

Findings from a Two-Phase Mail Survey for a Study of Veterans

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Abstract

Address-based sampling has been used in response to the declining coverage and response rates of random digit dial surveys. Although mail surveys using address-based samples have emerged as a promising approach in general population studies, their usability for studying specific subpopulations is yet to be tested. Since there is no interviewer to screen households for the targeted group, it is unclear how a mail questionnaire would work. This paper reports findings from a two-phase pilot study surveying Veterans as part of the National Survey of Veterans (NSV). The NSV is sponsored by the US Department of Veterans Affairs. The first phase was a mail screener sent to a nationally representative sample of 11,000 residential addresses selected from the US Postal Service address lists. The second phase was a topical questionnaire directed to the Veterans identified through the screening. The pilot study demonstrated the feasibility of applying two-phase mail survey design for Veterans and distinguished some factors associated with response rates.

Key Words: Address-based sampling, specific subpopulation, response rate

1. Introduction

In recent years address-based sampling (ABS) has been used in response to the declining coverage and response rates of random digit dialing (RDD) landline surveys. Although ABS mail surveys can be a promising approach for general population studies (Link, et al, 2008; Cantor, et al., 2008), their usability in studying specific subpopulations is yet to be tested. This paper reports findings from a two-phase mail pilot study to survey Veterans as part of the National Survey of Veterans (NSV).

The NSV is a series of comprehensive nationwide surveys designed to inform the Department of Veteran Affairs (VA) of pertinent issues related to Veterans' awareness and use of their benefits and services. The NSV collects information not otherwise available in VA administrative files and provides VA, Congress, stakeholders, and the public with up-to-date information on the Veteran population. Among all the Veterans, only a subset are using VA's service, so one important goal of the NSV is to reach those Veterans who are currently not using VA's benefits and services and thus not included in VA's administrative files.

The last NSV was conducted in 2001 using a landline RDD approach with an overall response rate of 51.6 percent. Due to the decline of coverage and response rates in RDD surveys in the past decade, a decision was made to use an ABS mail design for the 2009 NSV. Since only a small proportion of households contain Veterans, using a single-phase approach, which sends a long questionnaire including all the survey items to all the

sampled households, would drive up operation costs and increase response burden. Instead, we formulated a two-phase design with separate screening and extended questionnaires in order to screen for Veteran households before sending the extended survey instrument. Given that there would be no interviewer to enumerate the household and screen for Veterans, it was unclear whether a mail screening questionnaire would work. The NSV pilot study was methodological in nature, with the goal to test the feasibility of the two-phase ABS approach and to produce statistically and methodologically informative findings that would help improve the main study design.

The remainder of this paper is organized as follows: Section 2 discusses the design features of the NSV pilot study in greater detail, including the selection of the sample, the three experiments for screener data collection, and the timeline of the survey operation. Section 3 reports the overall response rates and effective coverage rates as well as the variations of these rates across screener experimental conditions and subgroups of Veterans. Section 4 contains the conclusions and discussions.

2. Design Features and Operation Procedures

This section describes the key features of the NSV pilot study. Section 2.1 lays out the general procedure of the two-phase design. Section 2.2 provides details about the three experiments embedded in screener data collection. Section 2.3 discusses the mailing strategy and the length of the field period.

2.1 General Procedure of a Two-Phase Approach

The NSV pilot study was implemented in two phases with separate screener and extended questionnaires. For the screener phase, a nationally representative sample of 11,000 residential addresses (including P.O. Boxes) was selected from the US Postal Service Computerized Delivery Sequence file. A stratification mechanism was used to oversample addresses with higher expected prevalence of Veterans. We contacted all the sampled addresses initially by mail, requesting that an adult household member complete a five-minute screening questionnaire for the household. The purpose of this screening questionnaire was to identify Veterans and other subpopulations of interest. The screener also collected demographic information for the identified Veterans, which allowed the possibility of subsampling and target mailing for the extended survey.

In the second phase, an extended questionnaire was administered among the identified Veterans from the screener phase in order to collect the actual information of interest. Two modes, Web and paper, were offered in the second-phase data collection. A question on mode choice was included in the screener questionnaire, so the screener respondents could select their preferred mode for completing the extended survey.

2.2 Three Experiments for Screener Data Collection

Three data collection experiments were embedded in the screener with the goal to identify the optimum data collection approach for the main study. The sample was randomly assigned to each experiment. The first condition varied the mode of interview offered at the initial screener attempt. The second condition tested the effect of an insert that conveyed a message encouraging response. The third condition was the inclusion or exclusion of a question asking whether the household included anyone serving on Active Duty in the U.S. military at the time of the screener. The following sections describe each condition in greater detail.

