

The Use of Targeted Incentives to Reluctant Respondents on Response Rate and Data Quality¹

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I. Abstract

For the Survey of Program Dynamics (SPD), a longitudinal study on welfare reform, targeted unconditional incentives were used to reduce the attrition rate. The targeted households for incentives are nonrespondent households in the previous waves to bring them back in sample, interviewed reluctant households from the previous wave and reluctant respondents this current wave. Incentives have helped the SPD maintain its response rate. This paper will examine the reluctant respondents converted using incentives. First, we compare the data quality of the incentive and non-incentive groups by looking at the partial interview rates. Second, we explore whether the household and person-level demographic characteristics of reluctant respondents differ from other interviews. We also compare these characteristics to nonrespondents who could not be brought back into sample using incentives. It is possible that the use of incentives could make the nonresponse nonrandom, thereby increasing the survey bias while increasing the response rate.

II. Introduction

As the number of waves increases in longitudinal study, keeping the sample becomes increasingly more important and difficult. The Survey of Program Dynamics (SPD) interviews respondents from the 1992 and 1993 panels of Survey of Income and Program Participation (SIPP). In 2000, respondents were interviewed for the fourteenth time. The longitudinal sample loss by 1998 was approaching 50 percent and there was concern about the perceived quality of the data if the sample loss went over 50 percent. Starting in 1999, the Census Bureau used incentives to bring back households into sample

who refused the previous wave and allowed the regional office to send incentives to households who initially refused in the current wave. The result was that the sample loss remained the same. In 2000, households who previously received an incentive was given an incentive again and the interviewer themselves were given the ability to offer an incentive to reluctant respondents.

III. Longitudinal Sample Loss

The response rate for any particular wave may appear to be quite high but the cumulative effect of nonresponse leads to "sample loss." There are three types of sample loss in longitudinal surveys: refusals/not at home/temporary absent/extended vacations; movers who can't be found; and those who fall out of sample (due to death, leave the country, institutionalized). The latter are not considered attriters but in long-term longitudinal studies will lower the effective sample size.

Unlocatable movers have a detrimental effect on estimates since lower income respondents are more likely to be lost than higher income respondents. The Census Bureau has found in SIPP in any given wave, the unlocated movers rate for persons in poverty was twice the rate for persons not in poverty (Census Bureau, 1998). The ever-increasing sources of consumer databases has helped reduce the number of unlocated movers in recent years, but most likely has only increased the bias toward those in poverty being missed at greater rate since they are less likely to be captured on the consumer databases—this is untested at this point.

It is refusal rates that have increased in recent years, even in longitudinal surveys where there was prior commitment. It is among this group that incentives may have the largest impact.

¹ This paper reports the results of research and analysis undertaken by Census Bureau staff. It has undergone a Census Bureau review more limited in scope than that given to official Census Bureau publications. This report is released to inform interested parties of ongoing research and to encourage discussion of work in progress. Results and data are not final.

IV. Incentives in Longitudinal Surveys

In October, the Office of Management and Budget and the Council of Professional Associations on Federal Statistics (COPAFS) sponsored a symposium on providing incentives to survey respondents. The participants recommended that incentives be considered for surveys that are long or time consuming or that are part of longitudinal panels (Council of Professional Associations on Federal Statistics, 1993).

A review of the well-known longitudinal studies (Downs, 1999) found that all non-Census Bureau studies used a monetary incentive during each wave, but there had been no scientific tests to determine the effectiveness of the incentives. The consensus of the survey managers was that the incentives were needed, but they did not conduct any experiments.

Mack et al (1998) found that incentives in SIPP made a significant improvement on low income household cooperation in Wave 1. Incentives were not given to the SIPP panel again until the seventh wave, but the improvement shown in Wave 1 persisted through additional waves. There is some concern that this test was biased by a sample selection that put all of New York City into the non-incentive control group. Since New York City has both the highest poverty group and the lowest response rate to all surveys, the results may be skewed.

