Evaluating Methodologies to Increase Internet Responses in Mixed-Mode Surveys

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Introduction

Approaches to collect survey data have been changing over the past few years. Prior to 1999, many surveys were conducted by telephone, with little use of the Internet. Since that time there has been increasing availability of Internet access. The most recent data show that 77% of the population from North American are Internet users, 83% of households in the Netherlands have Internet access (Bethlehem, 2010), and overall there is a 58% Internet penetration in Europe (World Internet Usage Statistics, 2011). Given the increasing access to the Internet, using the Internet to conduct surveys has become quite attractive as a tool for collecting survey data in the United States and in other countries.

A second change, particularly in the United States, is the decreasing number of landline telephones (Bandwidth Report, 2011). For many decades landline telephones have been very popular to collect survey data. The reason landline telephones are decreasing is due to the increasing use of mobile telephones in households. In the most recent United States study monitoring telephone usage, 26.6% of American households had only wireless telephones. This represents an eightfold increase in six years and moreover, users of mobile phones are not representative of the general population (Blumberg, et.al; 2011). Therefore, if telephones are to continue to be a valid approach for collecting survey data, dual frames need to be considered to include individuals with landlines and those with mobile phones. However, conducting surveys using mobile telephones introduces other challenges in survey research.

Web surveys can be delivered rather quickly to a large group of individuals (Couper 2000). However, since

not all households have access to the Internet, all individuals in the population do not have the opportunity to participate in the study and this creates undercoverage issues.

Mixed-mode surveys have been introduced as a method of capturing the benefits of the Internet but incorporating frames that are more inclusive of the population (Dillman, 2000; Kaplowitz et. al., 2005; Jackle et.al, 2010). In these studies, individuals may have the opportunity to respond to the survey by a different mode. Given the cost advantages of using the Internet, it is important in mixed-mode surveys to encourage individuals to complete the survey by Internet. Holmberg, et.al. (2009) found an increase in responses using the Internet if the introduction of an alternative paper questionnaire for completing the survey was delayed.

We discuss four experiments that we conducted in general population surveys of a random sample of Oregon residents to ask their opinions on a number of issues. In the experiments, we tested methods aimed at obtaining more responses by Internet. Three of the surveys focused on topics related to transportation in Oregon. Another survey asked questions regarding invasive species in Oregon. We evaluate response rates and approaches used to assess their influence on the fraction of responses by Internet.

Methods

Four experiments were conducted in general population surveys in Oregon from 2007-2010 by the Oregon State University Survey Research Center (OSU-SRC). In all the experiments, randomized split samples were assigned to different modes. The objective of these experiments was to compare response rates across different modes of data collection. The modes of data collection included telephone, mail, and mixed-mode methods. The mixed-mode refers to a combination of Internet (i.e., web) and mail.

Two studies were conducted in 2007 and 2008 to compare telephone, mail, and a web-followed by-mail approach (web-mail). Random digit dialing was used to obtain a probability sample of landlines in Oregon. For the mail mode and web-mail approach, all contacts were made by mail, using mailing addresses obtained from the US Postal Service (USPS) through the Marketing Systems Group, Ft. Washington, PA, USA. The addresses of households were obtained using the delivery sequence file (DSF) which is a computerized file that contains all delivery point addresses serviced by the USPS. No email addresses were used, since a list of email addresses is not available to provide full coverage of households in the U.S. Up to four contacts were used in the mail and web-mail modes. A preletter was sent to introduce the upcoming surveys. The second mailing sent to the mail mode households included a cover letter and a printed copy of the questionnaire. For the web-mail approach, a letter was sent to selected households which requested that the questionnaire be completed online. A pin number was provided to permit access to the questionnaire on the web. The use of the pin number ensured that only one questionnaire could be completed per household. The third mailing was a thank you and reminder post card. The final mailing sent to nonrespondents in both the mail and web-mail groups included a cover letter and a paper version of the questionnaire. The cover letter for the web-mail sample again included the information about how to access the questionnaire on the web.

