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REPORTS AND COMMUNICATIONS

Prepaid and Promised Incentives in Web Surveys

An Experiment

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Prepaid monetary incentives consistently exert the largest positive effect on response rates in mail surveys. For web-based surveys, it has not been possible to administer monetary incentives via the Internet in advance. Recently, several new web-based services have been introduced that can transfer money to people online. Does this really have the same positive effect on response rates as shown in traditional mail surveys? The authors investigated this question experimentally in the context of a web-based survey among members of a professional association in Virginia. The results indicate that prepaid incentives in web surveys seem to have no advantages concerning the willingness to participate, actual completion rates, and the share of incomplete response patterns when compared with postpaid incentives. Furthermore, postpaid incentives show no advantages over no incentives. Finally, compared to no incentives, prize draws increase completion rates and also reduce various incomplete participation patterns.

Keywords: web-based surveys; incentives; noncompliance; nonresponse

One major disadvantage associated with web-based surveys is the fact that a series of methods and procedures proven effective in reducing nonresponse in traditional self-administered surveys (see, e.g., Dillman, 2000, for an overview) are not easily applicable. For example, although working with an interactive medium, we are for the most part technically limited in personalizing a survey to effectively establish an exchange situation resulting in a strong compliance to participate. Furthermore, we know from a meta-analysis on incentives in mail surveys conducted by Church (1993) that incentives only have a consistent and significant positive effect on response rates if they are prepaid instead of promised. Church's (1993) research synthesis also showed that prepaid monetary incentives result in greater increases in response rates (on average, 19.1% increase if compared to a no-incentive control group) than nonmonetary incentives (on average, 7.9% increase if compared to a no-incentive control group).

Following these principles for survey design, Dillman, Tortora, Conradt, and Bowker (1998) and Dillman et al. (2001) used prepaid incentives to increase response to a web-based

survey. However, in those designs, the prepaid monetary incentive was delivered by postal mail, and all participants in the sample received the incentive. Conclusions cannot be drawn about the effectiveness of this technique because the variable was not a part of the study's experimental design (all respondents received the incentive). Until recently, it has not been possible to administer monetary incentives online. Consequently, this variable has not been examined as a possible technique for increasing response rates in web-based surveys. Recently, though, several new web-based services have been introduced that can transfer money to people online (e.g., PayPal and Igain). Sending out cash equivalents via e-mail (e.g., with the aid of PayPal, www.paypal.com) could be one solution, but does this really have the same positive effect on response rates as shown in traditional mail surveys? We investigated this question experimentally in the context of a web-based survey among members of a professional association in Virginia.

HYPOTHESES AND RESEARCH QUESTIONS

Given Church's (1993) results and assuming that the effects of administering monetary incentives are the same for web surveys as for mail surveys, we expect that the willingness to participate as well as the actual participation will be higher when monetary incentives are prepaid rather than promised.

Hypothesis 1: The willingness to participate will be significantly higher for the "prepaid" monetary group than for the "promised" incentive group.

Hypothesis 2: The actual participation will be significantly higher for the "prepaid" monetary group than for the "promised" incentive group.

Hypothesis 3: There will be no differences between the "promised" incentive group and the control group on measures of willingness to participate.

Hypothesis 4: There will be no differences between the "promised" incentive group and the control group on measures of actual participation.

As illustrated by Bosnjak and Tuten (2001), one major advantage in web-based surveys is the fact that incomplete participation patterns can be traced. For example, people prematurely terminating the survey process (dropouts) as well as those viewing all of the questions without answering any questions (lurkers) are, in principle, detectable. This enables the survey researcher to test the effect of different types of incentives using *incomplete participation* as an additional independent measure. With respect to Church's (1993) result, we expect the following for these incomplete participation patterns:

Hypothesis 5: Incomplete participation patterns will be significantly lower for the "prepaid" incentive group when compared with the "promised" incentive group.

Hypothesis 6: There will be no difference in incomplete participation between the "promised" incentive group and the control group.