V. Targeted Incentives

Using targeted incentives for certain subgroups of interest or for refusal conversion, while giving no incentives to most of the sample, has been increasing in recent years. There is a concern among some researchers about the ethics and fairness of this practice (Groves and Couper, 1998). It is cost effective to only give incentives when needed, but there is a notion that we are rewarding bad behavior and ultimately training respondents to refuse future surveys unless they receive compensation.

Abreu D.A. and Winters F. G., (1999) used incentives to increase the conversion rate in SIPP. SIPP offered incentives to nonrespondents from the previous wave in an effort to bring them back into sample. They

found that the conversion rate was significantly improved by the use of incentives.

Link et al. (2001) used targeted incentives in the base year of a longitudinal study and found incentives an effective tool for refusal conversion but not for getting the “hard-to-reach” population. They also did not find a statistical difference in participation rates for Wave 2 based on the first year of data.

VI. Reluctant Respondents as Predictors of Non-response

A number of studies have used reluctant respondents as predictors of non-respondents with mixed success (Stinchcombe et al, 1981;Smith, 1984). Fitzgerald and Fuller (1982) concluded that respondents requiring multiple callbacks were different on six of the seven criteria tested. Lin and Schaeffer (1995) examined two different methods of using reluctant respondents and decided that both were flawed and more arbitrary than anticipated. Cohen et al. (2000) found that “reluctant respondents as a whole appear to be a distinctly separate group, sharing one set of characteristics with the cooperative respondent group, another set with those who refused during the second round of the survey, and a yet a third set of characteristics that are uniquely their own.”

VII. The SPD

The purpose of the SPD is to collect data that can provide the basis for an overall evaluation of how well welfare reforms are achieving the aims of the welfare reform legislation.

The SPD is a longitudinal study that follows a subset of the respondents from the 1992 and 1993 panels of the Survey of Income and Program Participation (SIPP). Use of the retired SIPP panels provides three years of longitudinal baseline data on program eligibility and participation, transfer income, in-kind benefits, job transitions, income, and demographics. The data gathered for the 10-year period (1992-2002) will aid in assessing short- to medium-term consequences of outcomes of the welfare legislation.

The reduction of sample through attrition is a concern. The SPD inherited a 26.6 percent

sample loss rate from the SIPP sample. However, after three waves of the SPD, the sample loss rate is 50 percent. Procedures used during the 1999 survey helped to slow the sample loss rate between the 1998 and 1999 SPD surveys.

The SIPP respondents provided 9 or 10 waves of detailed data over a three-year period. The SIPP data collection has a burden of 30 minutes per adult respondent per wave. So the average SIPP household (2.1 adults per household) has provided more than 10 hours of their time in burden. At the end of the last wave of the SIPP interviews, respondents were thanked for their time and told that there would be no more interviews. Then one to two years later, the respondents were contacted and told they were still in a panel survey. Therefore, it was not surprising that the SPD would have nonresponse problems.

Each adult member of the household is followed if he/she leaves the household. For example, if a couple divorces, each person is found and their household is interviewed. Likewise, when a young adult leaves the household, the young adult is found and interviewed at their new household.

Previous studies on the SIPP sample loss have shown that the sample loss is not uniform. Households in and near poverty attrit at a higher rate than other households (Census Bureau, 1998). Since poverty households are a key target population in the study of welfare reform, there is some concern about nonresponse bias.

VIII. Incentives in SPD

In order to address the sample loss problem incentives were given to nonrespondents during the 1999 data collection. For the 2000 SPD, three groups of households were given \$40 incentives:

- Nonrespondents in the 1999 SPD.

- Households that received incentives as part of the previous incentive program and gave an interview in the 1999 SPD.
- Sample households who initially refuse to participate in the 2000 SPD.

Households which received a \$40 debit card incentive in 1999 and were interviewed in the 1999 SPD received an advance letter via priority mail containing a \$40 debit card incentive prior to the interviewer's visit in 2000. In addition, households which received an incentive in 1999 and remained a noninterview in 1999 received the \$40 debit card incentive in the mail. Households receiving an incentive are allowed to cash the incentive regardless of the interview outcome (interview or noninterview).

