

Changes in Internet Participation for Mixed-Mode Surveys over Time

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Abstract

Worldwide, Internet connection has increased dramatically in the past 20 years. Estimates show it was less than 1% in 1995 and now is estimated around 40%. In 2014, nearly 87% of the population use the Internet in the United States. Survey researchers are enthusiastic to take advantage of this high percent of Internet use in the population as a method to obtain opinions from surveys. However, there are drawbacks to use the Internet solely for data collection, particularly for surveys of the general population. Although a high percent of the population use the Internet, the ability to select a random sample of all Internet users is not feasible. Since there are no complete frames of all Internet users, individuals must be contacted by other modes and asked to complete a survey online. However, the demographics of individuals in the general population using the Internet have different characteristics than those individuals that do not use the Internet. A series of experiments were conducted in probability-based surveys of the general population of Oregon households from 2006 through 2014. Demographics of the individuals that completed the survey by the Internet, mail and telephone are compared to the general population demographics. Our interest was to determine whether or not participation in surveys by the Internet is increasing. In addition, it is of interest to compare whether or not the demographics of the completed sample by different modes has changed over time. We also discuss whether or not any additional features we examined in these experiments, such as the use of color in the paper questionnaires, size of envelope used in the mailings, and content of the cover letter improved response rates by Internet.

Keywords: response rates, coverage error

Introduction

Internet usage worldwide is increasing. Worldwide approximately 42% have Internet access. In the United States (US), the Census Bureau has asked questions in the Current Population Survey (CPS) about computer use since 1984 and questions about Internet access since 1997 (US Census Report, 2012). The CPS is based on a sample of approximately 60,000 eligible households. These data provide temporal estimates but it is also of interest to determine whether or not Internet usage is also expanding to demographic subgroups that traditionally were not Internet users. This required larger samples and thus in 2013, the American Community Survey (ACS) included questions on computer and Internet usage providing estimates at more detailed levels of geography (File and Ryan, 2014). Computer and Internet data from the ACS is based on a sample of approximately 3.5 million addresses for all geographies with populations larger than 65,000 people. In 2013, 74.4 percent of all households reported Internet use. The ACS data showed that Internet use is highest among the young, Whites or Asians, the affluent, and the highly educated.

In addition to surveys determining Internet use in US households, the Pew Research Institute had tracked Internet usage among individuals since 1995 (Pew Research Center, 2104). In their surveys of adults 18 and over, Pew Research Center state that 87% of American adults now use the Internet. Dramatic growth occurred between 1995, when Internet usage was just 14%, to 2005, when Internet usage increased to 66%. The Pew Research Center also showed similar demographic subgroups as indicated by the ACS data that households with high income, the young and those with college degrees were more likely to use the Internet.

Surveys using the Internet to obtain opinions are attractive due to the speed of data collection, reduced printing and postage costs, and reduced time for data entry (Dillman et al., 2009; Lesser and Newton, 2007; Lesser et al., 2011). However, as the data from the ACS and Pew Research Center show, there are differences in demographics for Internet and non-Internet users in the US. This suggests that for general population surveys, if mechanisms were available to contact those individuals using the Internet, the data collected that use the Internet as the only mode to collect survey data may not reflect an accurate snapshot of US demographics.

One approach adopted in the current research is to obtain a random sample of household addresses and use multi-mode surveys to collect survey data (Dillman, 2014; Lesser et al., 2011). For example, one approach is a Web+Mail mode. In this approach, a random sample of individuals are first asked to complete the survey using the Internet and follow-up contacts to nonrespondents, including those without Internet access, are sent printed copies of the questionnaire by mail. The multi-mode approach gains the benefits of using the Internet to obtain data less expensively, but also deals with the undercoverage issues associated with using the only-Internet method by offering another mode for data collection.

We discuss a study that has been conducted biennially in Oregon from 2006. Five surveys were conducted selecting a random sample of Oregon households. In these experiments, we tested multi-mode and single mode methods of data collection each year. We evaluate response rates and how the Internet responses have

changed over time. We also evaluate how the demographics of the completed sample across modes change over time.

