

INCENTIVES IN POPULATION BASED HEALTH SURVEYS

Richard C. Strouse, John W. Hall, Mathematica Policy Research, Inc.

Richard C. Strouse, Mathematica Policy Research, Inc., P.O. Box 2393, Princeton, NJ 08543

Key Words: Nonresponse, Incentives, Health Surveys

BACKGROUND

In recent years, concern has been voiced about declining survey response rates, particularly in random digit dialing surveys. A recent review of response rates in national and state random digit dialing (RDD) surveys sponsored by various federal and state agencies and foundations showed a range of from 55 to 79 percent; cited surveys were conducted since 1990.¹ Survey researchers employ a variety of methods to increase response rates to surveys, including carefully designed and tested introductions, interviewer preparation, mailing of advance materials to potential respondents when addresses are available, refusal conversion efforts, and frequent follow up calls scheduled to represent various time periods. Monetary incentives also have been used in some surveys to increase response rates.

In the following sections, we present the results of two monetary incentive experiments, one for a 1993-1994 ten state health reform survey and the second for a 1996-1997 nationally representative survey on the impact of health system change. Both experiments used list assisted random digit dialing methods, included advanced mailings for households with published telephone numbers, and standardized survey introductions. Offered incentives were randomized at 0, \$5, and \$10 for the first experiment and 0, \$15, \$25, and \$35 for the second. Refusal conversion incentives were standardized for each experiment -- \$10 for the first and \$25 for the second experiment, except for the \$35 subgroup, which was offered the same incentive level for refusal conversions. Sponsorship and study purpose varied, with the 1993-1994 health reform surveys obtaining state endorsements and presenting a more salient statement of purpose.

EXPERIMENTAL DESIGNS

State Initiatives Family Health Insurance Survey

During 1993-1994, Mathematica Policy Research conducted a household survey in 10 states in support of the Robert Wood Johnson Foundation's State Initiatives in Health Reform program.² Data from the survey were

intended to assist states analyzing proposed health reforms. The survey was designed to represent the civilian, non-institutionalized population in each state; uninsured and Medicaid recipients were oversampled. A mixed frame approach, including list-assisted RDD, supplemental state Medicaid files, and an area probability sample to screen for and represent non-telephone households, was used to select the samples. The interview included a brief screener to determine whether anyone in the household was receiving Medicaid or was uninsured; these households and a sample of other privately insured households were selected to be interviewed. The interview averaged 25 minutes and was conducted by a family informant. A total of 25,674 families were interviewed by telephone and 1,463 in person from May 1993 to April 1994.

Due to the importance of obtaining high response rates and uncertainty concerning the effect of monetary incentives on general populations surveyed primarily by telephone, we conducted an experiment during the first four weeks of the survey to determine the impact of monetary incentives on willingness to participate in the survey and on measures of data quality. The experimental sample included a representative subsample in Minnesota, Vermont, and Florida, which were the first three states surveyed; sampled households were randomly assigned to a promised payment level of zero, five, or ten dollars. Households sampled for in person interviewing were not included in the experiment.

Data collection procedures other than the monetary incentive were standardized. Households with published telephone numbers were mailed advance letters, signed by each state's governor or health commissioner. The survey introduction referenced the governor (two states) or health commissioner (one state) by name and emphasized that the surveys would support health reform, a highly salient topic at that time. The CATI program also provided interviewers with standard text to respond to questions concerning study objectives, confidentiality, selection procedures, and the advance letter. The names and telephone numbers of personal contacts within the states' health care agencies were provided to respondents who wanted additional information or verification of the study's authenticity. The number and timing of follow-up efforts were controlled by CATI. Respondents who initially refused

were contacted two weeks after the initial refusal and were promised \$10 to reconsider their decisions.

Community Tracking Study (CTS) Household Survey

The Community Tracking Study (CTS) is part of the RWJF Health Tracking Initiative, which was launched in 1995 to examine and report on the nation's changing health care system.³ The household survey is one of several data collection efforts included under this effort and is designed to assess the effects of health system change on individuals' health insurance coverage, access to care, use of health services, health status, and satisfaction with health care. The household survey sample is designed to represent the civilian, non-institutionalized population in the contiguous United States; most of the interviews were conducted in a nationally representative sample of 60 communities. An unclustered supplemental RDD sample covering the contiguous United States increased precision of national estimates. A mixed frame design was used. Telephone household samples were selected using list-assisted RDD methods; non-telephone households were represented using area probability methods and in person interviewing in a subsample of communities. Data were collected from August 1996 through July 1997. A total of 32,097 family interviews were conducted by telephone and 635 in person.