Although most of the web surveys conducted to date operate with various kinds of prize draws to attract potential participants, the empirical evidence concerning their effectiveness to influence (non)participation is largely inconsistent (Brennan, Rae, & Parackal, 1999; Cook, Heath, & Thompson, 2000; Frick, Bächtiger, & Reips, 2001; Lozar Manfreda, 2001; MacElroy, 2000). In view of these inconsistent results, we cannot predict how prize draws compete with the conditions mentioned above, namely, prepaid incentives, postpaid incentives, and a no-incentive control condition. Hence, we formulated an open-ended question: What effect will prize draws have on (a) the willingness to participate, (b) complete partici-

pation, and (c) incomplete participation in comparison to prepaid incentives, postpaid incentives, and a no-incentive condition?

METHOD

Participants and Experimental Design

A complete e-mail list of members of a local professional sales association (real estate agents and brokers) in the Mid-Atlantic United States made up the population in the study ($N = 1,466$). Because of the small membership size, a census of the full population was used. These 1,466 e-mail addresses were randomly assigned to one of the following experimental conditions:

- Group 1 received \$2 via PayPal within the first contact (prepaid group).
- Group 2 was promised to receive \$2 upon completion of the survey (promised group).
- Group 3 was offered the opportunity to participate in a prize draw upon completion of the survey (two \$50 and four \$25 prizes) (prize group).
- Group 4 was requested to participate without offering any extrinsic motivators (control group).

As a result of randomly assigning these e-mail addresses to the four experimental conditions, the number of e-mails per group was distributed as illustrated in Table 1.

As shown in Table 1, the process of randomizing the initial 1,466 e-mail addresses resulted in an unequal distribution between groups. Between 31 (postpaid group) and 36 (promised group) individuals had not been reached, be it because of outdated or invalid addresses or because of a storing space limitation, which prevented new incoming e-mails from being accepted by the respective e-mail mail servers. Between 329 (prize draw group) and 336 (prepaid group) individuals were finally reached. Taking all four groups together, the resulting number of potential participants was 1,332.

Materials

Participants were surveyed on the topic “trends and concerns in real estate with a special emphasis on fee-based compensation.” This topic is highly salient and personally relevant to the participants under investigation. The web-based survey comprised 23 questions in total, of which 5 were open-ended. The survey was a multipage survey with questions grouped according to topic. On average, the survey took 10 minutes to complete.

Survey Implementation

In accordance with Dillman’s (2000) recommendations for implementing self-administered surveys, the 1,322 potential participants received multiple contacts. The *initial contact* (*prenotice*, Day 1) consisted of a short e-mail briefly describing the topic of the survey, the exact date of sending out the URL to access the web-based questionnaire, and emphasizing the confidentiality of the answers given. In addition, a text block corresponding to the respective experimental condition was prominently included. Within this text block, the prepaid group was notified about the receipt of a cash equivalent: “As a small token of our appreciation for your response to the survey, \$2 has already been deposited into a PayPal account for you. You can collect it online at <http://...>” Instead, the postpaid group received the following information: “As a small token of our appreciation for your response to the sur-

TABLE 1
Random Distribution of Participants Across Experimental Groups

	<i>Experimental Group^a</i>			
	<i>Prepaid</i>	<i>Promised</i>	<i>Prize Draw</i>	<i>Control</i>
E-mail addresses per group	372	364	364	366
Nonreachable addresses	36	31	35	32
Reached addresses	336	333	329	334

a. Initial sample, $N = 1,466$; reached sample, $N = 1,332$.

vey, \$2 will be deposited into a PayPal account upon completion of the survey.” Participants assigned to the prize draw condition were given the following information:

As a small token of our appreciation for your response to the survey, you will be entered into a prize drawing. There are two \$50 and four \$25 prizes to be awarded. The drawing will take place at the conclusion of the survey period, and winners will be notified immediately.

Finally, the control group received no information on incentives at all.

