

DO MONETARY INCENTIVES IMPROVE RESPONSE RATES IN THE SURVEY OF INCOME AND PROGRAM PARTICIPATION?

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Abstract

The Survey of Income and Program Participation (SIPP) used a monetary incentive in the initial interview of the 1996 panel to lower nonresponse rates. As in other longitudinal surveys, nonresponse rates increase in SIPP panels over time. We plan to interview sample households in the 1996 SIPP panel over a longer period than previous panels, 48 months versus 32 months. Consequently, we expect nonresponse levels to reach record levels, 30% or more by the end of the panel. We conducted an experiment to study the effect of \$10 and \$20 incentives on nonresponse and interviewing costs. James [1997] analyzed data from the first year of the panel. She found that the \$20 incentive was effective in lowering nonresponse rates and that any incentive lowered the number of interviewer visits needed per case. This paper extends the analysis to cover interviews over two years, studies additional population subgroups, and looks at item completion rates.

I. Introduction

The SIPP is a longitudinal survey conducted by the U.S. Census Bureau which provides national estimates of sources, amounts, and determinants of income for households, families, and persons. The principle goal of the SIPP is to provide information to federal policy makers to assist in evaluation and reform of welfare programs, taxes, and entitlement programs. In order to achieve these goals, the SIPP provides both cross-sectional and longitudinal estimates (such as transition probabilities and spell durations).

Interviewing of SIPP panel members usually starts in February of the panel year (the 1984 and 1996 panels are exceptions). Subsequent interviews take place at four month intervals until the panel ends. One round of interviewing of the entire panel is called a wave. SIPP panels are divided into four rotation groups of approximately equal size. One rotation group is

interviewed each month. This arrangement smooths out interviewing workloads and reduces bias in transition estimates.

In the initial interview, all persons living at sample addresses are listed as household members. Persons who are 15 years of age and older are interviewed and become original sample persons. Original sample persons are the units of observation for SIPP and are followed for the life of the panel. Exceptions include those who die, move abroad, or move into an institution or military barracks. Persons who move into households with original sample persons after wave 1 are also interviewed as long as they continue to reside with an original sample person.

Details of SIPP panels, such as sample size and panel length, vary among panels. More substantial changes are made after each Decennial Census when we update the sample frame and select new sample. The 1990 redesign of the SIPP took effect with the 1996 panel. We reduced cluster sizes, oversampled for poverty, introduced computer assisted interviewing, and made other changes.

In the first interview of the 1996 panel, wave 1, we obtained interviews from 92% of eligible households; about 36,700 interviews. Like other longitudinal surveys, SIPP noninterview rates increase as panels get older. The household noninterview rate of the 1996 panel stood at 26.4% as of the end of wave 6.

The SIPP conducted an incentive experiment in the initial interview of the 1996 panel to study the effect of incentives on nonresponse rates. SIPP primary sample units (psu's) were divided into three groups to receive no incentive, a \$10 incentive, or a \$20 incentive. Sample addresses in rotations 2,3, and 4 in the \$10 and \$20 groups were given vouchers (redeemable by mail) by interviewers immediately before the interview. James [1997] reported on the effectiveness of the incentive up through wave 3. She looked at nonresponse rates and interview cost data among households that were sent out for interviewing; we do not attempt further interviews with households that do not respond in wave 1 or have two consecutive noninterviews. James found that \$20 incentives were effective in lowering nonresponse rates in waves 1-3 and that any incentive lowered the number

¹ This paper reports the general results of research undertaken by the Census Bureau staff. The views expressed are attributable to the authors and do not necessarily reflect those of the Census Bureau.

of interviewer visits needed per case in wave 1.

In this paper, we will cover incentive results through wave 6. We compare household nonresponse between population subgroups defined by within-psu stratum (high poverty/low poverty), March poverty status, race, and education. Cumulative household nonresponse rates are used throughout the paper rather than wave nonresponse; i.e., households we no longer attempt to interview due to prior nonresponse are counted as nonrespondents.