Many of the features of the CTS Household Survey are similar to the 1993-1994 State Initiatives Family Survey. Both surveys obtained information on similar topics (insurance coverage, health status, resource use, satisfaction), and relied on mixed frame designs. Differences in design included geographic coverage, respondent burden, study purpose, timing, and endorsements. The State Initiatives Family Survey was limited to ten states, most of which were less urbanized than the nation as a whole. The CTS household survey was nationally representative and over sampled metropolitan areas, which typically have lower response rates. Respondent burden was greater for the CTS household survey, which averaged 35 minutes for the family informant and included an additional 5 to 10 minutes of subjective questions on health status which were asked of each adult; the family interview for the State Initiatives Family Survey averaged only 25 minutes and did not include a self response module.

The State Initiatives Family Survey was conducted during 1993 and early 1994 when national and state health reforms were being proposed in the surveyed states. In contrast, the 1996-1997 CTS Household Survey was conducted long after the national health care reform debate. We were only able to obtain

endorsements from state health commissioners in some states and could not state that the survey was being conducted on their behalf or to meet specific state health care needs. The objective of the surveys was to obtain information to understand the impact of changes in the health care system on the public's insurance coverage, health, and health care needs. Prior to the design of the experiment, early survey results indicated that a focus on one policy concern encouraged non-responses from respondents for whom this was not an issue. Longer introductions that attempted to embrace a larger set of concerns were too verbose and resulted in respondents hanging up before the interviewer completed her introduction. We eventually standardized an introduction for the experiment that emphasized the value of the survey to help communities plan for public's health needs. Follow-up statements were included both on CATI screens and in longer training packets to assist interviewers in responding to queries. Interviewers were offered performance based bonuses, a procedure that was not employed in the State Initiatives Family Survey.

Since the respondent task for the CTS Household Survey was more demanding than for the State Initiatives Family Survey and initial cooperation rates were very low, we tested a range of larger incentives. Treatments were randomized equally across households in four cells — 0, \$15, \$25, and \$35. The experimental sample was selected from all 60 communities and the national supplement. Households in the \$0, \$15, and \$25 cells that refused were offered \$25 during refusal conversion calls, while those initially offered \$35 were offered the same amount during the conversion call. Respondent payments were promised at the initial call for all experimental households and during refusal conversion calls for households with non-published telephone numbers; households with published addresses that refused were mailed letters and checks before the interviewer called to attempt refusal conversions. Since a single round of refusal conversions was insufficient to achieve acceptable response rates, we opted for a longer time period (minimum of eight weeks) between initial and refusal conversion calls and made two rounds of refusal conversion calls.

RESULTS

State Initiatives Family Survey

Table 1 shows that a \$10 payment level marginally increased screener cooperation rates for the 1993-1994 State Initiatives Family Survey, but not interview cooperation rates, prior to refusal conversion efforts. (The cooperation rate is defined as the ratio of completed

interviews to contacted residential households; telephone numbers that did not result in a contact after 20 attempts were excluded.) A \$5 incentive had no effect on initial cooperation and a slightly negative effect on refusal conversion efforts, which were standardized at \$10. Following refusal conversion efforts, cooperation rates for the \$0 and \$10 groups were virtually equivalent, but were slightly lower for the \$5 group. This difference may have reflected a negative reaction by some respondents who initially refused and may have felt manipulated at later being offered a slightly higher incentive. The impact of incentives on sensitive items was minimal, except for reporting own address, which was necessary for receipt of payment (Table 2).

As a result of this experiment, we discontinued respondent incentives, except for refusal conversions, which included a promised \$10 incentive. Overall, we obtained a 73 percent response rate for the RDD portion of the survey. The response rate was the product of the screener (86 percent) and interview (85 percent) response rates; residential status for telephone numbers for which there was no contact after 20 calls were imputed based on residential eligibility for telephone numbers for which contact was made.⁴ Response rates for the telephone samples in the three states included in the experiment were representative of the ten states, with Florida below average (65.9 percent) and Minnesota (76.5 percent) and Vermont (78.2 percent) above average.

CTS Household Survey

Results for 1996-1997 CTS Household Survey indicate that incentives had a greater impact on initial cooperation by survey respondents. Initial cooperation rates were low for all incentive treatments, but increased from 0 to \$25 both for households with published addresses (which received advance letters and brochures describing the study) and households with non-published addresses (no prior mailing). Initial cooperation rates increased slightly from the \$25 to \$35 incentive level for households with published addresses, but not for those with non-published addresses (see Table 3A).

Refusal conversion efforts were accompanied by promised \$25 incentives for all households with non-published addresses, except for the \$35 treatment group, which was promised the same amount; households with published addresses were mailed a letter with pre-payment prior to the refusal conversion call.

Refusal conversions increased cooperation rates significantly for all incentive levels, but did not close the initial gap. Final cooperation rates were 61 percent for the \$0/25 group, 64.3 percent for the \$15/25 group, 67.4

percent for the \$25/25 group, and 67.5 percent for the \$35/35 group.

