The Effect of Large Monetary Incentives on Survey Completion: Evidence from a Randomized Experiment with the Survey of Consumer Finances

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ABSTRACT

This study examines the effect of prepaid and large postpaid monetary incentives using data from an experimental version of the Survey of Consumer Finances. The survey was fielded in person to a random sample of adults in high-income areas of the United States. Monetary incentives were randomly assigned: $5 prepaid incentive and notification postcard, or no prepaid incentive and no postcard. In addition, promised incentives were much greater in value than are typically offered by surveys: $50, $100, or $150 upon completion of the survey. The study analyzes the effect of variation in these incentives on unit response, including respondent-initiated phone calls to complete the survey, to an interviewer-administered survey about household finances. We find that prepaid incentives increased respondent-initiated phone interviews and the overall response rate and that $100 and $150 promised incentives both increased response rates relative to the $50 incentive, thereby reducing interviewer effort.

1 Corresponding author: Joanne W. Hsu, joanne.w.hsu@frb.gov. The analysis and conclusions set forth are those of the authors and do not indicate concurrence with other members of the research staff or the Board of Governors of the Federal Reserve System.
Response rates for household surveys have experienced long-running declines, raising the risk of biased inference if nonresponse occurs nonrandomly (Brick and Williams 2013; Groves 2006; Curtin, Presser, and Singer 2005). These trends pose a particular challenge to large national surveys that seek to measure characteristics—such as spending or wealth—that are highly concentrated in populations with already low response rates (Groves et al. 2002, Groves and Peytcheva 2008).

Larger prepaid and promised monetary incentives have been proposed as one way to mitigate declining response rates, given the evidence demonstrating their effectiveness (Pforr et al. 2015; Singer and Ye 2013; Teisl, Roe, and Vayda 2006; Trussell and Lavrakas 2004; Mercer et al. 2015). However, the optimal amount and structure may vary by survey. A token prepaid incentive may increase response rates for a brief mail survey but may be less effective for a longer face-to-face survey on sensitive information.

Previous research shows that monetary incentives positively influence response rates for interviewer-administered surveys, but the amounts considered were relatively small ($50 or less) and targeted broad populations (Willimack et al. 1995, Singer et al. 1999, Laurie and Lynn 2009). In this study, we examine the effects of offering relatively large pre- and postpaid monetary incentives to hard-to-reach higher-income households on outcomes related to unit response.

The Survey of Consumer Finances (SCF), sponsored by the Federal Reserve Board (FRB), has typically offered an initial postpaid incentive of $50 (Bricker 2014). To explore how changes in the structure of respondent incentives could improve response rates and durations in

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1 One exception is James and Bolstein (1992), who included a $50 incentive contingent upon returning a mail questionnaire. Large incentives are also sometimes offered as lottery prizes (Warriner et al. 1996).
the field, we conducted an experiment that randomly assigned the amount of pre- and postpaid incentives to a sample of 900 higher-income households, a hard-to-reach group in previous waves of the SCF. Half of the sample was randomly assigned to receive a $5 cash prepaid incentive, included in their invitation letter, along with a pre-notification postcard. The households were also randomly assigned to receive an offer of $50, $100, or $150 cash upon completing the survey; these offers were listed in the text of the invitation letter.\textsuperscript{2}

In this study, we analyze the experimental results to determine the effects of the prepaid incentive and different postpaid incentives on survey completion rates for a face-to-face survey on household finances. The results provide insights into the costs and benefits of offering large monetary incentives for completing an in-depth interviewer-administered survey on a sensitive topic. Moreover, by offering incentive amounts in a large range, we explore whether the relationship between higher incentive amounts and higher response rates is monotonic or changes at large values.

**Theoretical Background on Response to Monetary Incentives**

Past research has examined the theoretical and empirical influences of monetary incentives on response rates. In general, monetary incentives, particularly noncontingent prepaid incentives, encourage potential respondents to complete surveys by providing a psychological obligation to reciprocate the favor (Singer, Groves, and Corning 2001) or, in accordance with social exchange theory, by establishing trust that the respondent would comply with the request (Dillman 1978). At the same time, monetary incentives may act as external motivators (Hansen 1980), which are generally less effective than internal motivators in producing compliance.