Another issue we consider is whether incentives are effective at a person level. Some researchers have suggested that incentives can influence the quality and amount of information obtained from persons. To study this issue, we look at a few person-level rates: noninterview rates of persons within interviewed households (Type Z's), proxy interview rates, and nonresponse rates for gross wages.

II. Literature Review

There are many reports of positive results from using incentives. Ferber and Sudman [1974] reviewed a number of incentive studies. They found that the effect of incentives depends on respondent burden (i.e., the effort needed to cooperate), the amount of the incentive, and the economic level of the respondent. Berlin, et al. [1992] reported that a \$20 incentive increased response rates for subgroups with low levels of literacy and lowered interviewer costs. Incentives may increase the willingness of respondents to provide information. A variable incentive was used in an education assessment study (Chromy and Horvitz [1978]). Young adults, age 26 to 35, were asked to take one or more assessment packages. Most respondents decided to take the maximum number of assessments to receive the highest incentive. The literature is mixed, but the following results were found in many studies:

- Large incentives increase response rates more than small incentives.
- Incentives are effective for underrepresented populations, such as low income and low education.
- Incentives are effective in surveys with high respondent burden such as panel or diary studies.
- Incentives can reduce interviewer time and costs.
- Incentives may increase respondent cooperation; i.e., respondents may provide more information when given incentives (Chromy and Horvitz [1978]).

Gbur [1988] reported on an incentive experiment in

the SIPP 1987 panel. A small gift was given to households scheduled for April 1987 interviews, about 25% of the total sample. The remainder of the panel was interviewed in February, March, and May. Interview rates were 1% higher for gift-recipient households than for nonrecipient households.

III. Design of the SIPP Incentives Experiment

SIPP sample psu's were sorted by size and divided into incentive groups using systematic sampling. Incentives were distributed to sample addresses in \$10 and \$20 incentive groups during rotations 2,3, and 4 of wave 1. Incentives were not distributed in rotation 1. Table 1 gives counts of eligible households by incentive group and incentive versus nonincentive rotations.

Table 1. Wave 1 households eligible for interviewing.

Incentive group	rotation 1 (no incentive)	rotations 2-4 (incentive)
\$0	3529	10328
\$10	3219	9686
\$20	3388	10038

Vouchers for \$10 and \$20 were distributed by SIPP interviewers at the door immediately after verifying the address. Interviewers gave vouchers to noninterviewing as well as interviewed households. Recipients were instructed to fill in their name, check the address, and return the voucher to the Census Bureau in the postage paid preaddressed envelope. After receiving the voucher, the Census Bureau mailed a check to the recipient within 2 to 3 weeks.

In this paper, we compare response rates and imputation rates. All estimates are weighted. We use base weights; i.e., the inverse of the probability of selection, or final weights as noted.

Differences are examined using two-tailed tests based on the normal distribution. Significance is reported at the 10% level. Two types of comparisons are made:

- differences of rates. The nonresponse rates of households in rotations 2,3, and 4 are compared between incentive groups. Significantly lower nonresponse rates in the \$20 incentive group are expected if a \$20 incentive is effective in lowering nonresponse.
- differences of differences. The differences of nonresponse rates from rotation 1 to rotations 2,3, and 4 are compared between incentive groups. If the \$20 incentive is effective in reducing nonresponse, then the change in nonresponse rates should be

greatest in the \$20 incentive group.

IV. Nonresponse Rates

Within PSU Stratum

We oversampled for low-income households using a stratification approach proposed by Waksburg [1973]. Two within-psu strata were formed, one with a high concentration of poverty and one with a low concentration. In wave 1, we found a poverty rate of 27% in the high poverty stratum and 11% in the low poverty stratum.

