

Q2008 special topic session - Quality indicators for measuring and enhancing the composition of survey response

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General summary of session:

Data that is missing due to nonresponse impose a serious threat to the quality of statistics that are based on both surveys and registers. In most cases nonresponse relates to demographic and socio-economic characteristics of the selected persons or enterprises and importantly also on the data collection process.

In recent years a growing focus can be observed in survey research on differentiated data collection protocols and responsive designs (Groves and Heeringa 2006). Such protocols and designs are differentiated with respect to frame data that are available beforehand and with respect to process data or paradata that are collected during data collection. The objective is to balance the composition of the response. Obviously, one needs quality indicators that relate to nonresponse bias and mean square error to find such a balance.

The theory of Deming (1986) about improving quality and productivity in industry is well-known. Many of his famous 14 points for management also apply to the production of statistical information. Quality must be built in at the design stage. Deming's points particularly apply to the data collection process. The response rate is often used as an indicator of survey quality. However, literature gives various examples where increased data collection efforts led to a higher response rate but also to a larger or comparable nonresponse bias.

Therefore, to assess the effects of nonresponse on the quality of statistics, other quality indicators are needed. These indicators should measure the degree to which the group of respondents of a survey or register still resembles the population.

First examples of such quality Indicators have emerged recently in survey research programmes and literature. These indicators may be used in several stages of the data collection process to improve the quality of the resulting statistics. They may also be used in responsive designs.

In the session we would like to present papers that show the state-of-the-art in survey research about quality indicators for survey nonresponse. The papers may discuss both the theoretical and the empirical properties of such indicators. Furthermore, papers may present results from investigations into differentiated data collection strategies.

Programme (total 90 minutes)

20 minutes	Enhancing response by differentiated data collection strategies Barry Schouten and Jelke Bethlehem (Statistics Netherlands)
20 minutes	Management tools for enhancing the composition of survey response Anne Sundvoll and Øyvind Kleven (Statistics Norway)
20 minutes	Use of process data to determine the number of call attempts in a telephone survey Annica Isaksson (Linköping University), Peter Lundquist (Statistics Sweden) and Daniel Thorburn (Stockholm University)
20 minutes	An Indicator of Nonresponse Bias Derived from Call-back Analysis Paul Biemer (RTI International and University of North Carolina)
10 minutes	Discussion

Abstracts of papers:

Enhancing response by differentiated data collection strategies

Barry Schouten and Jelke Bethlehem

Survey organisations have to make a steadily growing effort to achieve high response rates in household surveys. For this reason the question how to allocate fieldwork resources efficiently becomes more and more important. In nonresponse research and literature a growing interest for so-called responsive designs (Groves & Heeringa 2006) can be observed. Responsive designs are data collection strategies that adapt to the composition and speed of the response during the fieldwork of a survey. These dynamic designs learn from the response that is coming in during the fieldwork period. As a consequence they are especially interesting for surveys that are conducted for the first time or with a low frequency.

However, even for surveys that have a long history or that have a high frequency it is promising to make the data collection design dynamic and to differentiate data collection between different households. Three ingredients are needed: auxiliary information about the households, fieldwork strategies, and an optimisation criterion. With auxiliary information we mean household characteristics that are available from other sources than the survey itself, i.e. registers, administrative data and paradata collected during fieldwork. With fieldwork strategies we refer to incentives, pre-notification letters, timing and number of contact attempts, and so on. Finally, an optimization criterion is needed to allocate different fieldwork strategies to different households.

In the paper we discuss possible optimization criteria and illustrate their use with a practical example.

Management tools for enhancing the composition of survey response

Anne Sundvoll and Øyvind Kleven

In recent years there has been a growing focus on how to improve response rates, response bias and fieldwork costs during the fieldwork period. The electrification of the survey business provides the survey manager with more paradata than in the earlier years. The combination of administrative data and paradata gives the opportunity to monitor the data collection process and possibly intervene during the actual fieldwork to a great larger extent than earlier. It is vital that the survey organisation uses a standard set of quality indicators and that the output is presented in a quick and easily understandable form. In Statistics Norway we are in the process of developing a set of quality indicators as management tools for monitoring and intervening in the data collection. This paper presents some examples of management tools that can be used; the examples are from different interviewer administrated surveys conducted in recent years. Furthermore the paper also discusses the impact on using these management tools on survey errors.

Use of process data to determine the number of call attempts in a telephone survey

Annica Isaksson, Peter Lundquist and Daniel Thorburn

The choice of maximum number of call attempts to make in a telephone survey is important; a large number of call attempts makes the data collection costly and time-consuming; a small number of attempts decreases the response set from which conclusions are drawn. We present a strategy for choosing the number in an optimal way. The solution relies on models for various survey errors (the sampling error, measurement errors and errors due to nonresponse) as well as the costs of data collection. We apply our strategy to the Swedish Labour Force Survey. By use of process data, we estimate the bias and variance of a survey estimator as well as the cost for different numbers of call attempts. The estimates refer to the variable *monthly salary*, which is available from a register for all sampled individuals. Through comparisons of estimates of average salary based on the full sample (i.e. both respondents and non-respondents) and corresponding estimates based solely on the respondents, the non-response bias is estimated. We further investigate optimal numbers of call attempts for different subsets of the sample.

An Indicator of Nonresponse Bias Derived from Call-back Analysis

Paul Biemer

It is common practice in interview-assisted surveys to review call records and contract reports during data collection. This analysis helps the field director determine whether nonresponding units have received sufficient call attempts and whether call patterns appear to maximize the probabilities of contact and the overall response rate. "Responsive design" took this idea a step further by monitoring the levels of key statistics during data collection so that field resources can be redeployed in ways that also reduce nonresponse bias. This paper pursues the idea of modelling data on call-backs during data collection to reduce nonresponse bias. First, we review the latent call-back model used by Biemer and Link (2007) to adjust for survey estimates for nonignorable nonresponse. Using a similar model, we construct indicators of nonresponse bias appropriate for use during data collection. We show how these indicators can be used to guide the completion of the field work in ways that reduce nonresponse bias. Data from a large-scale national survey will be used to illustrate the essential ideas.