard a week later, and a second mailing to those who had not already responded about a month later. In Study 2, 2,616 different households were randomly selected from the same two counties in Wisconsin using the ABS. Each of the six treatment groups was randomly assigned 436 households, stratified by county.

#### 3.3 Analyses

#### 3.3.1 Response rate analysis

Table 1 presents response rates after the first and second mailings for each of the six experimental groups. The overall response rate was high with 51.4 percent of the sample responding after the first mailing and 64.6 percent responding after the second mailing. Differences between the experimental groups, however, were fairly small. Following the second mailing, response rates were lowest (60.5 percent) for the two groups that did not receive a second incentive but had either a health or monetary message printed on their envelope. Response rates were highest (68.3 percent) for the two groups that received a second incentive of \$5 and had either no message or a health message on the envelope.

<sup>&</sup>lt;sup>4</sup> Note that when the factors are crossed they yield a cell for \$0 second incentive and monetary message cell. Sample members in this group received the monetary message for the first mailing, but as they would not receive a second monetary incentive, they did not receive a monetary message (by design) for the second mailing.

To test the effect of envelope messaging on response rates after the first mailing, we performed a one-way ANOVA. Results indicated that envelope messaging had no effect on response rates. For response rates after the second mailing, we performed a two-way ANOVA for the inclusion of a second incentive and envelope messaging as factors. A main effect emerged for the second incentive (F(1, 2337) = 8.48, p < .01), but neither the effect for envelope messaging or the interaction term were significant, suggesting that the second incentive had a consistent effect on survey participation across the envelope messaging groups. Post-hoc comparisons (see Table 2) indicated that the main effect for the second incentive was due to a higher response rate achieved for the group that received a second incentive of \$5 compared to the group that did not receive a second incentive (67.5 versus 61.7 percent, respectively).

When we restrict the analysis to include only the 1,189 sample members who were sent an additional survey (i.e., those who were nonresponders after the first mailing), we see just how strong of an effect the second incentive had on response rates (results not shown). The final response rate among initial nonresponders was approximately 14 percentage points higher among those who received the second incentive than for those who did not (35.0 versus 20.8 percent, respectively; F(1, 1109) = 28.61, p < .001).

#### 3.3.2 Cost analysis

Because messaging had no effect on response rates, our cost analysis focused on how costs varied across incentive treatments. Adding a second incentive of \$5 increased total variable costs from \$17,810 to \$21,024 (see Table 2). Although it was expensive, the \$5 incentive increased response rates almost 6 percent while only increasing the cost per complete by an additional \$2.59, from \$24.33 to \$26.92. This was somewhat surprising as an incentive introduced in a later contact has less opportunity to save money through reducing the need for expensive follow-up, yet cost per complete only increased slightly.

#### 4. General Discussion

In our two studies we manipulated several variables. With envelope messaging, we attempted to leverage the positive effects of incentives and health surveys by drawing sample members' attention to these features during their first point of contact with the study, the receipt of the envelope. Unfortunately, neither the references to monetary enclosures or health proved effective. Perhaps among sample members with a low propensity to participate, the messages flagged the mailing as non-essential or another piece of junk mail. It is also important to note how compliant the Wisconsin county residents in these studies were with our survey request. Both surveys achieved response rates of around 65 percent. It may be that such high response rates left little room for improvement. In a less homogenous area or with a less salient topic or sponsor (the county seal was used on all envelopes in this study), an envelope message may have more influence.