Methods

A survey of the general population of Oregon households was conducted in 2006, 2008, 2010, 2012 and 2014. These studies were all managed by the Oregon State University Survey Research Center (OSU-SRC). A similar 12-page questionnaire was used each year, attempting to use a core set of questions that were identical over the years. For each year, an experiment was nested in the study to compare the impact of using different modes of data collection on results. In each year, a mixed mode (Web+Mail) and single mode (All Mail) were used. The Web+Mail mode asked households in the selected sample to initially complete the survey online if possible. All nonrespondents in both modes received a printed version of the questionnaire in the follow-up contacts. In earlier years of the studies (2006 and 2008), the telephone, using random digit dialing, was also used. In addition, for each year additional experiments were nested in the Web+Mail mode in order to investigate if other slight changes to the delivery mode would improve responses by the Internet. This included changes to the text of the cover letters, the use of color on the paper questionnaire, and the size of the envelopes used to mail the questionnaire.

In order to access a household for the All Mail and Web+Mail approaches, all contacts were made by mail. The mailing addresses were obtained from the US Postal Service (USPS) through the Marketing Systems Group, headquartered in Horsham, PA, USA. The household addresses were obtained using the delivery sequence file (DSF). This is a computerized file that contains all delivery point addresses serviced by the USPS. This provides a fairly complete frame of household addresses in the US. The sequence of contacts first included a preletter sent to notify the selected individuals in the sample about the upcoming surveys. The second mailing sent to the All Mail mode households included a cover letter, a printed copy of the questionnaire and postage-paid return envelope. The cover letter explained how the household was selected, the importance of completing the survey, statements to assure confidentiality and contact information for any individuals that may have questions. For the letter sent to selected households in the Web+Mail group, additional information was given asking the individual to complete the questionnaire online. An entry code was provided which ensured that only one questionnaire could be completed per household on the Internet. A thank you post card was sent to all individual approximately 7-10 days after the first mailing. An additional mailing was sent to all nonrespondents. This mailing included a cover letter, a printed version of the questionnaire, and a return postage-paid envelope.

Response rates and the percent of respondents that completed the survey online over time were examined. The demographics of the completed sample for each mode of delivery were compared with the population demographics obtained for that year. We were interested to determine whether or not the demographics of individuals completing the questionnaire changed over time. Additional comparisons that investigated a number of other factors to determine what might improve Internet responses to this survey will also be discussed.

Results

Table 1 summarizes response rates for each year for the All Mail and Web+Mail modes. For this table, we present a simple comparison of only the two modes of delivery, while keeping all other factors between the two modes identical. For all years of the study, the mode using All Mail contacts provided a higher response rate than the mixed mode, Web+Mail, method. In both modes, more recent years of data collection show lower response rates. Over time, the response rates between the two modes were more similar. In 2006, the difference in response rates between the two modes was 10% but was only 5% in 2014.

Table 1: Survey Response Rates for the All Mail and Web+Mail modes across time.

<u>Mode</u>	<u>All Mail</u>	<u>Web+Mail</u>
2006	30%	20%
2008	33%	23%
2010	38%	28%
2012	31%	23%
2014	24%	19%

In 2006, 25% of the completed questionnaires in the Web+Mail mode were completed online. Internet completions for this survey increased over time. In 2014, 36% of the respondents who completed the questionnaire used the Internet. Gender, percent of employed respondents, percent of income over \$50,000, average age, and percent of respondents with a four-year college degree were compared with the population demographics for each year. Over the course of the five years that the survey was repeated, we found a higher proportion of males completing the survey online. In addition, individuals completing the survey online were more likely to be employed, have higher incomes, have a higher number with a four-year college degree, and were younger than those completing the survey by paper. However, we did notice changes in percents of these demographic variables over time that will be presented.

Conclusions

There are an increasing number of Internet users. To conduct any probability based survey of the general population using the Internet, it is important to understand response rates by Internet from the general population. It is also important to understand the demographics of the individuals responding to surveys by Internet. Our research shows demographic changes of survey participants to mail and Internet surveys from 2006 to 2014.

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