The Impact of Tracing Variation on Response Rates within Panel Studies

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Abstract
Locating and contacting survey participants is one of the biggest challenges for any longitudinal panel study. Panel maintenance is essential to any panel study in order to produce accurate and reliable data. There are many levels of tracing that can be conducted to increase response rates. There are also many factors influencing the level of tracing a project can employ. One of the most important factors is the budget.

This study describes the impact of a 3-tiered approach to tracing on project budget and response rates. It takes into consideration the challenge of locating and conducting interviews with the highly mobile population surveyed in the Accumulation of Wealth and Social Capital among Low-Income Renters (AWSC-R). The AWSC-R is a 5-year panel study of low- to moderate-income renters conducted by RTI International on behalf of the University of North Carolina at Chapel Hill. The first year of data collection was conducted as a Random Digit Dial (RDD) study. Interviews were completed by telephone with 1,533 renters and this established the panel of renters for the next 4 years of the study.

To maintain the panel of renters interviewed each year, a three-tiered approach was applied to tracing, which included batch tracing, intensive tracing, and field tracing as needed. Each intensive approach is intended to increase response rates, but is also associated with high project costs.

The success of any panel study relies on the study's ability to successfully locate and maintain contact with respondents over the course of the study. This paper describes the levels of tracing that can be utilized by panel studies to increase response rates along with project budget constraints to be considered.

Key Words: Response Rates, Longitudinal Studies, Respondent Tracking

1. Introduction

Locating and contacting survey participants is one of the biggest challenges for any longitudinal study. This is especially true for telephone studies, wherein follow-up interviews often follow an initial baseline data collection period, and addressing respondent attrition becomes a key challenge. With the increase in call screening devices and the use of cell phones, establishing and maintaining contact with respondents has created challenges for telephone surveys (Tucker and O'Neill, 2001). The differences between the original sample and the non-responders in a follow-up effort can potentially jeopardize the reliability of the research. In order to minimize attrition and improve follow-up response rates in a cost-effective manner, researchers need to consider various methods of locating the respondents to complete the subsequent pieces of the research. Each study brings with it unique variables and challenges, and consequently requires an individualized evaluation of the costs and benefits of budgeting for such tracing operations.

In order to prevent this attrition, there are several cost effective methods researchers can use at the baseline data collection period, including obtaining several sets of contact information (a respondent's friends and/or relatives), collecting the respondent's date of birth (DOB) and social security number (SSN), and giving out change of address cards. After the initial data collection period, researchers can stay in touch with the respondents by sending out postcards, making follow-up calls, developing a tracking system, and providing incentives for the respondents to participate in future rounds of data collection.

At the follow-up stage, baseline respondents who cannot be located can be traced. A successful approach will require using and blending multiple sources of information in order to locate as many sample members as possible. Tracing efforts for most studies are divided into three steps: Batch Tracing, Intensive Tracing, and Field Tracing.

Batch tracing is the first and most inexpensive tracing step in order to obtain a valid address and/or telephone information to facilitate contact with sample members. Intensive tracing provides more specific information through the use of databases searches conducted by trained specialists. Field tracing employs the use of a field interviewer acting as field tracer to physically visit last known addresses in an effort to locate hard to reach sample members. Implementing some or all tracing steps as mentioned above can be expensive and complex. However, conducting simple batch processes can decrease the level of intensive tracing required throughout the course of the study.

For example, Andresen et al (2008) found 49% of their sample after batch tracing, and then an additional 19% using interactive tracing. The batch tracing methods used were National Change of Address and Telematch, and were followed by more intensive interactive tracing methods, such as internet searches, calling of contacts, as well as using credit bureaus and public records databases. Additionally, Weinberger et al (2002) found an additional 33% of their sample using Interactive tracing, and for Morrison et al (1997) interactive tracing provided an additional 17.5 percent.