Table 2 gives nonresponse rates in rotations 2-4 by poverty stratum. Nonresponse rates are significantly lower in every wave for the \$20 incentive group when compared to the \$0 and \$10 incentive groups: for the high poverty stratum; for the low poverty stratum; and overall.

Differences in nonresponse rates in rotation 1 and rotations 2-4 are shown in Table 3. Positive differences indicate lower nonresponse rates in rotations 2-4 than in rotation 1. Significant overall decreases in rates occur in waves 2 through 6 within the \$20 incentive group. The \$20 incentive was particularly effective in the high poverty stratum where relatively large differences occurred in all waves.

Table 2. Household nonresponse by poverty stratum. Rotations 2-4 only, weighted by base weights.

wave	incentive group	High Poverty Stratum	Low Poverty Stratum	Overall
1	\$0	9.30%	9.14%	9.18%
	\$10	8.12%	9.51%	9.26%
	\$20	5.91%**	8.16%**	7.72%**
2	\$0	16.06%	14.88%	15.13%
	\$10	13.77%*	14.44%	14.32%
	\$20	11.40%**	13.05%**	12.72%**
3	\$0	19.18%	18.10%	18.33%
	\$10	17.65%	18.17%	18.08%
	\$20	14.39%**	16.12%**	15.77%**
4	\$0	22.36%	21.22%	21.46%
	\$10	20.74%	21.27%	21.18%
	\$20	16.91%**	19.33%**	18.85%**
5	\$0	25.53%	24.48%	24.70%
	\$10	24.26%	24.24%	24.24%
	\$20	21.06%**	22.78%**	22.44%**
6	\$0	28.98%	27.27%	27.64%
	\$10	27.10%	26.70%	26.77%
	\$20	23.00%**	25.22%**	24.78%**

* significantly different from \$0 incentive group
 + significantly different from \$10 incentive group

Table 3. Household nonresponse by poverty stratum. Difference of rotation 1 and rotations 2,3, and 4 weighted by base weights.

wave	incentive group	High Poverty Stratum	Low Poverty Stratum	Overall
1	\$0	-0.05%	-0.33%	-0.27%
	\$10	0.34%	-0.33%	-0.21%
	\$20	2.78%	-0.31%	0.31%
2	\$0	0.67%	0.51%	0.55%
	\$10	2.64%	1.09%	1.37%
	\$20	5.18%*	1.81%	2.49%*
3	\$0	-0.58%	0.45%	0.23%
	\$10	1.07%	-0.12%	0.09%
	\$20	6.11%*+	2.30%*+	3.07%*+
4	\$0	-1.35%	-0.76%	-0.88%
	\$10	0.27%	-0.53%	-0.39%
	\$20	5.42%*+	1.45%*	2.25%*+
5	\$0	0.49%	-0.38%	-0.17%
	\$10	0.79%	0.35%	0.43%
	\$20	3.94%	2.38%*	2.69%*+
6	\$0	-0.73%	-1.47%	-1.30%
	\$10	1.71%	0.49%	0.70%
	\$20	4.64%*	1.78%*	2.34%*

* significantly different from \$0 incentive group
 + significantly different from \$10 incentive group
 shaded differences are significantly different from 0

The change in nonresponse rates from rotation 1 to rotations 2-4 is often larger in the \$20 incentive group than in other incentive groups. Overall nonresponse rate differences are largest within the \$20 incentive group for waves 3,4, and 5.

The \$10 incentive does not appear to significantly influence nonresponse rates overall or within poverty strata. The only significant result, i.e., positive result, for the \$10 incentive group occurs in wave 2.

Wave 2+ Rates by Poverty Status

Analysis of wave 1+ nonresponse rates is limited to the few variables whose values are known for wave 1 nonrespondents. Geographic and sampling variables are known. Interviewers are asked to provide their best guess of the householder's race and sex as well as household size and tenure. For other characteristics, we can study the effect of incentives on wave 2+ nonresponse rates; i.e., nonresponse of wave 1 respondents.