Another study was conducted in 2008 comparing a mail survey with a web-mail survey. This study did not include a telephone mode. In 2010 we conducted a survey that included an experiment comparing mail, web-mail, and a web-mail-option collection mode. The web-mail option gave an option to the selected participant of either completing the questionnaire by mail or by web. Printed copies of the questionnaire were provided in each mailing, along with information about how to access the web and complete the

questionnaire online.

In order to evaluate methods to improve response rates by the Internet, the two 2008 experiments discussed above investigated whether additional instructions about accessing the web would increase response rates. In addition to a cover letter, a small card was included that outlined steps on how to access the location of the survey as well as the initial steps necessary to access the questionnaire. The 2007 experiment also investigated whether the type of cover letter changed response rates.

Results

For the 2007 study, different preletters were used in the cover letters sent with the mail and web-mail groups (Lesser and Newton 2007). One half of the contacts received a preletter from the sponsor while the other half received a preletter from the OSU-SRC. All subsequent contacts to the selected respondent used the OSU-SRC as the return address. Adjusted response rates were computed after the undeliverables (those that were deceased or moved out of state) were removed. The telephone response rate (RR3) was computed using the American Association of Public Opinion Research codes. The response rates for telephone, mail, and web-mail were 30%, 32%, and 22%, respectively. The mail and web-mail response rates given here are averaged across the two types of preletters. For both modes of delivery, there was approximately a 4% increase in response rates when the preletter originated from the sponsor, rather than from the OSU-SRC.

In the two 2008 studies, we examined the influence on response rates of the amount of information supplied about accessing the questionnaire on the web. The web-mail groups in each year were randomly split into two groups; the impact of additional instructions sent to the selected individuals is summarized in Table 1. For both studies, providing additional information decreased response rates as compared to just providing a few simple statements in the cover letter.

Table 1: Survey Response Rates Investigating Impact of Level of Instructions Provided to Access a Web Survey.

Mode	Study 1	Study 2
Mail	35.5%	30.8%
Web-Mail		
Detailed instructions	22.8%	20.3%
Minimal instructions	28.5%	25.2%
Telephone	31.4%	-

In 2010, providing an option to complete the questionnaire either on the web or by mail increased the response rate as compared to offering only the web option initially and then offering both web and paper versions. However, the number of individuals responding using the web was much lower when individuals were given only that option. Comparisons of the responses in this survey between modes, and differences in item nonresponse will be discussed.

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RÉSUMÉ (ABSTRACT)

Internet penetration is increasing worldwide. Currently nearly 80% of North Americans use the Internet. To gather information about a large population, it is becoming increasingly attractive to use the Internet as a method of data collection. A number of national surveys conducted in the United States, such as the Behavioral Risk Factor Surveillance Survey (BRFSS), traditionally have used the telephone as the data collection methodology. However many national surveys, such as BRFSS), have explored the Internet as an option to collect probability data in the United States and elsewhere; e.g. Jackle et.al. (2010) discuss the use of Internet data collection for the European Social Survey. With the increasing use of the Internet to collect survey data, it is important to compare data collected by traditional methods with data collected using the Internet. Bethlehem (2010) describes some methodological problems associated with Internet surveys. Studies to investigate strategies that maximize response rates but do not

introduce additional bias from Internet responses are particularly necessary. A series of experiments were conducted in probability-based surveys in Oregon from 2007 through 2010 to identify features that improved response rates using the Internet. Responses to questions, and the demographics of individuals who chose to response by the Internet, are compared to data collected by the more traditional approaches. Factors that were investigated in these studies included the level of detail to include in the instructions on gaining Internet access to the questionnaire and whether providing a choice of using the Internet or forcing a respondent to complete the questionnaire by Internet provided higher response rates. Finally, response rates with a varying number of contacts are assessed.