\textsuperscript{2} The experimental design was reviewed and approved by NORC’s Institutional Review Board.
Identically structured incentives could have heterogeneous effects across potential respondents. As described in leverage-saliency theory (Groves, Singer, and Corning 2000), different individuals may be swayed by different factors. The leverage of particular factors likely varies with characteristics like household socioeconomic status, though empirical evidence on differential incentive effects is mixed (Toepoel 2012).

Empirical studies typically show that prepaid incentives encourage survey response more effectively than promised incentives (Church 1993, Singer et al. 1999). The prepaid incentives studied are generally small—usually less than $5 (Church 1993, Singer et al. 1999, Singer and Ye 2013). According to theories of economic exchange (Biner and Kidd 1994), respondents weigh the costs and benefits of responding, and greater incentives should yield higher response rates. Larger promised incentives could also improve response rates. However, excessively large sums could potentially deteriorate the positive effects of monetary incentives by increasing external motivation at the expense of altruistic motivation (Islam and Tanasiuk 2013; Singer, Hoewyk, and Maher 1998). Large incentives could also lead respondents to question the intentions of the data-collecting organization (Lee et al. 2015).

Some studies have found nonlinear relationships between the size of prepaid incentives and response rates (Trussell and Lavrakas 2004, Warriner et al. 1996). One possible explanation is that smaller and larger incentives may appeal differentially to factors of low or high leverage, feelings of reciprocity, or perceptions of survey legitimacy. Therefore, it is unclear ex ante whether postpaid incentives of the magnitude considered here would generate the same increases in response rates as seen in previous studies in the literature, particularly given our focus on a higher-income population.
Methods

OVERVIEW OF THE SURVEY OF CONSUMER FINANCES

The SCF is a triennial cross-sectional survey of U.S. families, sponsored by the FRB. It is a nationally representative survey on the finances of U.S. households, including income, assets, and liabilities. The survey is administered by field interviewers (FIs) and is primarily conducted face-to-face.

Given the concentrated nature of wealth in the United States, the SCF uses a dual-frame sample that includes a multistage national area-probability (AP) sample and a separate stratified list sample designed to oversample wealthy Americans. Although many surveys have experienced significant declines in response rates over the past two decades (Brick and Williams 2013), the SCF has maintained a response rate of nearly 70 percent since 1992. The AP response rate ranged from 66.3 to 68.6 percent, and the list sample response rate ranged from 28.3 to 34.0 percent (RR1, AAPOR 2015). These response rates have come at a cost: The target field period is about eight months, but each wave since 2004 has required an average extension of 2.5 additional months in the field.

Many aspects of the SCF contribute to its difficulty completing interviews. Wealthy families are particularly difficult to reach, as they are typically located in secured areas and take great efforts to maintain privacy. Broader populations are also increasingly difficult to reach, as more Americans reside in locked communities and screen who they talk to. The sensitivity of survey questions on personal finances, increased concern about privacy issues in the wake of information security breaches at retailers and government agencies, and difficulties in making

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3 See Kennickell (2005) for a discussion of the sampling procedure.
contact with potential respondents all suggest a careful consideration of how incentives, along with other field strategies, could mitigate these factors to gain compliance with a survey request.

**STUDY DESIGN**

The experiment, sponsored by the FRB and conducted by NORC, involved conducting a survey billed as the 2014 SCF. Following an approach similar to the regular SCF, an AP sample of 900 randomly selected residential addresses was drawn from census tracts in New York City, Los Angeles, and Miami. Only census tracts in the top quintile of the distribution of median income were included in the sample frame to focus our study on the populations for whom the SCF and other household surveys previously had particular difficulty reaching target response rates (Groves 2006, Sabelhaus et al. 2015).4

Half of all respondents received a $5 bill as a prepaid incentive with their invitation letter, which was preceded by a postcard mentioning that an invitation was forthcoming and would include a token of appreciation. Past experiments that have separately tested the effects of pre-notification and prepaid incentives found that both treatments separately increased response rates (Messer and Dillman 2011; van Veen, Göritz, and Sattler 2016). The remaining respondents received invitations without prepaid incentives or postcards. For brevity, we will henceforth refer to the “$5 prepaid and pre-notification postcard” treatment as simply the “prepaid” treatment.

Sample addresses were randomly assigned to one of three postpaid monetary incentives for completing the SCF: $50, $100, or $150. The amount of the promised incentive was listed in the text of the invitation letter. Prospective respondents received the exact same information

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4 Although we were interested in the effect of incentives on participation across all incomes, due to cost constraints we focused on households in census tracts with median household incomes, on average, of about $108,000.
and recruitment strategies as previous SCF waves. The interviewer did not know which respondents received the prepaid incentive unless a respondent mentioned receiving one. Interviewers did know the random assignments of the post-paid incentive treatment as they were responsible for paying the respondents at the time of the interview.