2.2.1 Screener data collection experiment I

The first experiment varied the mode offered at the initial screener attempt (Exhibit 1). Half of the sample was mailed a letter asking a household member to complete a screener on the Web. The other half was sent a paper screener with no mention of the Web. For both groups, a paper questionnaire was used to follow up the households that did not respond to the initial request. In the follow-up attempt, the Web option was mentioned in the cover letter to the group initially assigned to Web, so the household could still respond through the Web if they preferred to.

By encouraging the target respondents to use the Web, we hoped to save operation costs and improve response from younger age groups. On the other hand, existing literature suggests that offering options to target respondents can have a negative impact on response rate (Griffin, et al., 2001; Dillman, et al., 2009). The pilot study allowed us to test these competing hypotheses.

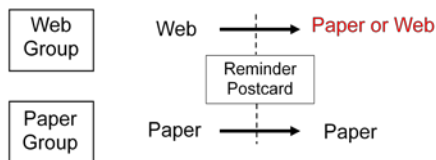


Exhibit 1: Experiment on Screener Mode

2.2.2 Screener data collection experiment II

The second screener experiment varied the use of an insert. For half of the sample, an insert was attached to the cover letter for the initial screener attempt (Exhibit 2). The intent of the insert was to pique the target respondent's interest without their having to read the cover letter. This could help improve their cooperation.



Exhibit 2: Experiment on Screener Insert

2.2.3 Screener data collection experiment III

The third experiment varied whether to include a question on Active Duty at the beginning of the questionnaire. Half of the sample received a screener that initially asked whether anyone in the household was on Active Duty at the time of the survey. This

question was followed by the Veteran question (Exhibit 3). For the other half, the Veteran question was asked directly and no question on Active Duty was included. The Active Duty question was intended to improve the measurement of Veteran status by providing a clear definition of Active Duty. On the other hand, the question was quite long and might be too complex for some respondents to read through or fully comprehend.

The Active Duty question:

Is there anyone in the household who is currently serving on Active Duty in the U.S. Armed Forces, military Reserves or National Guard? (Active duty does not include training for the Reserves or National Guard, but DOES include activation, for example, for the War in Iraq or Afghanistan).

The Veteran question:

Is there anyone in this household who previously served on active duty (Do not include those currently serving)?

Exhibit 3: Experiment on Opening Question(s)

2.3 Mailings and Length of Field Period

One concern with a two-phase mail study is that the data collection might take too long. This section gives some information about the mailings and the field period. For the screener phase, we followed the total design method (Dillman, et al., 2009) and made multiple contact attempts. First, a pre-notification letter was mailed to the address to alert household members of the survey. A week later, the initial screener package was mailed. As described in Section 2.2.1, this contact experimented with two modes to promote initial response – a paper questionnaire or a letter specifying the Web link to the screener. A week following the initial screener mailing, a postcard was sent to thank the households for their response or to remind them to complete the questionnaire. If the household did not complete the screener three weeks after the initial screener package was sent, then another mailing package containing a cover letter and a paper screener was sent to the address as the final screener attempt.

Since the screener response arrived gradually throughout a period of time, it was important to time the extended mailings accordingly. We used a “cohort” strategy. Six cohorts were formed based on the date that the screener questionnaire was received, and the initial extended questionnaire was sent (via either mail or email) by cohort with a one-week gap between each cohort. A similar approach was used for the follow-up attempts at the extended phase.

The NSV pilot study was fielded in April 2009. The entire data collection period, including the screener phase and the extended phase, lasted approximately five months with a one-month overlap between the two phases.

3. Response Rates and Effective Coverage of Veterans

In this section we evaluate the successfulness of the two-phase design by examining two measures – response rate and effective coverage rate. In the first phase, response rate measures how well the general population (including Veteran households and non-Veteran households) responded to the screener. Although non-Veteran households were not the target population, their early response would help save the costs associated with

screeener follow-up mailings. At the same time, the NSV aimed to generate estimates regarding Veterans, so we used a measure called “effective coverage rate” to assess how well the survey reached the Veteran population and its subgroups in both phases of data collection.

3.1 Screener Response Rates

The overall weighted response rate for the screener phase is 31.3 percent. In order to identify the optimum data collection approach, we compared the response rates across different experimental conditions. Overall, the mode of the initial attempt (Web or paper) had a significant impact on the response propensities of general households. Table 1 shows that the paper group led the Web group by 6.7 percentage points in response rate. Besides the fact that not every household had access to a computer or Internet, some households might find it more convenient to complete a five-minute questionnaire on paper than on the Web. As described in Section 2.2.1, the mode treatment applied only to the initial attempt. For both treatment groups, a paper questionnaire was provided in the follow-up mailing (with the Web option mentioned in the cover letter for the Web group). Although the Web treatment group was given the opportunity to respond on paper in the follow-up attempt, its final response rate was still lower than the group that was initially assigned for the paper mode.