One important caveat to note about the use of intensive tracing methods is that the costs and benefits will be unique to each study. In an effort to reach unwed fathers for follow-up data collection, Teitler, Reichman, and Sprachman (2003) used field tracing and in-person interviewing when batch tracing and interactive tracing methods proved to be unsuccessful. Although the in-person efforts added a significant number of completed interviews thus increasing the similarities between the sample and the population to which results were going to be generalized, the cost per completed interview skyrocketed from $154 per case to $1574 per case. While it is easy to see in hindsight the point at which the costs surpass the benefits, the key to maximizing response rates at a minimal cost is to pinpoint the most affordable and effective tracing methods for a particular sample.

The present study discusses how a sample of renters was traced for follow-up over a 5-year period and examines how successful and cost effective those tracing methods proved to be.

1.1 Sample

The study sample is designed to be a control group for the Community Advantage Panel Survey (CAPS), an ongoing study of the accumulation of wealth and social capital among low- to moderate-income new homeowners. RTI obtained a sample from Genesys of likely low-income renters in the top 31 Metropolitan Statistical Areas (MSAs) from the CAP Survey. The goal of sample selection was to recruit renters that had annual incomes less than a threshold and lived in a geographic proximity to the homeowners. The income threshold was based on the Area Median Income (AMI) for the homeowner's MSA and the percent minority population in the homeowner's Census tract.

1.2 Survey Methods

This is a 5-year panel study of renters. Data collection mode varied by year for this study; the first, third and fourth years of data collection were conducted by telephone. Years 2 and 5 (currently underway) are conducted in person to collect more sensitive financial information, such as wealth, assets, and household debt. In Year 1, telephone interviewers were screened on the basis of threshold income, renter status, and age (initially just to avoid college-age respondents, and later those aged 65 or above). Upon identifying the eligible member of the household (one holding the lease or rental contract), the telephone survey commenced and asked about household composition, employment, education, interest in buying a home, parenting practices, and community involvement.

2. Respondent Attrition

2.1 Methods to Prevent Respondent Attrition

An important aspect in carrying out a longitudinal study is remaining in contact with sample members between each wave of the study. The literature on respondent tracking offers several steps that can be implemented for panel maintenance studies (Morrison et. al, 1997). These methods include: obtaining numerous contacts, locator mailings, developing a sophisticated tracking system, and offering incentives. Each of these activities was employed for the renter's study and a short description of each can be found in the following sections.

2.1.1 Baseline Tracking Activities

Obtaining Numerous Contacts during Baseline Interview: RTI collected several pieces of contact information from the respondent in each year of the study. This information included: respondent email address, alternate phone numbers, and contact names and telephone numbers for a relatives or friends. These additional contacts were only used in the event that we were unable to reach the respondent during data collection.

Collected SSN and DOB: Collecting a respondent's Social Security Number is the single most important identifier our in-house tracing unit uses to locate new contact information for respondents. Respondents were asked for their SSN during the second year of the study, when the interview was conducted in-person. The respondent's date of birth was also collected and confirmed each year of the study as this is an important identifier for tracing as well.

2.1.2 Post Baseline Tracking Activities

Locator Mailing: Between each wave of the study, letters were mailed to respondents, informing them about the upcoming wave. The letter asked respondents to update their records in case of intended or planned moves that would result in a change of address or telephone number. This mailing included a letter and postcard, and respondents were asked to either send the postcard back with updated information or call an 800 number to update their information over the telephone. Any letters that were returned undelivered constituted the first batch of cases that were submitted to the tracing unit for in-house tracing.

***Control System*:** An efficient and flexible control system was developed for this study to schedule data collection activities, maintain the integrity of the sample, and to track all mail-out activities. The control system developed for this project became the primary tool that integrated data collection and processing, allowing project staff members to monitor the flow of data from the start of data collection through each wave of the study.

Incentives: After successfully completing the interview, participants received an incentive payment for completing the phone interview. Offering a monetary incentive as a token of appreciation has been shown in the survey research literature to increase response rates (Dillman, 2000; Singer, Hoewyk, Gebler, Raghunathan, and McGonagle, 1999).