The field process begins when the FI attempts to contact the respondent. The FI continues these attempts by employing normal contacting strategies and including additional materials as necessary. The process ends when the respondent accepts the interview request or issues a refusal. The field period for the experiment was brief—about eight weeks, starting in October 2014.5 The invitation letter and all additional materials left by the FI included a toll-free number that a respondent could call with questions at any time during the experiment or to complete an interview.

ANALYSIS METHODS

We begin with a comparison of response rates across experimental groups, supplementing the analysis with estimates from linear probability regression models (LPMs) that control for various other factors that could affect response rates, using the following specification:

\[ \text{outcome}_i = \beta_1 \text{experimental groups}_i + \beta_2 \text{control variables}_i + \epsilon_i. \]

We estimate LPMs for two different outcomes—completion (either in person or over the phone) and directly contacting NORC by phone and completing the survey—as a function of indicators for the experimental conditions.

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5 In the original experimental design, soft refusals would be continued to be worked by FIs, with half of each contingent group eligible for an escalated offer. Due to the short field period, the refusal conversion stage was not fully implemented. Therefore, all soft refusals are coded as “no completion,” and the disposition was not updated if conversions were later successful.
We include controls for whether the respondent resides in a locked building or gated community, which poses additional challenges for contacting; city indicators; and median household income within the census tract. We also estimate additional specifications adding the number of contact attempts made by the FI and an indicator for whether the FI ever made in-person or telephone contact with the respondent, because the shortened field period prevented some cases from being fully worked by the FI, and many respondents only became aware of the incentive after interacting with an interviewer. Probit and logistic regressions yield results nearly identical to the LPMs (results available upon request).

Results

Table 1 shows response rates (RR1, AAPOR 2015) and the number of in-scope cases, split by experimental group. For the 808 in-scope cases, FIs were able to establish contact at least once for 552 cases.\(^6\) 236 cases were completed, yielding an overall response rate of 29.2 percent.

The results show that prepaid incentives and larger postpaid monetary incentives are associated with higher response rates. In particular, we find a statistically significant difference in response rates between the prepaid and no prepaid incentive groups (32.5 versus 25.9 percent; \(t=-2.08, \ df=806, p=0.04\)).

Table 2 presents the estimated coefficients from the LPM regressions for two outcomes: completion and calling NORC to complete the survey.\(^7\) As shown in columns (1) and (2), the $5 prepaid incentive increased the probability of a completion by 6 percentage points relative to no

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\(^6\) 92 cases were out of sample due to the residence being unoccupied or ineligibility of residents.

\(^7\) Completions include surveys that were completed face-to-face or over the phone.
prepaid incentive. The $100 postpaid incentive had a positive but imprecisely measured effect on the response rate relative to a $50 postpaid incentive. In column (2), the $150 postpaid incentive is estimated to increase the response rate by 7 percentage points relative to the $50 incentive offer; this is more than triple the estimated effect of $100. When omitting the contact controls in column (1), the effect of the $150 postpaid incentive is slightly smaller in magnitude.

[INSERT TABLE 2 ABOUT HERE]

Columns (3) and (4) present estimates for whether the respondent called NORC to complete the survey after receiving the incentive offer. Only the prepaid incentive was found to affect calls to NORC, increasing the call-in rate by 3 percentage points, doubling the overall call-in rate.

Table 3 presents the same regressions with interaction effects between the prepaid and postpaid treatments. We find that, holding the prepaid incentive constant, larger postpaid incentives have larger positive effects for both outcomes, though imprecisely measured for the non-prepaid groups. Holding the postpaid incentive constant, adding a prepaid incentive and postcard also substantially increases response, with precisely measured effects for some of the coefficients. The largest effect on response comes from the prepaid and $150 postpaid group; this coefficient is more than double the next largest treatment. These results are insensitive to the inclusion of contact controls.