Incentives are thought by many researchers to be most effective in low-income areas. Wave 2+ noninterview rates are shown in Tables 4 and 5 by the March poverty status of the original household. Nonresponse is lower in rotations 2-4 for both poverty

and nonpoverty households in the \$20 incentive group, except for wave 4 poverty. The \$20 incentive appears, at first glance, to be more effective for poverty households than for nonpoverty households; however, the differences are not statistically significant except for wave 2.

Table 4. Wave 2+ nonresponse rates for households in poverty as of March, weighted by base weights.

wave	incentive group	rotation 1	rotations 2-4	difference r[1]-r[2-4]
2	\$0	7.10%	7.87%	-0.77%
	\$10	10.06%	5.97%*	4.09%*
	\$20	13.53%*	7.73%+	5.80%*
3	\$0	10.28%	10.81%	-0.53%
	\$10	13.59%	11.12%	2.47%
	\$20	16.70%*	10.69%	6.01%*
4	\$0	13.24%	14.83%	-1.59%
	\$10	15.66%	13.56%	2.10%
	\$20	16.46%	14.70%	1.76%
5	\$0	15.55%	19.03%	-3.48%
	\$10	20.80%*	17.11%	3.69%*
	\$20	21.91%*	17.49%	4.42%*
6	\$0	16.39%	23.50%	-7.11%
	\$10	24.88%*	19.64%*	5.24%*
	\$20	25.27%*	20.63%*	4.64%*

* significantly different from \$0 incentive group
 + significantly different from \$10 incentive group
 shaded differences are significantly different from 0

Table 5. Wave 2+ nonresponse rates for households not in poverty as of March, weighted by base weights.

wave	incentive group	rotation 1	rotations 2-4	difference r[1]-r[2-4]
2	\$0	7.61%	6.51%	1.10%
	\$10	7.19%	5.72%*	1.47%
	\$20	7.07%	5.22%*	1.85%
3	\$0	10.88%	10.20%	0.68%
	\$10	9.91%	9.81%	0.10%
	\$20	11.23%	8.64%*+	2.59%*+
4	\$0	12.98%	13.61%	-0.63%
	\$10	12.93%	13.43%	-0.50%
	\$20	14.12%	11.90%*+	2.22%*+
5	\$0	17.72%	17.11%	0.61%
	\$10	17.14%	16.85%	0.29%
	\$20	18.41%	16.05%*	2.36%+
6	\$0	19.93%	20.16%	-0.23%
	\$10	20.11%	19.70%	0.41%
	\$20	20.42%	18.53%*+	1.89%*

* significantly different from \$0 incentive group
 + significantly different from \$10 incentive group
 shaded differences are significantly different from 0

Nonresponse Rates by Race

Nonresponse rates are given by race and incentive group in Tables 6 and 7. We use the race of the original wave 1 householder in all waves.

About 87% of SIPP sample households are headed by non-Blacks in wave 1, so it's little surprise that results in Table 6 are similar to results in Tables 2 and 3 for the general population. Nonresponse rates are lower in the \$20 group than in the \$0 and \$10 groups for rotations 2 through 4 of every wave. Nonresponse rates decrease in rotations 2-4 for the \$20 incentive group in every wave except wave 1.

Looking at "difference" column in Table 7, the \$20 incentive is generally effective in decreasing noninterview rates of Black households. Significant decreases in nonresponse rates occur in waves 2 through 6. The \$10 incentive is effective in waves 1, 2, and 6. Nonresponse rates decrease more in the \$10 and \$20 incentive groups than in the \$0 incentive group for waves 2, 5, and 6; however, this may be due to the unusually low nonresponse rates in rotation 1 for the \$0 incentive group.

