

# EFFECTS OF SURVEY MODE AND ADVANCE LETTERS ON CONTACT AND INTERVIEW COMPLETION RATES FOR POPULATION-BASED SURVEYS OF WOMEN

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## Abstract:

We evaluated the effects of mode of interview (telephone versus in-person) and type of initial contact (advance letter versus no letter) on our ability to contact and obtain interviews from women age 40 and older who were randomly selected from a listing of licensed drivers. Contact rates were 63 percent for the in-person interview and 52 percent for the telephone interview. Among contacted women, the interview completion rate was not associated with survey mode, initial contact, or age, and was 75 percent overall. Because of the lower contact rates, the telephone survey was less satisfactory and sending an advance letter was not effective in increasing interview completion rates.

## 1 Introduction

Response rates for population-based surveys have decreased over time (Olson et al., 1992). There are numerous ways in which response rate can be defined, but in general, it reflects both the ability to contact individuals as well as the willingness of those contacted to complete an interview.

A variety of sources have been used to identify and contact subjects for population surveys. These include random digit telephone numbers (Hartge et al., 1984; Psaty et al., 1991), maps of geographic areas (Kish, 1965), and rosters, such as driver's license lists (Lynch et al., 1994), telemarketing lists (Psaty et al., 1991) or lists of Medicare recipients (for persons age 65 or older) (Hatten, 1980), among others. Rosters have the advantages of providing a sampling frame and allowing for the possibility of sending a letter to alert potential respondents that they will be contacted in the near future. Available

frames may have deficiencies, such as ineligible listings, duplicate listings, or non-coverage (Lepkoski, 1988). These deficiencies may increase the cost of the survey (Lepkoski, 1988), or they may introduce bias into the survey (Dillman et al., 1976). Even if a complete frame is available, bias can also be introduced by the inability to contact selected individuals or from their unwillingness to participate.

Some research has suggested that response rates are higher for in-person than telephone surveys (Groves and Lyberg, 1988; Leeuw and van der Zouwen, 1988), particularly among the elderly (Herzog et al., 1983). This difference has been attributed in part to greater difficulty contacting individuals by telephone and by more refusals among those contacted (Colins et al., 1988). Among eligible persons who have been contacted, some research has indicated that interview completion rates are higher when a potential respondent was sent a letter prior to contact by an interviewer (Dillman et al., 1976; Groves and Lepkowski, 1986; Smith et al., 1995).

In this study, we focused on population-based telephone and in-person interviews for a women's health survey. We made use of a readily available, inexpensive, sampling frame, a state's listing of licensed drivers. The effects of mode of interview (telephone versus in-person) on both contact and interview completion rates were evaluated, as well as the effects of an advance letter on interview completion rates.

## 2 Materials and Methods

The target population was women age 40 or older who were permanent residents of Lee County, Florida. Our sampling frame was a listing of 101,555 women age 40 or older who had Florida driver licenses with Lee County addresses. The list was obtained from the Florida State Department of Transportation in December, 1995 and contained the name, address, and year of birth of each woman.

Our study used a 2 X 2 factorial design. The two

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factors were mode of interview (telephone versus in-person) and type of initial contact with respondent (a letter sent in advance of contact by an interviewer versus no advance letter). Using the sampling frame, 800 women were randomly selected and assigned to one of the four experimental conditions; 200 women were randomized to each condition.

Local telephone directories and directory assistance were used to locate telephone numbers of women randomized to the telephone survey. Women randomized to the two groups receiving initial contact through the mail were sent a letter one week prior to attempted contact by an interviewer. The letter was sent on University letterhead, was addressed to each woman personally, and was signed by both the Principal Investigator and the Director of our local evaluation office. If the address was not correct, we asked that the letter not be forwarded. Briefly, the letter contained the following information: the woman would be contacted by a female interviewer within a week's time, the purpose of the survey and who was conducting it, how her name was obtained, the importance of her participation, assurance of confidentiality, and telephone numbers to call if she had questions or concerns.