Two days later, all potential participants received an additional e-mail notifying them about the start of the survey (*survey start*, Day 3). This notification contained a URL and unique ID to connect to the welcome page of the web-based survey. The technique of associating URLs with unique IDs ensures that only eligible persons participate. Furthermore, the number of unique accesses and participation patterns can be traced without imposing the burden to type in an ID.

Five days later, those who had not responded yet were reminded to participate (*first reminder*, Day 8). This reminder carried the unique URL to reach the survey again along with a paragraph stressing the incentive received (prepaid group), the incentive to be expected (postpaid group), or mentioning the chance to win prizes (prize draw group).

Another 5 days later, a second reminder was sent out to all individuals who had not participated yet (*second reminder*, Day 13). This reminder had the same content as the first reminder, including the URL to access the web-based questionnaire and mentioning the specific incentive (for the groups prepaid, postpaid, and prize draw). In addition, the offer to get help by e-mail if any concerns persisted and/or technical difficulties emerged was made. With the fifth and *last contact* on Day 22, all participants were notified about the end of the survey.

Dependent Measures

The dependent constructs considered in this study were operationalized as follows:

Willingness to participate was measured using (a) the unique number of accesses to the survey welcome page, (b) the number of individuals entering the survey process from the welcome page, and (c) the speed of accessing the survey (in days) after the sample was notified.

Actual participation is reflected by the share of participants answering all questions (i.e., complete participation). Conversely, the share of participants accessing the survey without answering all of the questions, encompassing participants who dropped out, left certain items blank (item nonresponse), or were just retrieving the survey without answering a question (lurker) was used as a measure for *incomplete participation*. Unfortunately, the web sur-

vey program used (Inquisite) does not allow for differentiation between these different subgroups of incomplete participation, and this placed limitations on our ability to use more traditional definitions.

RESULTS

We conducted several analyses to address the hypotheses and research questions presented in the preceding section. The results are presented below.

Willingness to Participate

Unique accesses to the welcome page. Starting from the number of reached persons in each experimental condition, Table 2 summarizes the results concerning the number and share of participants accessing the welcome page of the Web survey within each group. Of those participants accessing the first web page of the survey, the most originated from the prize draw group (35.9%), followed by the postpaid group (27.3%), and then the control group (26.6%). Surprisingly, the prepaid group showed the lowest initial participation rates (25.6%). If compared by means of chi-square tests, there are no significant differences between the “prepaid” and “promised” groups, $\chi^2(1, N = 336/333) = 0.26$, *ns*, nor between the “promised” group and the control group, $\chi^2(1, N = 333/334) = 0.04$, *ns*. Based on this, we did not find support for Hypothesis 1, but there was support for Hypothesis 3.

The prize draw group differs significantly from the “prepaid” group, $\chi^2(1, N = 329/336) = 8.25$, $p < .01$, the “promised” group, $\chi^2(1, N = 329/333) = 5.59$, $p < .05$, and the control group, $\chi^2(1, N = 329/334) = 6.56$, $p < .05$. Therefore, it appears that the willingness to participate, operationalized as the share of unique accesses to the welcome page of the survey, is highest for the prize draw group.

Speed of accessing the welcome page. In this section, we report the speed of accessing the welcome page of the survey in terms of the time delayed between the first notification and the actual unique accessed per experimental group. Figure 1 illustrates these delays by relating the days after the groups were invited to participate (x-axis in Figure 1; Day 1 corresponds to Day 3 in Survey Implementation section) to the cumulative percentages of accesses (y-axis in Figure 1; 100% = number of total accesses per group). Figure 1 illustrates that the speed of accesses was lowest for the prepaid group throughout the whole field period. Although the lines for the promised and control group are nearly identical, the prize draw group takes a middle position. In sum, the different speeds accessing the first page leading to the Web survey indicate that the initial willingness to participate was lowest for the prepaid group.