3. Locating Sample Members

3.1 Levels of Respondent Tracing

Batch Tracing: Batch tracing is considered the least expensive tracing method to update locating information of respondents or to generate additional information that will be used in the more traditional interactive tracing. RTI uses several vendors for batch tracing; the selection of a certain vendor is based on the information researchers are seeking. For instance, in batch tracing Transunion is often chosen specifically to generate new Social Security numbers (SSNs) or to confirm existing ones. Other batch vendors such as Fast Data, Accurint, Telematch, and Lexis Nexis are used to report new address and telephone information or to confirm the existing data.

Interactive Tracing: Cases submitted to RTI's in-house tracing unit included those where a lead letter was returned undelivered or cases with suspected inaccurate contact information. The first step in intensive tracing is to have a tracer review the case and determine what locator information and leads are available. The tracer will usually begin locating efforts by using Internet sources to confirm that the area code associated with the given telephone number is correct. Most of the intensive tracing performed for the Renter's Study was conducted through database searches and credit bureau searches.

Field Tracing: Our final tracing step included field tracing any renters that we were unable to reach by telephone. RTI hired field interviewers to visit the homes of renters at their last known address in an attempt to persuade them to call RTI's Call Center to complete the telephone interview. The field interviewer paid a cash incentive to those household members completing the telephone interview when they visited the home. All cases that were field traced were mailed a lead letter to notifying them that a field interviewer might visit their home because they had been unreachable by phone.

4. Results

4.1 Results

Table 1 provides the demographic characteristics of the baseline respondents. The mean age of the sample was 41 years and a majority (72 percent) of the respondents were female. Forty six percent were White, 31 percent Black, 6

percent American Indians, 1.5 percent Asians or Pacific Islanders, and 15 percent classified themselves as "Other" race. About 18 percent were Hispanic.

About half of the sample had a high school or less than high school education. Thirty two percent had some college education and over 13 percent had at least a bachelor's degree.

In terms of marital status, about two thirds of the respondents were married or living with a partner at baseline. Sixteen percent were never married, 10 percent were divorced, and about 5 percent were separated. Almost 60 percent of the respondents were employed. The mean household income in 2002 was about $21,000. The mean number of household members was 2.4; the mean number of children, 0.7.

Table 1. Baseline demographic characteristics of the Renters sample members

Demographic characteristic	Mean or N (%)
Age, mean (SD), years	41.4 (15.5)
Female, No. (%)	1177 (71.5)
Race, No. (%)	
White	753 (46.1)
Black	509 (31.2)
American Indian	104 (6.4)
Asian or Pacific Islander	25 (1.5)
Other	243 (14.9)
Hispanic (of any race), No. (%)	300 (18.2)
Education, No. (%)	
High school or less	813 (49.4)
Some college	527 (32.0)
Bachelor's degree (BA, AB, BS)	206 (12.5)
More than a bachelor's degree	82 (5.0)
Other	18 (1.1)
Marital Status, No. (%)	
Married or living with a partner	1093 (66.3)
Widowed	32 (1.9)
Divorced	165 (10.0)
Separated	76 (4.6)
Never been married	259 (15.7)
Other	23 (1.4)
Currently working for pay, No. (%)	969 (58.9)
Household income in 2002, mean (SD), $	20,857 (14,006)
Retired, No. (%)	173 (78.3)
No. of household members, mean (SD)	2.4 (1.5)
No. of children in household, mean (SD)	0.7 (1.1)

Table 2 shows response rates by tracing method used for data collection years 2, 3 and 4. For year 2, both batch and interactive methods found about two thirds of the sample members sent to tracing for each method. The percent of completed interviews among those located was higher for batch than for interactive tracing (87.5 percent vs. 77.2 percent). Looking at cumulative response rates, adding interactive tracing brought the response rate to 75 percent from 58 percent.