Five trained female interviewers administered the questionnaire from March through June of 1996. To equalize potential effects of interviewers on contact and interview completion rates, each was randomly assigned respondents from all experimental conditions. For the telephone survey, they were instructed to make five attempts to contact a respondent before giving up; one call was to be made in the daytime during the week, and other calls could be made in the evenings or weekends. For the in-person survey, each interviewer was instructed to make four attempts to contact a respondent before giving up. Rules for when to make contact attempts were the same as those that applied for the telephone survey, unless a neighbor, postman, or someone else in the neighborhood indicated when persons in a particular household were likely to be home. Interviewers did not refer to the advance letter if one had been sent.

For each woman in our sample, detailed records about contact attempts and results were kept. Women who agreed to be interviewed were asked about their breast screening behavior and their exposure to potential risk factors for breast cancer. The interview took approximately 20 minutes to complete.

For each survey mode, the contact rate was calculated as the proportion of women in the sample who were contacted. For each experimental condi-

tion, the interview completion rate was calculated as the proportion of contacted women (excluding those not eligible, disabled, or non-English speaking) who were interviewed. The effects of survey mode and age group (40–49, 50–64, 65–75,  $\geq 75$ ) on contact rates and the effects of survey mode, advance letter, and age group on interview completion rates were investigated using chi square analyses. Logistic regression was used to examine the joint effects of the variables on contact and interview completion rates.

### 3 Results

Contact rate was associated with survey mode; 52 percent of the women in the telephone group were contacted compared to 63 percent in the in-person group ( $p < 0.0001$ ). The most common reason for not being able to contact women was that the correct phone number or address could not be obtained. Frequencies of reasons for being unable to contact women are detailed in Table I for each survey mode. Contact rate also was associated with age group. The percentage of women contacted by age group were: 43 percent for ages 40 to 49, 56 percent for ages 50 to 64, 68 percent for ages 65 to 74, and 60 percent of ages 75 or older ( $p < 0.0001$ ). Logistic regression analyses indicated that there were interactions between survey mode and age group, which was explained largely by difficulty in contacting women of ages 40 to 49 by telephone; in this age group, the contact rates were 28 percent for the telephone mode and 57 percent for the in-person mode.

Among contacted, eligible women, interview completion rates were not associated with survey mode or advance letter. The percent interviewed were: 71 percent (telephone survey, no advance letter), 73 percent (telephone survey, advance letter), 77 percent (in-person survey, no advance letter), and 77 percent (in-person survey, advance letter) ( $p = 0.68$ ). Interview completion rates were not associated with age group ( $p = 0.25$ ). Logistic regression indicated no significant interactions between survey mode, advance letter, and age group. Most of the non-interviews were the result of refusals. One woman who received an advance letter contacted us to refuse; all others refused when contacted by the interviewer. Frequencies of reasons for being unable to interview contacted women, by survey mode, are detailed in Table II. Although few women terminated an interview before it was completed, twice as many did so during a telephone interview.

Among women who could not be contacted, the median number of contact attempts to reach a final disposition for the telephone survey was 0 (range 0–

Table 1: Frequency of contact or non-contact of women, and reasons for not contacting them, by survey mode

	Survey Mode	
	Telephone <i>n</i> = 400	In-person <i>n</i> = 400
Unable to get correct phone number or address	186 (47%)	116 (29%)
Phone number not listed	105	
Phone number not in service	17	
Phone number not released	45	
Address no longer exists		33
Address not available	1	5
Wrong number or address	18	78
No answer or no access	7 (2%)	33 (8%)
Interviewer felt threatened		1
No access to address		6
No answer	7	26
Contacted	207 (52%)	251 (63%)

10); for 78 percent of respondents, no attempts were made because we were unable to find a telephone number to try. Similarly, for the in-person survey, the median was 2 (range 0 - 9); for 11 percent of respondents, no attempts were made because either the address did not exist or was not available (for example, only a post office box was provided). Among women who could be contacted for the telephone survey, the median number of contact attempts required to reach a final disposition was 2 (range 1-11); for the in-person survey, the median was 2 (range 1-9).