The mean number of days to access the survey was 6.53 ($SD = 5.40$) for the prepaid group, 4.35 ($SD = 4.53$) for the promised group, 5.30 ($SD = 5.11$) for the prize group, and 4.34 ($SD = 4.43$) for the control group. The *t* tests confirm that (a) the prepaid group took longer to access the welcome page than the promised group ($t = 2.93$, $df = 176$, $p < .01$), (b) the prepaid group showed no differences from the prize group ($t = 1.67$, $df = 202$, $p = .098$), and (c) the prepaid group took longer to access the welcome page than the control group ($t = 2.95$, $df = 173$, $p < .01$).

Thus, we again lack support for Hypothesis 1 but find support for Hypothesis 3.

Entering the survey process. Within the previous two subsections, the number of unique retrievals of the welcome page served as an indicator for the willingness to participate. In this section, the number of persons beginning the survey process is reported (see Table 3).

TABLE 2
Number and Share of Accesses to the Welcome Page Across Groups

	Experimental Group ^a			
	Prepaid	Promised	Prize Draw	Control
Reached persons (= 100%)	336	333	329	334
No. (and %) of unique accesses to first page	86 (25.6)	91 (27.3)	118 (35.9)	89 (26.6)

a. Initial sample, $N = 1,466$; reached sample, $N = 1,332$.

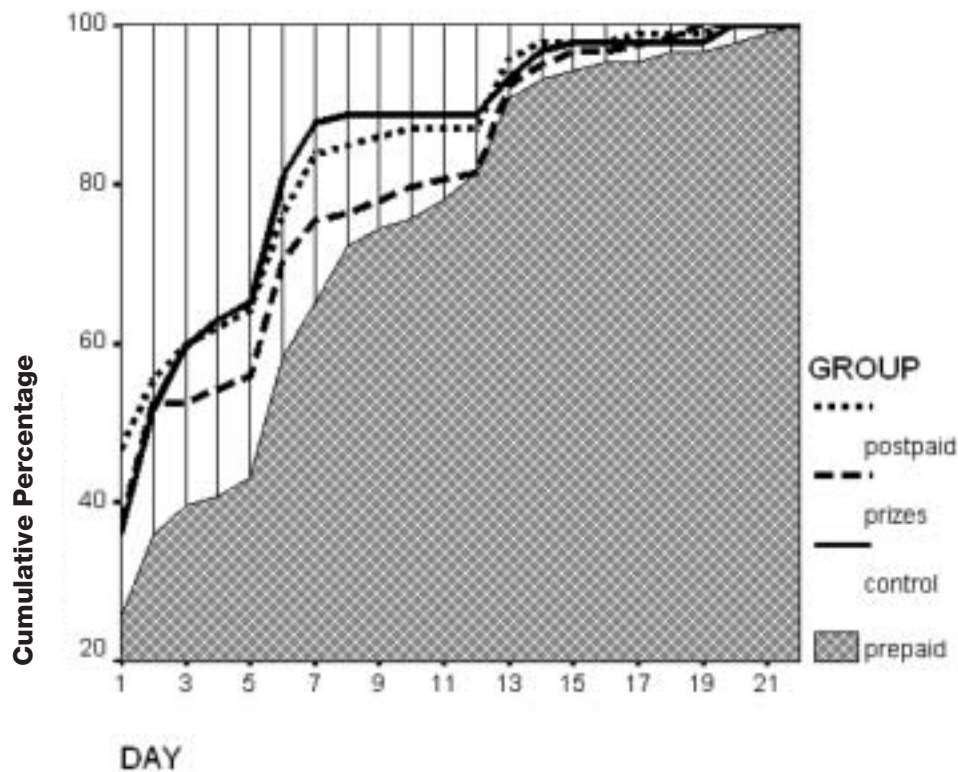


Figure 1: Speed of Accessing Welcome Page

The nominal values reported in Table 3 suggest that of those beginning the survey process, most were assigned to the prize draw group (79.7 %); 73.6% of the “promised” group and 70.9% of the “prepaid” group did the same. Of those belonging to the control group, 69.7% entered the surveying process. Given the marginal distribution reported (see row “Number of unique accesses to the welcome page”), the “prepaid” group did not differ significantly from the “promised” group, $\chi^2(1, N = 86/91) = 0.16, ns$, and the “promised” group did not differ significantly from the control group, $\chi^2(1, N = 91/89) = 0.35, ns$. Based on these results, Hypothesis 1 is rejected and Hypothesis 3 is accepted.