For year 3, batch tracing located about 55% of the sample, and about 82 percent of the remaining cases were located using interactive tracing. As with year 2, the percent of completed interviews among those located was higher for batch than for interactive tracing (90.8 percent vs. 55.4 percent). Adding interactive tracing brought the response rate to 70 percent from 50 percent.

As mentioned earlier, a field tracing component was added in year 4. In terms of locate rates, both batch and interactive tracing each located about 71 percent of the sample members. The additional field tracing step located half of the sample members not located through batch or interactive. In terms of completed interviews, 88 percent were completed among those located through batch tracing, about 46 percent among those located through interactive, and 81 percent among those located through field tracing. Response rates among those in batch tracing (61.9 percent) were higher than those in interactive (32.8 percent) and field tracing (40.3 percent). In terms of cumulative response rates, adding interactive tracing brought the response rate to 70 percent from 62 percent; adding field tracing brought the response up by about 5 percent, from 70 to 75 percent.

Table 2. Response Rates by Tracing Method Used and Year of Data Collection

	Year 2 (field data collection)						
	No. sent to tracing	No. located	% located	No. completed interviews	% completed interviews among located	Response Rate (%)	Cumulative Response Rate (%)
Batch	1536	1009	65.7	883	87.5	57.5	57.5
Interactive	527	356	67.6	275	77.2	52.2	75.4
	Year 3 (CATI)						
Batch	1488	813	54.6	738	90.8	49.6	49.6
Interactive	675	556	82.4	308	55.4	45.6	70.3
	Year 4 (CATI)						
Batch	1217	861	70.7	753	87.5	61.9	61.9
Interactive	320	229	71.6	105	45.9	32.8	70.5
Field	124	62	50.0	50	80.6	40.3	74.6

Table 3 shows the difference costs by tracing mode and the cost to trace a sample member and complete an interview them during the year 4 data collection. The cost per case in column 4 is the total cost spent for a particular tracing method, divided by the total number of cases sent to that particular method. This cost therefore includes all cases, regardless of whether or not a case was located, or whether a case resulted in a completed interview.

As expected, field tracing had the highest cost per case. The cost for batch tracing was $1.22; for interactive, $28, and for field, $92.

If we take into account response rates in the calculation of cost, that is, exclude non-respondents in the calculation, the cost per case significantly goes up. For batch, the cost increased from $1.22 to almost $2; for interactive, the cost increased from $28 to about $85; and for field tracing, the cost increased from $92 to about $228.

Table 3. Response Rates by Cost per Case by Tracing Method Used: Year 4

Tracing method	Total Cost (a)	No. Sent (b)	Cost per case (a)/(b)	No. completed (c)	Cost per case (a)/(c)
Batch	$1,484.74	1,217	$1.22	753	$1.97
Interactive	$8,960	320	$28	105	$85.33
Field	$11,408	124	$92	50	$228.16

5. Conclusion

For the Accumulation of Wealth and Social Capital among Low-Income Renters Study, we found that conducting tracing at various levels was most successful in that each level increased the locate/response rate enough to maintain the panel. Adding the field tracing component increased our response rate in Year 4 from

about 62% (which is what we would have achieved only using batch tracing) to about 75%. Identifying information such as SSN and DOB allowed our study to locate more respondents through batch tracing and at a lower cost than interactive tracing. Without such identifying information, false positives may identify a subject that was not an actual study respondent. Further intensive tracing of those subjects would be required to backtrack and find the correct respondent using a higher cost tracing follow-up.

In this study, the tracing costs paid off as they increased the sample size and response rates to the level required by our client to maintain the panel. However, it is important to keep in mind that the success of varying levels of tracing depends on a number of factors. Future research should examine the types of respondents included via intensive and field tracing that might not be in the sample otherwise. This may illustrate additional sample advantages to consider above and beyond response rate and cost. Advanced planning for tracing must consider the sample demographics, response rate requirements and budget restrictions in addition to the collection of data points necessary to complete the tracing.

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