The main effect of the insert or the Active Duty question is not listed in Table 1 because neither condition had a significant impact on response rate. However, we can see some interaction effects by breaking out the paper group on the treatments of the insert and the Active Duty question. Table 1 indicates that among the paper mode, the insert did not affect the response rate among general households, but the Active Duty question had a significant positive impact on response rate.

Table 1: Screener Response Rates by Experiment Conditions

<i>Experiment conditions</i>	<i>Deliverable addresses</i>	<i>Weighted response rate</i>	<i>P-value for comparison</i>
Paper group	4,966	34.6%	<0.0001
Web group	4,911	27.9%	
Among paper mode group			
With an insert	2,500	34.9%	0.67
Without an insert	2,466	34.3%	
With Active Duty question	2,473	36.3%	0.02
Without Active Duty question	2,493	32.9%	

3.2 Screener Effective Coverage Rates

To measure how well the screener reached the Veteran population, we used effective coverage rates – the weighted estimate of the number of Veterans that were enumerated on the screener divided by the number of Veterans in the population according to the projections in the VetPop2007 database developed by the VA. At the screener level, the counts in Table 2 are actually for Veteran households. Since the average number of Veterans in a Veteran household is 1.05, using these counts gave us reasonable approximations of the effective coverage rates of the Veteran population. Table 2 shows that the paper mode resulted in much better coverage of Veterans, leading the Web mode by 13 percentage points. Among the paper group, those with an insert covered Veterans at a higher rate than those without an insert. The Active Duty question did not significantly improve the effective coverage rate of Veterans.

Table 2: Screener Effective Coverage Rates by Experiment Conditions

<i>Experiment conditions</i>	<i>Responding veteran households</i>	<i>Approximate effective coverage rate</i>	<i>P-value for comparison</i>
Paper group	1,011	59.60%	<0.0001
Web group	838	46.50%	
Among paper group			
With an insert	530	66.10%	0.01
Without an insert	481	53.10%	
With Active Duty question	515	62.40%	0.17
Without Active Duty question	496	56.80%	

3.3 Challenges in Reaching Some Veteran Subgroups

Since the NSV targets for Veterans, effective coverage rate is a more comprehensive measure when evaluating the screener results. The comparisons in Sections 3.1 and 3.2 indicate that the paper mode with an insert was the best approach to screen for Veterans. In this section we focus on this best scenario and examine how the survey covered some subgroups of Veterans.

Table 3 shows the screener effective coverage rates and extended response rates for the entire Veteran population as well as selected subgroups defined by demographics and service periods. The product of the screener effective coverage rate and the extended response rate can be a good approximation of the combined effective coverage rate across both phases. The overall effective coverage rate of Veterans across the two phases is approximately 43.4 percent, which is considered reasonably successful. However, several subgroups were under-represented in the screener phase, including younger age (18-30 and 31-54) Veterans, female Veterans, minority (Hispanic and Non-Hispanic blacks) Veterans, and the Veterans who served in the Gulf War period. Once identified via the screener, these subgroups were also less likely to complete the extended survey. Although the estimates for some subgroups are unstable due to small sample sizes, the results serve as preliminary indication of the challenges in reaching some Veteran subgroups.

Table 3: Results of Yield in the Best Scenario Design (Paper Mode with an Insert)

	<i>Screener effective coverage rate</i>	<i>95% Confidence interval for effective coverage rate</i>	<i>Extended weighted response rate</i>
Overall	66.10%	(59.3, 72.9)	65.60%
Female	57.20%	(32.7, 81.7)	55.10%
18-30 years old	35.60%	(12.5, 58.6)	38.40%
31-54 years old	44.70%	(33.3, 56.1)	49.90%
Hispanic	54.30%	(26.2, 82.4)	32.80%
Non-Hispanic Black	45.50%	(26.9, 64.1)	53.30%
Gulf War period	40.60%	(29.1, 52.2)	40.80%

4. Conclusions

In summary, the NSV pilot study provided some evidence for the successfulness of surveying a specific subpopulation, Veterans, via a two-phase ABS design with separate

screening and extended questionnaires. This paper focused on the general procedures of the two-phase approach, so it did not cover the details of two other design features. The first is the statistical aspect of the sample design – how we matched the ABS sample with the VA’s administrative files to form the final frame file that allowed stratification and oversampling of the addresses with higher expected prevalence of Veterans. The other design feature is the mode choice for the extended interview. Both topics may deserve further research in the future.

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