Discussion

We examined whether the use of prepaid and large postpaid incentives increases response rates and reduces interviewer effort to complete interviews with a higher-income sample, which has typically been more difficult for SCF interviewers to reach. We found that the $5 prepaid
incentive plus postcard increased response rates, consistent with past research, by 20 percent.\textsuperscript{8}

Furthermore, the prepaid incentive plus postcard also increased the probability that the respondent would preemptively call to complete the survey. When respondents take initiative to complete an interview, survey costs can be substantially reduced by eliminating the need for interviewers to make further contact attempts and securing a completion in person. In our experiment, interviewers made an average of four visits to each respondent’s home to try to establish contact, whereas those who called NORC to complete the survey only required two visits, so a modest prepaid incentive has the potential to yield considerable reductions in interviewer effort.

Comparing various levels of promised incentives, we generally find that larger incentives lead to higher levels of completed interviews. The effects of a $150 promised incentive are larger than a $100 incentive, relative to the base incentive of $50, though the coefficient is only statistically significant when the contacting controls are included. This finding suggests that a large promised incentive may be most effective with some reinforcement from an interviewer. The total effect of the incentive is likely a combination of a “true money” effect on the respondent and an interviewer expectation effect, where the interviewer expects a more likely response from respondents assigned higher incentives. In our study, however, the $150 group was no more likely to be reached by an interviewer than other groups.

In the fully interacted models, the largest increase over the base incentive comes from combining the prepaid incentive/postcard with $150 postpaid, providing some evidence for nonlinear interaction effects. The estimates were insensitive to contact controls, suggesting that the combination of prepaid plus the large promised incentive was effective regardless of

\textsuperscript{8} One caveat is that the experimental design does not allow us to separately estimate the effect of the postcard.
interviewer–respondent interaction, perhaps because the postcard made respondents more likely to open the invitation letter and notice the incentive offer, or because it increased the legitimacy of the large offer.

All told, we do not find non-monotonic effects of larger incentives in this range for households living in areas with high median incomes. We hypothesize but cannot definitively conclude the same for lower-income households. Our findings are consistent with an earlier experiment implemented by the SCF, in which Bricker (2014) found that increasing promised incentives from $20 to $50 reduced both the number of contacts required to complete an interview and time in the field.

Unlike some other studies on incentives, we did not have a group that received no promised incentives. However, the fact that we find a positive effect of a $100 incentive relative to $50, and an even larger effect of $150, is generally consistent with previous studies analyzing smaller promised incentives. Our results suggest that, on average, the larger incentives in the range we studied did not appear to have the unintended consequence of reducing the perceived legitimacy of the survey. Even if the incentives appealed more heavily to extrinsic motivation, they still promoted survey response. We cannot rule out the possibility, though, that even larger incentives in our context could lead to deterioration in response rates.

In our base models, the effect of a $5 prepaid incentive plus postcard is only modestly smaller in magnitude than that of a promised incentive as large as $150. In the fully interacted model, the prepaid/postcard treatment has a positive effect at all levels of promised incentives, though the effect is precisely measured only when paired with the $150 and vice versa. The results provide further support for the effectiveness of prepaid incentives as a tool for survey practitioners, particularly if large promised incentives are infeasible for a particular survey.
Given that our experiment focused on a relatively affluent population, our estimates likely underestimate the effect of the various incentives on response rates in the general population, as low-income households are more responsive to monetary incentives (Martin and Winters 2001, Barón et al. 2009). That said, our results have no bearing on whether high-income households or other hard-to-reach populations should be offered different incentives than others, whether on the basis of equity, ethical, or other considerations. Overall, our findings suggest that the use of a prepaid incentive, and even a large postpaid incentive, can increase response rates and potentially reduce interviewer effort for a face-to-face survey like the SCF.
References


Warriner, Keith, John Goyder, Heidi Gjertsen, Paula Hohner, and Kathleen McSpurren. 1996.  
“Charities, no; Lotteries, no; Cash, yes main effects and interactions in a Canadian incentives experiment.” *Public Opinion Quarterly* 60 (4):542-62.  

### Tables

**Table 1.** Response rates and number of in-scope cases, by experimental group

<table>
<thead>
<tr>
<th>Postpaid:</th>
<th><strong>$50</strong></th>
<th><strong>$100</strong></th>
<th><strong>$150</strong></th>
<th><strong>Total</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>No Prepaid, No Postcard</td>
<td>Response rate</td>
<td>23%</td>
<td>28%</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>In scope</td>
<td>137</td>
<td>132</td>
<td>133</td>
</tr>
<tr>
<td>$5 Prepaid + Postcard</td>
<td>Response rate</td>
<td>30%</td>
<td>32%</td>
<td>35%</td>
</tr>
<tr>
<td></td>
<td>In scope</td>
<td>135</td>
<td>134</td>
<td>137</td>
</tr>
<tr>
<td>Total</td>
<td>Response rate</td>
<td>27%</td>
<td>30%</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>In scope</td>
<td>272</td>
<td>266</td>
<td>270</td>
</tr>
</tbody>
</table>
Table 2. Results of Linear Probability Model Estimation for Survey Response