Furthermore, the prize draw group does not differ significantly from (a) the prepaid group, $\chi^2(1, N = 118/86) = 2.07, ns$, (b) the postpaid group, $\chi^2(1, N = 118/91) = 1.06, ns$, and (c) the control group, $\chi^2(1, N = 118/89) = 2.72, ns$, if we test two-sided. If we had used a one-

TABLE 3
Number and Share of Participants Entering the Survey Process Across Groups

	<i>Experimental Group</i>			
	<i>Prepaid</i>	<i>Promised</i>	<i>Prize Draw</i>	<i>Control</i>
Number of unique accesses to welcome page (= 100%)	86	91	118	89
No. (and %) of persons entering the survey	61 (70.9)	67 (73.6)	94 (79.7)	62 (69.7)

sided hypothesis initially, the last relation (prize draw > control) would reach statistical significance.

Actual Participation

The number of completes, referred to here as the number of participants answering all questions asked, served as an indicator to measure actual participation. Table 4 summarizes the distributions between the experimental groups for this dependent measure.

On the basis of the distributions between the experimental groups reported in Table 4, we found that the prepaid group does not differ significantly from the promised group, $\chi^2(1, N = 86/91) = 0.11, ns$. In addition, the promised group does not differ significantly from the control group, $\chi^2(1, N = 91/89) = 1.78, ns$. On the basis of these results, we reject Hypothesis 2 and accept Hypothesis 4.

The prize draw group differs significantly from the control group, $\chi^2(1, N = 118/89) = 5.98, p < .05$, but does *not* differ significantly from the prepaid group, $\chi^2(1, N = 118/86) = 1.87, ns$, and promised group, $\chi^2(1, N = 118/89) = 1.07, ns$.

Incomplete Participation

Incomplete participation encompasses participants who entered the survey process without answering all of the questions. Thus, this group consists of individuals who dropped out, left certain items blank (item nonresponse), or just retrieved the survey without answering any questions (lurker). As a consequence of using the Inquisite software program for web-based surveys (Inquisite, <http://www.inquisite.com>) for this study, it was not possible to get more detail about incomplete participation as suggested by Bosnjak and Tuten (2001).

Table 5 summarizes the number of incompletes per experimental group, which is set by the number of persons entering the survey process. Although the percentages reported suggest that the control group had the highest share of incompletes (30.6%), followed by the prepaid group (21.3%), the postpaid group (20.9%), and the prize draw group (18.1%), the differences tested could not reach statistical significance. The prepaid group does not differ significantly from the postpaid group, $\chi^2(1, N = 61/67) = 0.003, ns$, and the postpaid group does not differ significantly from the control group, $\chi^2(1, N = 67/62) = 1.61, ns$. Consequently, we must reject Hypothesis 5 and accept Hypothesis 6.

There are no significant differences between the prize draw group and the prepaid group, $\chi^2(1, N = 94/61) = 0.25, ns$, nor the promised group, $\chi^2(1, N = 94/67) = 0.20, ns$. Furthermore, using the two-sided test, there are no significant differences between the prize draw group and the control group on number of incompletes, $\chi^2(1, N = 94/62) = 3.32, ns$. However, when

TABLE 4
Number and Share of Actual Participation Across Groups

	<i>Experimental Group</i>			
	<i>Prepaid</i>	<i>Promised</i>	<i>Prize Draw</i>	<i>Control</i>
No. of persons retrieving the first page (= 100%)	86	91	118	89
No. (and %) of completes	48 (55.8)	53 (58.2)	77 (65.3)	43 (48.3)

TABLE 5
Number and Share of Incompletes Across Groups

	<i>Experimental Group</i>			
	<i>Prepaid</i>	<i>Promised</i>	<i>Prize Draw</i>	<i>Control</i>
No. of persons entering the survey (= 100%)	61	67	94	62
No. (and %) of incompletes	13 (21.3)	14 (20.9)	17 (18.1)	19 (30.6)

a single-sided test is used, the difference observed reaches statistical significance. This suggests that incomplete participation patterns can only be reduced with prize draws.