#### 4 Discussion

Response rates have generally been found to be higher for in-person surveys and our findings are consistent with these earlier studies. As in previous investigations, it was more difficult to contact women by telephone. However, once we contacted an eligible respondent, neither survey mode nor use of an advance letter affected interview completion rates.

We experienced some problems contacting women both by telephone and in-person, although greater difficulties were encountered for the telephone mode. There are a variety of reasons that might account for our findings, which may relate to deficiencies in the sampling frame. One explanation is that our sampling frame, the listing of licensed drivers, was outdated because women moved but did not change the address on their driver's license. Women who had moved out of the County were no longer eli-

gible. Women who had moved but stayed within the County were eligible, but since the frame did not have the current address, it essentially had non-coverage of these women. The observations that some addresses no longer existed and some telephone numbers and addresses were incorrect suggest that these deficiencies were likely. Census figures indicate that in 1990, only 40.8 percent of resident in Lee County, Florida lived at the same address as in 1985 (U.S. Department of Commerce, 1990). Furthermore, Florida drivers are only required to update their registration every six years. Anecdotally, two of our five interviewers did not have their current address on their license.

Another limitation of the listing of licensed drivers as a sampling frame for telephone surveys is that a telephone number is not provided on the frame. It is likely more difficult to obtain a telephone number for a woman than it is for a man from a telephone directory. If a woman's telephone number was not listed under her last name, or if an address was not provided, we would not have been able to contact her.

While it was more difficult to obtain a correct phone number than a correct address, it was much cheaper and easier to make call backs by telephone than to send an interviewer back to an address; the number of women assigned to the in-person mode who were not contacted because someone never answered their door was greater than the number of women assigned to the telephone mode who were not contacted because someone never answered their telephone. As more gated communities are built, not

Table 2: Frequency of completed interview or non-interview, and reasons for non-interview, by experimental condition

Mode	Phone	Phone	In-person	In-person
Advance letter	No	Yes	No	Yes
	<i>n</i> = 97	<i>n</i> = 110	<i>n</i> = 125	<i>n</i> = 126
Non-interviews				
Not eligible	7	4	9	12
Disabled or non-English	0	2	1	1
Not available	1	2	4	1
Refused	21	20	20	22
Partial interview	4	6	2	3
Completed interview	64 (71%)	76 (73%)	89 (77%)	87 (77%)

having access to households will become a greater problem.

For women assigned to the telephone mode but for whom we were unable to find a current telephone number, we did not attempt to contact them by letter, requesting that they provide us with their telephone number if they were willing to participate in the survey. Similarly, for women assigned to the in-person mode, but for whom we were unable to find a current address or gain access to their address, we did not attempt to contact them by letter (or telephone), requesting that they provide us with their current address if they were willing to participate. We likely would have had greater success in contacting women if we had done so. However, we did not pursue these more time-consuming methods because they would not be feasible in the large, population-based, interviewer-administered surveys for which we were interested in testing appropriate methods.

While some researchers have found an increase in interview completion rates in the range of 5 percent to 16 percent through use of an advance letter, we found no increase. Advance letters can improve response rates by legitimizing surveys; however, reluctant respondents can be prepared with a firm refusal when forewarned that they will be contacted (Groves and Lyberg, 1988; Dillman, 1978; Collins et al., 1988). One difference between our study and earlier studies which have looked at effects of advance letters on interview completion rates (Dillman et al., 1976; Groves and Lepkowski, 1986) is that these earlier studies used listings from current telephone directories. Their contact rates were substantially higher than ours, approximately 88 percent. We cannot determine whether contacted and non-contacted women differed with respect to effects of advance letters. If women who are more difficult to contact are less likely to be persuaded by an advance

letter to complete an interview, this could account for some of the differences in our findings.

We concluded that the telephone survey was the less satisfactory survey mode because of the larger numbers of women who could not be contacted. Because interview completion rates were similar regardless of whether an advance letter was sent to the woman, it was not worth the expense to send one.

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