The Effect of Progressive Incentives on Response Rates

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Abstract

Numerous studies have shown that providing monetary incentives to survey respondents is positively correlated with response rates. In the Energy Information Administration's 2005 Residential Energy Consumption Survey (RECS), an incentive experiment was conducted to study how the amount of the incentive impacts response rates across income levels and across regions of the country.

Keywords: Incentives, response rates

1. Introduction

Research has shown that providing incentives to survey respondents can have a positive impact on response rates [Singer (1999)]. In the Energy Information Administration's 2005 Residential Energy Consumption Survey (RECS), the effect of the use of incentives is taken a step further in the research. An incentive experiment was conducted to explore how certain demographic variables may impact the effectiveness of incentives, and to examine the impact of monetary incentives on the response rate.

The goal of the experiment was to study how the amount of the incentive impacts response rates across income levels and across regions of the country. Specifically, the following questions were addressed:

- How does the amount of the incentive impact the overall response rate? Is there evidence of declining marginal returns for higher incentive levels?
- Are respondents in certain areas of the country more likely to participate than others, regardless of incentive amount?
- Are respondents in low-income areas more influenced by incentive amount than those in high-income areas?

1.1 Survey Background

The Residential Energy Consumption Survey is designed to provide information about the use of energy in residential housing units in the U.S., including the physical characteristics of the housing units, the appliances utilized by households, the types of fuels used, and other information about energy use. RECS also provides energy consumption and expenditures data for natural gas, electricity, fuel oil, LPG, and kerosene. The first RECS was conducted in 1978, and twelve rounds have been conducted since its inception.

Four sources of data are collected for the household data collection portion of the RECS:

- Household questionnaire (~45 min.) conducted in the housing unit
- Housing unit measurements (i.e., length and width of rooms)
- Authorization forms to contact the energy suppliers
- Rental agent questionnaires (used when rent covers all or part of energy costs).

Energy data are also collected from the energy suppliers.

1.2 Sample Design

All of the RECS surveys have used a stratified, multistage area probability sample design. The first stage of selection occurred at the PSU level, where PSUs were defined as counties or groups of counties. Each PSU was assigned to one and only one of nineteen geographic domains. Within each geographic domain, PSUs were grouped into strata of approximately equal size. Within each selected PSU, Intermediate Areas (IAs) were formed (composed of block groups or a group of block groups). Within each IA, listing segments were formed from census blocks or groups of census blocks.

Another feature of the sample design that was considered in the incentive experiment was the oversampling of Low Income Home Energy Assistance Program (LIHEAP) recipients. LIHEAP is a State grant program which provides energy assistance to needy households. Eligibility requirements vary by state; in general, recipients must have an income that is less than 150 percent of the poverty level for their state, or less than 60 percent of the state's median income.

1.3 Use of Incentives

Research has supported the idea that compensating respondents for their time with monetary incentives can increase survey participation [Singer (1999)]. Early rounds of the RECS realized benefits from the use of incentives, including an increase in the cooperativeness of the respondents in the additional tasks involved in the RECS beyond completing the questionnaire [Thompson (1985)].

In order to advance incentive research, the 2005 RECS was used as a vehicle to conduct an experiment with incentives that would investigate how demographic variables may impact the effectiveness of incentives. Incentives were given to households unconditionally, regardless of survey participation. The amount of the incentive was mentioned in the advance letter to the household. Field interviewers were not blind to the amount of the incentive. Incentives were hand-delivered to the households by field interviewers.

2. Experimental Design

2.1 Overview

The experiment was designed to ensure a good mix of the incentive amounts, income levels and regions. Three incentive levels were used: $0, $5, and $10. IAs were stratified into high- and low-income groups, and the segments contained within each income stratum were subsequently allocated to incentive groups using systematic selection.

LIHEAP cases received the same treatment as all other cases. Housing units missed during listing were also included in the experiment.

2.2 Income Stratification

Using available Census data, the median income was computed for each of the 175 PSUs in the sample. IAs with a median income lower than its PSU's median income were assigned to the low-income group, and those with median incomes greater than the PSU's median were assigned to the high-income group.

Most IAs contain only one listing segment; however, there are several IAs that are comprised of two segments. Segments were assigned to the same income group as the IA that they are contained in (i.e., if an IA was assigned to the high-income stratum, then both segments within that IA belong to the high income stratum). The low-income stratum contained 41.9 percent of the segments; the remaining 58.1 percent of the segments were assigned to the high-income stratum.

2.3 Incentive Allocation

To allocate the segments to the three incentive groups, the segments in each income stratum were sorted by PSU, IA and segment. Segments were then systematically assigned to incentive conditions. This method of sampling ensured that segments were equally allocated to the incentive conditions, as well as across income levels and regions. The following table displays the distribution of cases among the incentive and income groups.

Table 1. Distribution of cases by income level and incentive.

	$0	*$5*	*$10*
Low Income	993	1,078	1,045
High Income	1,155	1,144	1,136

3. Results

The field period of the 2005 RECS was very productive, surpassing its target of 4,300 completed interviews. The overall response rate was 77.1 percent; eighty of the PSUs had response rates greater than 80 percent.

3.1 Impact of Incentives

A significant difference in response rates was found for the incentive groups ($p=0.045$). The $10 group had the highest response rate of the incentive conditions. Surprisingly, there was no statistically significant difference between the response rates of the $0 incentive group and the $5 group.

