

Mixed Mode Surveys in a Changing Society: The Impact of Internet and Mobile Phones

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Abstract

In this lecture I review recent trends in data collection methods for sample surveys, with an emphasis on combining data collection methods in a mixed-mode design. Special attention is paid to web surveys and mixes of traditional data collection methods with online surveys.

Keywords: combining data collection methods, web survey, mobile phone, coverage error, measurement error

1 Introduction

In the past 15 years, major changes in technology have changed the way data are collected for sample surveys. One major technological change was the rapid growth of the Internet and the availability of Internet access at home. The second change was the increase in mobile phone use and the decrease of landline telephones. This forced survey researchers to adapt their data collection methods, and mixed mode surveys in which several survey methods are used in combination are the trend now (Couper, 2011). Mixed-mode surveys are seen as a promising approach to increase response rates and improve coverage at affordable costs (De Leeuw, 2005)

2 Telephone Surveys and Technological Changes

In the 1990's telephone surveys were the main mode of data collection in market research in the USA and Europe and also at statistical agencies and universities in scarcely populated countries such as Canada, Sweden, and Finland. Increasing nonresponse and increasing penetration of mobile phones at the costs of fixed landline telephone connections challenges the validity of this data collection method. For instance, both in Finland almost the total population can in principle be reached by telephone, but nearly half of the population can be reached by mobile phone only and not by landline. Other countries (e.g., Hungary) have a low overall telephone penetration. For a detailed overview of the development of landline and mobile phone coverage in Europe and its impact on coverage bias, see Mohorko et al (2013a). In order to reach respondents it becomes more and more necessary to include mobile phones in a telephone survey; furthermore, for countries with a low overall coverage (landline + mobile) complementing a telephone survey with another data collection method is imperative. Reducing nonresponse is another important reason for using a multiple mode design (Tucker and Lepkowski, 2008).

3 Internet Surveys

Internet or web surveys have vastly been gaining popularity in the 21-th century (Couper 2008). Most surveys in market research around the world changed from telephone to Internet panels. At universities data collection for large scale quantitative surveys, is being done more and more using the Internet, and statistical offices are now experimenting with online surveys. This increasing popularity is partly due to the low costs per completed interview and partly due to the availability of user-friendly and affordable software for implementing web surveys.

But, Internet surveys have problems too. Among these are coverage problems (not everyone has an Internet collection) and the associated digital divide, the difference between those with and without Internet (e.g., in age, and education). For a detailed overview of the development of Internet coverage in Europe and its impact on coverage bias and the digital divide, see Mohorko et al (2013b). Other problems associated with Internet surveys are the availability of adequate sampling frames and the high nonresponse on web invitations. Again a potential solution for these problems is using a multiple (mixed) mode approach (de Leeuw, 2005).

4 Combining Data Collection Methods in a Mixed Mode Design

In a mixed-mode survey several quantitative data collection methods (e.g., a telephone interview and web survey) are combined into one survey. For instance, nonrespondents on a web survey are contacted by an interviewer in a later stage, or elderly respondents are offered a paper mail questionnaire in stead of an online survey. Mixed mode survey designs are attractive, because they are cost effective and because they can be successful in reaching different kinds of respondents (de Leeuw, 2005). As a result, they have the potential to decrease both coverage and nonresponse errors, thereby increasing the representativeness of the final (combined) sample at affordable costs (Couper, 2011).

However, a combination of different modes in one survey, be it cross-sectional or longitudinal, can come at the cost of measurement errors (de Leeuw, 2005). An important distinction is in measurement errors caused by the design and implementation of the survey and in mode inherent errors (Dillman and Christian, 2005). The former can be prevented; for instance, in the design phase survey questions are sometimes constructed differently for each mode (e.g., offering do-not-know in one mode but not in another). As a result respondents in particular modes are presented with different question formats, which will produce differences in responses. To avoid these question-format mode effects, Dillman (2007, chapter 6) advocates the uni(fied)mode design where equivalent questionnaires are developed for each mode in a mixed mode study. Mode effects can and should be reduced in the design phase as far as possible (see also De Leeuw, Hox, and Dillman, 2008 on designing for mixed-mode studies).

The remaining mode inherent effects, should be assessed and if possible corrected for (Van Nieuwenhuijze, Loosveldt and Molenberghs, 2014). These mode effects have been studied extensively for the traditional modes: face-to-face, telephone and self-administered (e.g., mail) surveys not involving Internet. Most of these studies investigate simple mode effects, such as, shifts in the response distributions of single questions, amount of missing data, or effects on sensitive questions. These studies typically find small differences, often indicating

a dichotomy between survey modes with and without an interviewer (De Leeuw, 1992; Groves, 1989). When web surveys are added to the comparison, they tend to behave as self-administered paper-and-pen surveys. For an overview of such studies we refer to De Leeuw and Hox (2011) and Tourangeau, Conrad and Couper (2013, chapter 7).

5 Concluding

Combining data collection methods for survey in a mixed-mode design has its advantages. It may reduce nonresponses when used in a sequential design, where the non-respondents in one mode are re-approached using a different mode. It also can reduce undercoverage error in web and telephone surveys. However, mixed-mode designs are not a cure for all and it needs careful implementation. Especially, questionnaire design and equivalent questions for the individual data collection methods is crucial in reducing measurement errors.

Society and its technologies will keep developing and with it the data collections methods used in surveys. For instance, the simple online surveys performed in the beginning of this century have evolved in flexible instruments, which make it possible to use far more complex questionnaires which approach the versatility of interviews and will improve the data of stand-alone web surveys and of mixes of web surveys and interview surveys. But, at the same time new technological developments will pose new challenges to survey methodologist (e.g., the use of smart phones for online surveys) and the variety of data collection methods and of combination of survey modes will continue to expand (cf. Couper, 2011)

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