Summary of Results

The results indicate that prepaid incentives in web surveys seem to have no advantages concerning the willingness to participate, actual participation (completion rates), and the share of incomplete response patterns compared with promised incentives. Furthermore, promised incentives show no advantages over no incentives. Prize draws significantly increase the willingness to participate and, eventually, also the number of sample units starting the survey. Prize draws also increase actual participation (completion rates) and tend to reduce the number of incompletes compared to no incentives.

CONCLUSIONS AND RECOMMENDATIONS

Prima facie, the results bring the suitability of the social exchange perspective for web surveys into question. Although social exchange theory would predict that prepaid incentives should be superior in reducing nonresponse compared to the other conditions taken into account, this prediction did not hold true in this study. Given the superiority of prize draws compared to the no-incentive control group suggests that theories of human decision making (see, e.g., Birnbaum, 2001) are a preferable theory for explaining participation in web surveys.

However, we cannot totally dismiss social exchange theory for use in web surveys. First, in a web survey, the reward is not tangible. In other words, although the monetary incentive was “delivered” in advance of the request to participate in the web survey, respondents were required to collect the money from another organization. It was not “money in the hand.” Second, there is no way to assess that the participants trust that they would receive the token of appreciation. If those receiving the requests for participation felt that the offer was not legitimate, it could cause an artificial result. Finally, the \$2 electronic cash incentive could

have been regarded as too low to have an effect. This is particularly possible given the nature of this sample, which is trained to think in economic exchange dimensions.

On a practical note, the results do add credence to the popular method of using prize draws as incentives in web surveys. Based on this study, this method is the most sound in terms of generating a strong response rate and high data quality. It is possible, though, that this effect is somehow based on the current “culture” of surveys. In other words, culture studies emphasize that individuals learn a culture through socialization practices. Because many survey studies are not funded at levels that provide the opportunity for individual monetary incentives for each participant, many studies do rely heavily on prize drawings to encourage response. Therefore, it is possible that individuals have been socialized by this practice to anticipate the use of a prize drawing rather than an individual, guaranteed reward. This, too, could help to heighten the effect of trust—or distrust—as the case may be. Specifically, if individuals are socialized to expect a prize draw but receive a cash equivalent or promise of an equivalent, this may heighten feelings of doubt that they would actually receive the reward.

This study does have many limitations. The study was limited by high levels of attrition. Consequently, the power of the statistical comparisons was low. With a bigger sample, several differences would have been significant. In addition, we used a membership list as the population. Future studies should attempt to study a more general population of web users.

We recommend replicating this study with the following improvements. A replication should include a larger sample size to eliminate limitations caused by attrition. This sample should also address web users in general rather than a subset of this population. In addition, different sizes of monetary incentives should be added to the design. This would allow a closer examination of the level of monetary incentive required to positively affect response rate, speed, and completeness. Different delivery methods for the monetary incentives could also be studied. People may not trust online financial organizations like PayPal. Perhaps a well-recognized banking institution, such as Bank of America, would be more effective even when delivery is online. This could also be contrasted with mail delivery of the incentive. Finally, a program that allows for the differentiation of all possible response types, as described in Bosnjak and Tuten (2001), should be used to build the web survey. This would provide for more accurate and relevant dependent measures.

Despite these limitations, this study provides relevant information for web survey design. It appears that, compared to promised incentives, prize draws, or a simple thank-you, prepaid incentives do not increase the willingness to participate or actual participation. Prepaid incentives also did not decrease the presence of incomplete response. Likewise, promised incentives showed no advantage over a simple thank-you. Only prize draws significantly increased willingness to participate and the number of sample units starting the survey. Prize draws also increased actual participation and reduced the presence of incomplete participation patterns. This lends credence to the popularity of this method as an incentive for Web-based surveys.

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