After making contact with the respondent to conduct an interview, interviewers had the discretion to give a \$40 debit card incentive immediately if they felt they were going to receive a refusal.

IX. Results

The effects of the incentives can be measured using three different standards: households eligible for incentive; households with a debit card assigned; households with cashed incentives. The reasons that incentive-eligible households might not have debit card issued include: could not locate household; respondent refused debit card when offered and therefore was not assigned a debit card; or records from a split household did not accurately record eligibility.

As can be seen by the results in Table 1, those who cashed incentives have a similar complete response rate to those who did not receive an incentive, 82.3% versus 83.9%. Households who received but did not cash the incentive are likely to be refusals. But those offered an incentive complete the interview more often than those eligible but not assigned a debit card.

Table 1: 2000 Response Rates Based on Incentive

2000 Survey Outcome	No incentive	Eligible but not issued	Issued but not cashed	Cashed Incentive	All
Complete Interview	83.9%	30.4%	40.7%	82.3%	78.5%
Partial Interview	5.6%	4.2%	7.7%	8.1%	6.2%
Refusal, Not at home	6.2%	46.5%	48.5%	7.9%	10.9%
Unlocated	4.3%	18.9%	3.1%	1.8%	4.4%
	100% (13,268)	100% (965)	100% (1113)	100% (4544)	100% (19890)

The partial interview rate is higher for the incentive group, 8.1%, is higher than that of any other group. Comparing partial interviews with all other outcomes and incentive against no incentive, the chi-square is 36.8 with 1 degree of freedom has a $p < .01$ and a phi coefficient of 0.0454.

There is some concern that we are “buying” only partial data. But under the assumption that some data is better than no data, a partial interview is better than a refusal we would have gotten without offering an incentive.

X. Demographic Characteristics

These data are testing the incentives using various measures. This is a methodological test

using unedited and unweighted data. Any analytic data cited is only used to refer to the incentive effect and do not match population estimates from using weighted data.

Table 2 shows the breakdown of various demographic variables by incentive groups. Compared to the other groups, the cashed incentive households are more likely to have four or more people, have children, and be renters. They are less likely to have someone in the household who is over 65 years of age.

Those who were issued but did not cash the incentive have a higher income, are not on government programs, do not have a post high school education, and own their homes.

Table 2: Demographic Characteristics from the Incentive Groups

Demographic Characteristics*	Issued an uncashed Incentive (n=1,113)	Cashed an Incentive (n=4,544)	No Incentives (n=14,233)
Hispanic in household	6%	8%	8%
No Hispanics	94%	92%	92%
Blacks in household	8%	15%	11%
No blacks in household	92%	85%	89%
# of People in Household**	(n=540)	(n=4,023)	(n=12,223)
1	22%	18%	24%
2	23%	22%	25%
3	16%	20%	17%
4 +	39%	40%	34%
Tenure**	(n=538)	(n=3,959)	(n=12,102)
Own	78%	66%	72%
Rent	20%	31%	25%
Rent w/o payment	2%	3%	3%

(continued)

Table 2: Demographic Characteristics from the Incentive Groups (continued)

Children in household	47%	55%	44%
No children in household	53%	45%	56%
Family Type**	(n=540)	(n=4,023)	(n=12,223)
Single adult	22%	18%	25%
2+ adults, no kids	31%	27%	30%
1 adult with kids	2%	4%	3%
2+ adults with kids	46%	51%	42%
Demographic Characteristics*	Issued an uncashed Incentive (n=1,113)	Cashed an Incentive (n=4,544)	No Incentives (n=14,233)
People over 65 in household	21%	13%	26%
No one over 65 in household	79%	87%	74%
Higher Education**	(n=538)	(n=3,959)	(n=12,102)
Person in household with post high-school education	29%	53%	49%
No one with post hs education	71%	47%	51%
Income Level**	(n=533)	(n=4,012)	(n=12,181)
Low income	11%	18%	18%
Middle income	42%	44%	42%
High income	47%	39%	40%
Government Program**	(n=533)	(n=4,012)	(n=12,181)
Received	4%	14%	12%
Did not received	96%	86%	88%

*For non-interviewed households, the characteristics are based on previous data collection.