Rotation 2-4 nonresponse rates do not differ significantly between incentive groups in most cases. The differences that do occur are not consistent in

Table 6. Nonresponse rates of non-Black households, weighted by base weights.

wave	incentive group	rotation 1	rotations 2-4	difference r[1]-r[2-4]
1	\$0	9.04%	9.16%	-0.12%
	\$10	8.51%	9.22%	-0.72%
	\$20	7.80%*	7.70%*+	0.09%
2	\$0	15.63%	14.84%	0.79%
	\$10	14.96%	14.17%	0.79%
	\$20	14.60%	12.41%*+	2.19%
3	\$0	18.64%	18.19%	0.45%
	\$10	17.41%	17.80%	-0.39%
	\$20	18.07%	15.51%*+	2.56%*+
4	\$0	20.59%	21.35%	-0.76%
	\$10	20.12%	20.89%	-0.77%
	\$20	20.26%	18.54%*+	1.72%*+
5	\$0	24.24%	24.59%	-0.35%
	\$10	23.86%	23.75%	0.11%
	\$20	24.26%	22.05%*+	2.21%*
6	\$0	26.14%	27.56%	-1.42%
	\$10	26.30%	26.14%*	0.16%
	\$20	26.08%	24.38%*+	1.70%*

* significantly different from \$0 incentive group
 + significantly different from \$10 incentive group
 shaded differences are significantly different from 0

Table 7. Nonresponse rates of Black households, weighted by base weights.

wave	incentive group	rotation 1	rotations 2-4	difference r[1]-r[2-4]
1	\$0	8.02%	9.39%	-1.37%
	\$10	13.16%*	9.54%	3.62%*
	\$20	9.93%	7.88%	2.05%
2	\$0	16.12%	17.36%	-1.24%
	\$10	21.10%*	15.48%*	5.62%*
	\$20	20.15%	15.48%	4.67%*
3	\$0	17.91%	19.35%	-1.44%
	\$10	23.95%*	20.15%	3.80%*
	\$20	25.11%*	18.10%	7.01%*
4	\$0	20.52%	22.34%	-1.82%
	\$10	25.83%*	23.37%	2.46%
	\$20	27.93%*	21.63%	6.30%*
5	\$0	26.67%	25.53%	1.14%
	\$10	30.80%	27.95%	2.85%
	\$20	32.25%*	25.89%	6.36%
6	\$0	27.85%	28.26%	-0.41%
	\$10	36.27%*	31.57%*	4.70%
	\$20	35.66%*	28.35%+	7.31%*

* significantly different from \$0 incentive group
 + significantly different from \$10 incentive group
 shaded differences are significantly different from 0

Table 8. Wave 2+ household nonresponse by education of original wave 1 householder. Difference of rotation 1 and rotations 2,3, and 4 weighted by base weights.

wave	incentive group	< bachelor r[1]-r[2-4]	bachelor+ r[1]-r[2-4]
2	\$0	0.90%	0.54%
	\$10	1.87%	1.54%
	\$20	2.44%*	2.26%
3	\$0	0.36%	0.70%
	\$10	0.35%	0.29%
	\$20	3.12%*+	2.84%
4	\$0	-0.70%	-1.48%
	\$10	-0.32%	-0.14%
	\$20	2.09%*+	2.59%*
5	\$0	-0.02%	-0.35%
	\$10	0.73%	0.15%
	\$20	2.47%*	3.63%*
6	\$0	-1.63%	-0.23%
	\$10	0.74%*	1.52%
	\$20	2.36%*	2.26%

* significantly different from \$0 incentive group
 + significantly different from \$10 incentive group
 shaded differences are significantly different from 0

direction.

Comparing the “difference” column in Table 6 with the “difference” column in Table 7, the \$20 incentive appears to be more effective for Black households than for non-Black households. The differences are statistically significant in waves 3, 4, and 6.

Nonresponse Rates by Education

Berlin et al. [1992] reported on an incentive experiment in the National Adult Literacy Survey. In that study, a \$20 incentive significantly improved response rates of people with low educational attainment.