Table 2. Response rates by incentive amount

Incentive	*Response Rate*
$0	76.68%
$5	76.36%
$10	79.45%

While the group of cases that received the $5 incentive did not have a higher response rate than the control group, the $10 incentive clearly had a positive impact on the completion of the questionnaire. Had the $10 incentive been offered to all of the cases, approximately 110 more cases would have been completed and the overall response rate would have increased by almost three percent.

Although the $5 incentive did not increase the response rate as expected, this money did reduce the number of attempts made to complete these cases. There was a significant relationship between the incentive amount and the number of attempts needed to finalize the case (p=0.01).

Table 3. Average number of attempts needed to finalize a case by incentive group

Incentive	Avg. Attempts to Finalize Case
$0	12.9
$5	12.4
$10	12.2

The cases that received a monetary incentive finalized in fewer number of contacts. The cost of compensating the respondents for their time with a small monetary incentive is likely to be much lower than the cost of the additional data collection efforts that would be required to finalize these cases.

3.1.1 Region

The success of data collection was not uniform across the country; the difference between the response rates of the Census regions was statistically significant (p=0.001).

Table 4. Response rates by region.

Region	Response Rate
Northeast	74.01%
Midwest	76.46%
South	81.00%
West	77.29%

The South had a much higher response rate than the other Census regions; the difference between its response rate and those of the Northeast and Midwest regions were significant at the 0.05 level.

This pattern may in part be explained by the percent of urban tracts contained within each segment. Over half of the segments sampled contained only urban tracts. These urban tracts had a lower response rate than those

that were not 100% urbanized (76.3 vs. 79.1 percent, p=0.014); this pattern existed across incentive groups. The South contained a much lower percentage of urban tracts than the other Census regions, which may contribute to the higher response rate in that region.

3.1.2 Income

The low income group had a higher response rate than the high income group across all incentive levels (p=0.061).

Table 5. Response rate by income and incentive.

	$0	$5	$10
Low Income	77.05%	76.35%	79.11%
High Income	74.89%	74.89%	78.40%

Cases that received LIHEAP assistance had a much higher response rate than non-LIHEAP cases (85.3 vs. 76.7 percent, p=0.001). Because LIHEAP cases were more likely to belong to the low income stratum (p=0.001), it was expected that the response rate pattern found between income level and incentive could be explained by the presence of these cases. However, even with LIHEAP cases excluded from the analysis, the low income group had a higher response rate than the high income group at every incentive level.

3.1.3 Unconditional Impact of Incentives

In order to examine the unconditional impact of the incentives, a logistic regression model was used to predict whether a case would complete the interview using urbanicity, LIHEAP status, income level, and incentive group as predictor variables.

Table 6. Significant variables in logistic regression model.

	Odds Ratio Estimate (95% Wald confidence limit)
$10 Incentive	1.141 (1.005, 1.296)
LIHEAP	1.758 (1.441, 2.146)

Corroborating the results previously discussed, the only the $10 incentive that had a significant impact on interview participation. The only demographic variable that was found to have a significant impact on the likelihood of interview completion was LIHEAP status.

4. Discussion

The $10 incentive group had the highest response rate of the incentive conditions, suggesting that the use of that incentive was effective in increasing survey participation. However, it is unclear why the $5 group did not have a higher response rate.

A possible explanation for the ineffectiveness of the $5 incentive is that it did not provide sufficient justification for completing the survey. According to cognitive dissonance theory, there is a tendency for individuals to seek consistency among their cognitions. When there is an inconsistency between attitudes or behaviors (dissonance), something must change to eliminate the dissonance (Meyers, 2005).

One hypothesis is that the $10 incentive was considered to be sufficient external justification for completing the survey, but the $5 incentive was viewed as insufficient justification for the task. If the respondent completed the survey although they did not feel they were being adequately compensated, this would lead to cognitive dissonance. An individual may choose to alter their behavior and not participate in the study, as opposed to changing their attitude towards participating in the survey.

Although the $5 incentive did not seem to increase the response rate, the results of this experiment suggest that the use of incentives may save money by finalizing cases more quickly. Haggerty, et al. (2000) discuss a similar pattern found in the Survey of Small Business Finances, which further supports the idea that offering incentives may decrease the number of contacts to needed to complete a case. The savings realized as a result of shortening the data collection period are likely far greater than the cost of providing respondents with a monetary incentive.

The incentives did not have a differential effect across income groups. It was expected that a larger increase in response rate would be seen among low-income respondents who received a monetary incentive. However, these respondents also had a higher response rate when no monetary incentive was offered. These individuals may be more likely to respond because the costs of energy are a greater concern to them than the residents of the high income segments. This may also explain why the LIHEAP respondents had a much higher response rate than those who do not receive government assistance for their energy bills.

The difference found in response rates between Census regions seems to be related to the number of urban segments contained in the region. The South had a higher response rate than the other regions, but also had a lower proportion of segments that were 100 percent urbanized. The urban segments had a lower response rate than non-urban segments. This trend was seen across incentive levels, which indicates that urban areas are more difficult to interview in, regardless of the incentive offered. However, urbanicity was not a significant predictor in the logistic regression model.

5. Conclusions

The amount of the incentive offered did not seem to interact with the income level; future research may look at the effect of the respondent's actual income. Also, future research may investigate factors in addition to urbanicity that could contribute to the different response rates found between regions.

While the $5 incentive did not seem to have a positive impact on the response rate, the results indicate that the incentive may offer the benefit of reducing number of contacts needed to finalize a case. The $10 incentive clearly had a positive impact on both the response rate and the number of contacts required to finalize the case. The marginal cost of additional attempts at finalizing a case would be more expensive than offering a monetary incentive.

References

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