<table>
<thead>
<tr>
<th>Dependent Variable Mean:</th>
<th>(1) Complete</th>
<th>(2) Complete</th>
<th>(3) Called NORC</th>
<th>(4) Called NORC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable Mean:</td>
<td>0.292</td>
<td>0.292</td>
<td>0.030</td>
<td>0.030</td>
</tr>
<tr>
<td>N = 808</td>
<td>N = 808</td>
<td>N = 808</td>
<td>N = 808</td>
<td>N = 808</td>
</tr>
<tr>
<td>β (se) Postcard + $5 Prepaid Incentive (relative to no postcard, no prepaid)</td>
<td>0.065 (0.0314) *</td>
<td>0.061 (0.0289) *</td>
<td>0.030 (0.0119) *</td>
<td>0.030 (0.0118) *</td>
</tr>
<tr>
<td>$100 Incentive (relative to $50)</td>
<td>0.027 (0.0385)</td>
<td>0.020 (0.0353)</td>
<td>0.007 (0.0146)</td>
<td>0.006 (0.0144)</td>
</tr>
<tr>
<td>$150 Incentive (relative to $50)</td>
<td>0.047 (0.0384)</td>
<td>0.070 (0.0353) *</td>
<td>0.014 (0.0146)</td>
<td>0.018 (0.0153)</td>
</tr>
<tr>
<td>R² Controls for contacts</td>
<td>0.047</td>
<td>0.202</td>
<td>0.016</td>
<td>0.042</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

Note: Additional covariates include an indicator for respondents living in a locked building or gated community, indicators for Florida and New York City, and the Census tract median income. Models (2) and (4) additionally include the number of attempts made to contact the respondent and whether the respondent was ever reached by an interviewer.

* p < .05
### Table 3. Results of Linear Probability Model Estimation for Survey Response with Fully Interacted Experimental Terms (all coefficients relative to the $50 incentive with no prepaid incentive)

<table>
<thead>
<tr>
<th>Dependent Variable Mean:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete</td>
<td>0.292</td>
<td>0.292</td>
<td>0.030</td>
<td>0.030</td>
</tr>
<tr>
<td>N = 808</td>
<td>N = 808</td>
<td>N = 808</td>
<td>N = 808</td>
<td>N = 808</td>
</tr>
<tr>
<td>$100 Incentive Alone</td>
<td>0.05 (0.0545)</td>
<td>0.049 (0.0499)</td>
<td>-0.007 (0.0207)</td>
<td>-0.008 (0.0204)</td>
</tr>
<tr>
<td>$150 Incentive Alone</td>
<td>0.040 (0.0544)</td>
<td>0.049 (0.0498)</td>
<td>0.008 (0.0206)</td>
<td>0.010 (0.0204)</td>
</tr>
<tr>
<td>Postcard + $5 Prepaid and $50 Incentive</td>
<td>0.077 (0.0542)</td>
<td>0.067 (0.0497)</td>
<td>0.016 (0.0206)</td>
<td>0.015 (0.0203)</td>
</tr>
<tr>
<td>Postcard + $5 Prepaid and $100 Incentive</td>
<td>0.079 (0.0543)</td>
<td>0.057 (0.0498)</td>
<td>0.037 (0.0206)</td>
<td>0.035 (0.0204)</td>
</tr>
<tr>
<td>Postcard + $5 Prepaid and $150 Incentive</td>
<td>0.131 (0.0542)</td>
<td>0.157 (0.0497)</td>
<td>0.037 (0.0205)</td>
<td>0.041 (0.0203)</td>
</tr>
<tr>
<td>R²</td>
<td>0.048</td>
<td>0.204</td>
<td>0.018</td>
<td>0.043</td>
</tr>
<tr>
<td>Controls for contacts</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: Additional covariates include an indicator for respondents living in a locked building or gated community, indicators for Florida and New York City, and the Census tract median income. Models (2) and (4) additionally include the number of attempts made to contact the respondent and whether the respondent was ever reached by an interviewer.

*p < .10; *p < .05