Our experiments varying the amounts and inclusion of preincentives and second incentives proved more potentially useful. In Study 1, sample members received either a \$2 or \$5 preincentive, which was followed by a second incentive of \$0 or \$2 for nonresponders. Consistent with previous research, the \$5 preincentive was associated with significantly higher response rates than the \$2 preincentive, such that an increase in the amount of \$3 was associated with increase of 6 points in response. While not surprising, we felt it was useful to replicate this finding using an address-based sample and a rather long self-administered questionnaire. In Study 1, the amount of the second incentive was either equivalent to (as in the case of a \$2 preincentive followed by a \$2 second incentive) or lower than (as in the case of the \$5 preincentive followed by either \$0 or \$2) the amount of the initial preincentive. Findings for the second incentive were not as encouraging as the second incentive had no effect on response rates. Informed by the results from Study 1, in Study 2 we sent all sample members a preincentive of \$2 and varied the amount of the second incentive so that it was larger than the preincentive. We found that sending nonresponders a second incentive of \$5 significantly increased response rates by 6 points over not including a second incentive.

Trying to interpret the cost analysis across the two studies is challenging and the story that emerges is somewhat confusing. Findings from Study 1, suggest that the most cost-effective approaches are to either (1) send all sample members a smaller preincentive (e.g., \$2 versus \$5) and forgo a second incentive, or (2) send all sample members a larger preincentive (e.g., \$5 versus \$2) and send nonresponders a second incentive of \$2, as there is little additional cost per complete. These conclusions seem a little implausible. Perhaps because sample members in the population we were surveying had high propensities to respond and the topic (health) tends to be very salient, we experienced such high response rates that results relating to incentive costs were at times spurious. In Study 2, the lesson seems clearer. If response rates are lagging and funds are available, sending nonresponders a second incentive that is larger than the preincentive (e.g., \$5 versus \$2), may increase response rates but will come at a non-trivial cost overall, even if cost per complete does not change dramatically.

We anticipate researchers will increasingly collect health data by mailing surveys to samples drawn from the general population using address-based sampling methods. Because a sample member's participation in a mail survey involves many decision-making points that are influenced by numerous design features, learning more about the effects of variations within and interaction among the features on response rates and costs is essential. Unfortunately our two studies do not allow us to compare the differences in response rates and costs between a \$2 pre- and \$5 second incentive treatment and a \$5 preincentive only treatment. This will be a natural next step in our examination of the utility and cost effectiveness of testing various incentive combinations.

## Acknowledgements

The authors thank Kristen Malecki, the SHOW Study and the SHOW study team (www.show.wisc.edu) for including this experiment. SHOW is funded by Wisconsin Partnership Program PERC Award (233 PRJ 25DJ), National Institutes of Health's Clinical and Translational Science Award (5UL 1RR025011), and National Heart Lung and Blood Institute (1 RC2 HL101468). Funding for this project was also sponsored by the Centers for Disease Control and Prevention Program - Communities Putting Prevention to work. Resources were made available in partnership with the Wisconsin Department of Health Services, the Wood County Health Department and the LaCrosse County Health Department. The research reported here was also supported by the University of Wisconsin Survey Center (UWSC), which receives support from the College of Letters and Science, and by the Wisconsin Center for Demography and Ecology, National Institute of Child Health and Human Development Center Grant [R24] HD047873 to James R. Walker]. We thank Steven Blixt for providing comments on an earlier draft. A preliminary version of this paper was presented at the 2012 meeting of the American Association for Public Opinion Research. Opinions expressed here are those of the authors and do not necessarily reflect those of the sponsors or related organizations.

#### References

- American Association for Public Opinion Research. 2011. Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 7th ed. AAPOR.
- Beebe, Timothy J., Michael E. Davern, Donna D. McAlpine, Kathleen Thiede Call, and Todd H. Rockwood. 2005. "Increasing Response Rates in a Survey of Medicaid Enrollees: The Effect of a Prepaid Monetary Incentive and Mixed Modes (Mail and Telephone)." *Medical Care* 43:411-420.
- Blumberg, Stephen J. and Julian V. Luke. 2012. "Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December 2011." National Center for Health Statistics.
- Brick, J. Michael, Douglas Williams, and Jill M. Montaquila. 2011. "Address-Based Sampling for Subpopulation Surveys." *Public Opinion Quarterly* 75:409-428.
- Church, Allan H. 1993. "Estimating the Effect of Incentives on Mail Survey Response Rates: A Meta-Analysis." *Public Opinion Quarterly* 57:62-79.
- Dillman, Don A. 2007. Mail and Internet Surveys: The Tailored Design Method 2007 Update with New Internet, Visual, and Mixed-Mode Guide, 2nd edition. New York: Wiley.
- Dillman, Don A., Eleanor Singer, Jon R. Clark, and James B. Treat. 1996. "Effects of Benefits Appeals, Mandatory Appeals, and Variations in Statements of Confidentiality on Complete Rates for Census Questionnaires." *Public Opinion Ouarterly* 60:376-389.