We observed the same relationship between incentive levels and final cooperation rates for households with published and unpublished telephone numbers. However, households with published numbers, which were mailed incentives prior to refusal conversion calls, had higher cooperation rates for each incentive level.

The incentive was promised only to the family informant; additional incentives were not promised to other adults in the family, who were asked to complete 5 to 10 minute interviews on subjective health status questions. For families completing interviews at the initial call, cooperation rates for self response modules were extremely high and did not vary by incentive level (Table 3B). Cooperation rates were somewhat lower for self-response modules in families participating as a result of refusal conversion efforts, but did not vary by size of incentive. We inferred that the commitment made by the family informant was sufficient to obtain cooperation from other family members without increasing incentive levels.

Based on results from the CTS Household Survey experimental sample, we included \$25 incentives to all families at the initial contact and to refusal conversion families for whom we did not have addresses. We took advantage of address information for families in the refusal conversion sample and mailed them \$25 checks before making conversion calls. Final cooperation rates for the survey were over 70 percent and the final family level response rate was 65 percent.

Level of Effort

We expected that the level of effort to complete interviews with households receiving incentives would be inversely related to incentive level (Table 4). This was true both for completed screeners in the 1993-1994 State Initiatives Survey and for interviews completed prior to refusal conversions for the CTS Household Survey. For the State Initiatives Survey, the reduction in the mean number of calls per interview from no incentive to a \$10 incentive was only .46 calls per interview. However, the reduction from no incentive to \$25 on the CTS Survey was much larger -- 1.87 calls per interview. The level of effort to achieve a final disposition with non-cooperating households does not vary with incentive. Nor did we find any difference in level of effort to convert refusals, with respect to incentive levels (which were standardized), in the CTS Household Survey. Reducing the mean number of calls to complete interviews during the initial call had a positive effect on

schedule, but recovered only a small fraction of the cost of the incentive.

It is also possible that mailing incentives in advance of the initial call for households with published addresses may reduce costs further. Although we used pre-paid incentives only for refusal conversions (where addresses had been confirmed), we will consider using pre-paid incentives for initial calls in future low-saliency RDD surveys requiring high response rates.

DISCUSSION

The outcomes of the two experiments on general population health surveys suggest that monetary incentives offered at the initial call are more effective in increasing cooperation rates on surveys whose sponsors and objectives do not resonate well with the target population. Monetary incentives had little impact on initial cooperation for the State Initiatives Family Health Insurance Surveys, which were conducted in 1993-1994 on behalf of well known state organizations responsible for public health and were designed to support state health reform programs that were generally popular at that time. On the other hand, a uniform \$25 incentive offered to households selected for the Community Tracking Study surveys significantly increased cooperation rates, compared with an approach that employed incentives only for refusal conversions. The CTS Household Survey was being conducted on behalf of a foundation that was not well known to the public and was designed to obtain information on the impact of health system change, a topic that was not highly salient with the general public.

An increase in cooperation rates of several percentage points resulting from a \$25 incentive was an important difference for the CTS Household Survey because the results will be used as the baseline for a longitudinal data series. Part of the CTS sample also will be used as a frame for other surveys. Obtaining good addresses for follow up surveys (which is improved by mailing incentives) is a benefit of using monetary incentives. Use of large incentives also slightly reduced follow up efforts, which is important for surveys operating under tight schedules.

On the other hand, we did not observe that incentives affected key data quality indicators on either of the two surveys. We will examine this issue further by examining sensitive questions and completeness of key variables on the CTS Household Survey, including identity of private insurers and employers, information needed for other data collection efforts. We also will analyze whether the incentive affected respondent cooperation differently by geographical characteristics

available on the RDD sample frame, including region, size of MSA, size of minority population, and income level.

In addition, we plan on analyzing the relationship of incentives to interviewer experience for the CTS household survey. Evidence from survey disposition reports suggests that incentives may play a lesser role in increasing cooperation with the most fluent and skilled interviewers. On the other hand, variations in interviewer skill are inevitable in very large surveys, in which many less experienced interviewers must be trained. Finally, we plan to conduct future experiments on the interaction of incentives and elements of the survey introduction including sponsor, statement of purpose, and task.

ENDNOTES

1. James T. Massey, Daniel O'Conner, and Karol Krotki. *Response Rates In RDD Telephone Surveys*, Paper delivered at 1997 ASA Meetings and included in these proceedings.
2. States included Vermont, Oregon, Minnesota, Florida, New York, North Dakota, New Mexico, Oklahoma, Washington, and Colorado.
3. The Community Tracking Study is described in P. Kemper, et. al., "The Design of the Community Tracking Study; A Longitudinal Study of of Health System Change and Its Effects on People." *Inquiry*, vol. 33, summer 1996, pp. 195-206.
4. For more information on the survey design, see John Hall, Richard Strouse, Barbara Carlson, and Rita Stapulonis, "Survey Design and Data Collection Methods for the Robert Wood Johnson Foundation's Family Survey on Health Insurance," a report to the Robert Wood Johnson Foundation and the RAND Corporation, September 1994.