** Data only available for interviewed households

XI. 1997 Data

For budgetary reasons, noninterviews from the 1997 SPD were dropped from sample and a subsample was selected based on income and children in the household. This means that we have data from 1997 (1996 data for income questions), for the entire 2000 SPD sample, interviews and non-interviews alike. Using this data, we can analyze whether the households converted using the incentive are more similar to non-interviews or interviews. This will give us

some insight on the effect the incentives have on data quality.

The incentive completes are more likely to have come from homeowner-households and households with children in 1997. On the economic measures, there is a less clear distinction, the incentive completes are more likely to have received government programs in 1996, their 1996 household income is not different than the 2000 non-interviews.

Table 3: Comparison of Incentive Completes versus Non-incentive Completes and Non-interviews from the 2000 SPD on Selected Variables from the 1997 SPD

1997 SPD Variables	No incentive completes (n=13,044)	Incentive completes (n=4,037)	Non-interviews (n=3,091)
Received government program in 1996	22.7%	25.0%	20.3%
Lower quintile of 1996 household income	31.8%	26.1%	25.1%
Upper quintile of 1996 household income	19.2%	18.4%	23.6%
Own home in 1997	76.0%	78.8%	75.4%
Rented in 1997	21.6%	18.7%	22.8%
Children under 18 in household in 1997	44.7%	60.5%	53.9%

XII. Discussion

The high response rate of those who cashed a debit card offers compelling support for the success of debits cards to convert reluctant respondents. However, it is important to look at the data of these respondents to ensure that this method is not bringing unintended bias into the estimate.

Comparing the results of those converted using incentives and the non-respondents can be examined in two ways. If the converted respondents are similar to nonrespondents then they can be used to model nonrespondents. If the converted respondents are significantly different than nonrespondents then there is the possibility of introducing bias into the estimate since the converted sample may make the non-respondents less random.

As in earlier studies, the reluctant respondents in the SPD are neither like cooperative respondents nor non-respondents. The data has shown that it is not reasonable to assume that all non-respondents are similar to the reluctant respondents. It is not possible to design a model using the incentive group to draw conclusions about the non-respondents.

If the reluctant respondents were not converted by incentives, there would no difference between respondents and nonrespondents for government programs in 1996 (combining column 2 and 3 in table 3). However, the incentive completes were more likely to have used government programs in 1996 and the hardcore nonrespondents less likely. For this study of Welfare Reform it is an encouraging finding, for other surveys this difference could be adding unwanted bias.

The data does suggest that the incentives are effective in improving the data quality. While the percentage of partials is higher for the incentive group than the non-incentive group, the few percentage points are not much greater and does not suggest a great deal of bias. Future studies of item response may be necessary to confirm this opinion.

The use of debit cards does add another factor in this analysis that is not present in most studies of incentives. This data shows a big difference in

response between those who cashed a debit card and those who were issued a card but did not cash it. In the social exchange theory of survey incentives, which suggest that incentives work because the respondent feels some social obligation to complete a survey that had an incentive, could be working in reverse. Hardcore refusals may not be cashing the incentive to avoid feeling obligated to complete the survey.

The socio-economic differences between those who cash an incentive and those who don't cash it and therefore tend to remain refusals suggest that care should be used for future studies that may use this methodology. For the SPD, increased low income response was a goal of the incentive program and therefore it was less of a concern.