- Dillman, Don A., Jolene D. Smyth, and Leah Melani Christian. 2009. *Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method, Third Edition*. New York: John Wiley & Sons.
- Dommeyer, Curt J., Doris Elganayan, and Cliff Umans. 1991. "Increasing Mail Survey Response with an Envelope Teaser." *Journal of the Market Research Society* 33:137-140.
- Dykema, Jennifer, John Stevenson, Chad Kniss, Katherine Kvale, Kim González, and Eleanor Cautley. 2012. "Use of Monetary and Nonmonetary Incentives to Increase Response Rates Among African Americans in the Wisconsin Pregnancy Risk Assessment Monitoring System." *Maternal and Child Health Journal* 16:785-791.
- Edwards, Phil, Ian Roberts, Mike Clarke, Carolyn DiGuiseppi, Sarah Pratap, Reinhard Wentz, and Irene Kwan. 2002. "Increasing Response Rates to Postal Questionnaires: Systematic Review." *BMJ* 324:1183-1191.
- Groves, Robert M., Stanley Presser, and Sarah Dipko. 2004. "The Role of Topic Interest in Survey Participation Decisions." *Public Opinion Quarterly* 68:2-31.
- Groves, Robert M., Eleanor Singer, and Amy Corning. 2000. "Leverage-Saliency Theory of Survey Participation: Description and an Illustration." *Public Opinion Quarterly* 64:299-308.
- Heberlein, Thomas A. and Robert M. Baumgartner. 1978. "Factors Affecting Response Rates to Mailed Questionnaires: A Quantitative Analysis of the Published Literature." *American Sociological Review* 43:447-462.
- Iannacchione, Vincent G. 2011. "The Changing Role of Address-Based Sampling in Survey Research." *Public Opinion Quarterly* 75:556-575.
- Kropf, Martha E. and Johnny Blair. 2005. "Eliciting Survey Cooperation: Incentives, Self-Interest, and Norms of Cooperation." *Evaluation Review* 29:559-575.
- Link, Michael W., Michael P. Battaglia, Martin R. Frankel, Larry Osborn, and Ali H. Mokdad. 2008. "A Comparison of Address-Based Sampling (ABS) Versus Random-Digit Dialing (RDD) for General Population Surveys." *Public Opinion Quarterly* 72:6-27.
- Mazzone, John and John Pickett. 2011. "The Household Diary Study: Mail Use and Attitudes in FY 2010." USPS Household Diary Study: Washington, D.C.
- Singer, Eleanor and Cong Ye. 2013. "The Use and Effects of Incentives in Surveys." In *The ANNALS of the American Academy of Political and Social Science*, vol. 645, edited by D. S. Massey and R. Tourangeau.
- Trussell, Norm and Paul J. Lavarakas. 2004. "The Influence of Incremental Increases in Token Cash Incentives on Mail Survey Response: Is There an Optimal Amount?" *Public Opinion Quarterly* 68:349-367.
- Ziegenfuss, Jeanette, Kelly Burmeister, Katherine James, Lindsey Haas, Jon Tilburt, and Timothy Beebe. 2012. "Getting Physicians to Open the Survey: Little Evidence that an Envelope Teaser Increases Response Rates." *BMC Medical Research Methodology* 12:41.