TABLE 1
1993-1994 STATE INITIATIVES SURVEYS
EFFECT OF RESPONDENT PAYMENTS
ON SURVEY RESPONSE

	Payment Level			Sample Size	X^2	P-value
	\$0	\$5	\$10			
Percent Completing Screener ^a						
Prior to refusal conversion ^c	74.3	74.5	78.1	1,826	3.030	0.220
After Refusal Conversion	90.4	87.7	91.2	1,826	4.414	0.110
Percent Completing Interview ^b						
Prior to refusal conversion	85.7	84.9	85.5	1,735	.159	0.929
After refusal conversion	96.3	92.5	94.8	1,735	7.97	0.019

^aRatio of completed screeners to residential households; excludes telephone numbers where no contact was made after 20 attempts.

^bRatio of eligible families completing interviews to eligible screened families selected to be interviewed.

^cA comparison of the combined \$0 and \$5 payment levels with the \$10 level yielded a X^2 value of 3.024, $P = .082$.

TABLE 2
1993-1994 STATE INITIATIVES SURVEYS
EFFECT OF RESPONDENT PAYMENTS
ON SENSITIVE ITEMS

	Payment Level			Sample Size	X^2	P-value
	\$0	\$5	\$10			
Percent Reporting Income	93.5	96.2	95.7	1,561	4.601	0.100
Percent Reporting Earnings	84.8	86.5	86.3	1,561	0.720	0.698
Percent Reporting Race	98.6	99.2	99.0	1,561	0.819	0.664
Percent Reporting Own Address	84.6	90.6	96.2	1,561	42.885	0.000
Percent Reporting Relative's Address ^a	83.5	73.1	76.6	1,415	13.952	0.001

NOTE: Limited to interviews completed prior to refusal conversion efforts.

^aRespondents who reported their own address were asked to report a relative's address.

TABLE 3
1996-1997 COMMUNITY TRACKING HOUSEHOLD SURVEY EFFECT
OF RESPONDENT PAYMENTS ON SURVEY RESPONSE
AND COMPLETENESS OF SELF RESPONSE MODULES

A. Survey Response	Payment Level				Sample Size	χ^2	P-value
	\$0	\$15	\$25	\$35			
Total Sample							
Percent Completed Interview ^a							
Prior to refusal conversion	37.9	45.6	52.0	49.2	3,624	33.81	.001
After refusal conversion	61.0	64.3	67.4	67.5	3,624	10.98	.012
HH with Published Addresses							
Percent Completed Interview ^a							
Prior to refusal conversion	36.2	46.5	47.8	52.7	1,662	23.83	.001
After refusal conversion	64.5	67.4	68.5	69.2	1,662	2.40	.494
HH with Non-Published Addresses							
Percent Completed Interview ^a							
Prior to refusal conversion	39.2	44.8	48.1	49.3	1,962	12.03	.007
After refusal conversion	58.1	61.8	66.4	66.1	1,962	9.63	.022
B. Completeness of Self Response Modules^b							
Initial Completions	97.4	96.9	99.5	98.5	1,650		
Refusal Conversions	89.0	88.6	90.0	88.0	646		

^a Ratio of completed interviews to sum of residential households (up to 40 calls were made to complete the interview); excludes telephone numbers where no contact was made after 20 attempts.

^b Statistic is the ratio of persons with responses to self-response modules on health status and other subjective measures to number of persons in families completing interviews. Chi-square test were not significant.

TABLE 4
MEAN NUMBER OF CALLS PER HOUSEHOLD BY PAYMENT LEVEL

A. 1993-1994 State Initiatives Survey	Payment Level			F-Value	P
	\$0	\$5	\$10		
Non-cooperating households	7.58	6.05	6.79	NS	
Completed screener	4.02	3.89	3.56	4.42	.0358
All Sample Points	4.39	4.47	4.15	NS	
B. 1996-1997 Community Tracking Survey	\$0	\$15	\$25	\$35	F-Value
Non-cooperating households	15.56	15.69	15.57	15.82	0.04
Completed interviews - initial call	8.63	7.81	6.76	7.03	4.36
Completed interviews - refusal conversion	13.25	13.46	13.46	13.33	0.03
All Sample Points	9.02	8.60	7.95	7.95	5.01

NOTE: Interactions between payment level and published versions nonpublished telephone samples were not significant for either survey.