There appears to be a contradiction in home ownership of incentive households when comparing 1997 data in Table 3 with the 2000 data in Table 2. The incentive households have the highest presentation of renters in 2000 (31% renters in Table 2), but are least likely to live in rental housing in 1997 (19% renters in Table 3). This may be explained by noticing that incentive households are more likely to be in households that had children in 1997. A number of teenagers in 1997 had moved out of their parents home by 2000 into rental units. These respondents often needed an incentive to induce participation. Young adults, especially young adults with children are an important analytic subgroup for a survey on welfare and other government programs.

This review shows that using targeted incentives to reluctant respondents was helpful in leveling off the longitudinal sample loss while probably reducing the bias of the estimates by getting a group of respondents who would not have responded otherwise.

Bibliography

Abreu D.A. and Winters F.G., (1999) "Using Monetary Incentives to Reduce Attrition in the Survey of Income and Program Participation." *Proceedings of the Survey Research Methods Section*, American Statistical Association, pp. 533-538.

Bates N. and Creighton K., (2000) *The Last Five Percent: What Can We Learn from*

Late Interviews? *Proceedings of the Survey Research Methods Section*, American Statistical Association.

Downs, B. (1999) "Incentive Use in Panel Surveys" Internal Census Bureau memorandum.

Census Bureau (1998) *SIPP Quality Profile*, 1998. SIPP Working Paper Number 230, U.S. Department of Commerce.

Cohen, S.B., Machlin S.R. and Branscome J.M. (2000) "Patterns of Survey Attrition and Reluctant Response in the 1996 Medical Expenditure Panel Survey" *Health Services & Outcomes Research Methodology*, 1:131-148.

Council of Professional Associations on Federal Statistics (1993), "Providing Incentives to Survey Respondents" Council of Professional Associations of Federal Statistics.

Fitzgerald R. and Fuller L. (1982) "I Hear You Knocking But You Can't Come In: The Effects of Reluctant Respondents and Refusers on Sample Survey Estimates" *Sociological Methods & Research*, 11:3-32.

Groves, R.M. and Couper M.P. (1998) *Nonresponse in Household Interview Surveys*, New York: Wiley.

Kalton G., Lepkowski J.M., Montanari G.E., and Maligalig, D. (1990) Characteristics of Second Wave Nonrespondents in a Panel Survey. *Proceedings of the Survey Research Methods Section*, American Statistical Association, pp. 462-467.

Kulka, R. (1992) "A Brief Review of the Use of Monetary Incentives in Federal Statistical Surveys" Paper presented at the Council of Professional Associations on Federal Statistics/OMB Symposium on Providing Incentives to Survey Respondents. Cambridge, MA: Harvard University.

Lepkowski, J.M. (1989) "Treatment of Wave Nonresponse in Panel Surveys" In Kasprzyk, D., Duncan G., Kalton G., and Singh, M.P. (eds.), *Panel Surveys*, New York: Wiley, pp. 348-374.

Lin, I and Schaeffer, N.C. (1995) "Using Survey Participants to Estimate the Impact of Nonparticipation" *Public Opinion Quarterly* 59:236-258.

Link, M.W., Malizio, A.G., and Curtin, T.R. (2001) "Use of Targeted Incentives to Reduce Nonresponse in Longitudinal Surveys" Annual Conference of the American Association for Public Opinion Research, Montreal, May 2001.

Mack, S., Huggins V., Keathley, D. and Sundukchi, M. (1998) "Do Monetary Incentives

Improve Response Rates in the Survey of Income and Program Participation?" *Proceedings of the Survey Research Methods Section*, American Statistical Association, pp. 529-534.

Singer, E., VanHoewyk J., Gebler, N., Raghunathan T., & McGonagle K. (1999) "The Effect of Incentives on Response Rates in Face-to-Face, Telephone, and Mixed Mode Surveys." *Journal of Official Statistics*, 15: 217-230.

Smith T.W. (1984) "Estimating Non-response Bias with Temporary Refusals" *Sociological Perspectives* 27:473-489.

Stinchcombe, A.L., Jones, C., and Sheatsley, P (1981). "Nonresponse Bias for Attitude Questions." *Public Opinion Quarterly* 45:359-75.