Wave 2+ response rate differences are given in Table 8 by educational attainment of the wave 1 householder. Response rate differences are similar across education groups. About 78% of SIPP households are headed by persons without bachelor degrees. Significant response rate increases occur in every wave among low education households in the \$20 incentive group. The \$20 incentive was also effective for high education households in waves 2 through 5.

V. Imputation Rates

Incentives are known to affect some measures of respondent cooperation. The number of interviewer callbacks may be reduced. Respondents may be willing to provide more complete information when incentives are given. In this section, we look at a few measures of person and item nonresponse.

SIPP interviewers try to obtain interviews from each person 15 years of age and older who lives at the sample address. Proxy interviews are taken when self interviews (person answers for self) cannot be obtained. Noninterviews of persons, by self or proxy, within interviewed households are referred to as Type Z noninterviews. We impute data for Type Z noninterviews rather than use a weighting adjustment. Table 9 shows the difference of rotation 1 and rotation 2-4 proxy and Type Z rates by incentive group. Proxy rates are not

Table 9. Wave 1 Type Z and proxy rates. Difference of rotation 1 and rotations 2,3, and 4 weighted by final weights.

	Incentive Group		
	\$0	\$10	\$20
Proxy	-0.254%	-1.032%	-0.052%
Type Z	-0.107%	-0.262%	0.617%*+

* Significantly different from \$0 incentive group
 + Significantly different from \$10 incentive group
 shaded differences are significantly different from 0

significantly affected by incentives. The \$20 incentive is effective in reducing Type Z rates. Type Z rates are generally around 2% in SIPP panels, so a change of .6% is large in relative terms.

The SIPP asks persons to tell us the amount of income they receive from jobs. This question is considered sensitive and many people refuse to answer it. Table 10 shows item imputation rates for gross wages in March 1996. The \$20 incentive is effective in lowering item imputation rates for this question. Item imputation rates in rotations 2-4 are lowest in the \$20 incentive group and also show significant improvement between rotation 1 and rotations 2-4.

Table 10. Percent of persons with jobs in March 1996 who had imputed amounts of gross pay for any job, weighted by final person weights.

incentive group	rotation 1	rotations 2-4	difference r[1]-r[2-4]
\$0	11.61%	12.03%	-0.42%
\$10	12.22%	12.45%	-0.23%
\$20	12.11%	10.47%*+	1.64%*

* Significantly different from \$0 incentive group
 + Significantly different from \$10 incentive group
 shaded differences are significantly different from 0

VI. Other SIPP Incentives

The 1996 panel has suffered from higher nonresponse rates than any previous SIPP panel. By the end of wave 5, the level of nonresponse had risen to 24%. The two most recent panels, 1992 and 1993, averaged 20% at the end of wave 5. Given the high level of nonresponse and the results of the wave 1 incentive, it was decided to offer an additional incentive in wave 7. We gave a \$20 incentive to all low-income households ($\leq 150\%$ poverty in wave 1) that received an incentive in wave 1. Sundukchi [1998] discusses our wave 7 incentive plans in greater detail.

Winters [1998] proposes a wave 8-9 incentive experiment to study the effects of incentives on converting Type A nonresponse (all nonresponse except for movers that we cannot locate) to interviews in the following wave. Conversion rates of Type A's in the following wave are typically low, e.g., less than 40% for waves 2 and 3 of the 1996 panel. The proposal envisions three levels of incentives: a \$0 control group, a \$20 incentive, and a \$40 incentive. Type A households will be randomly assigned to one of the incentive groups and receive the incentive in advance of the subsequent interviewer visit.

Conclusions

Twenty dollar incentives reduced household, person, and item (gross wages) nonresponse rates in the initial interview. Household nonresponse remained lower in subsequent interviews as well. The \$20 incentive was particularly effective for poverty and Black households. Ten dollar incentives did not significantly reduce nonresponse.

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