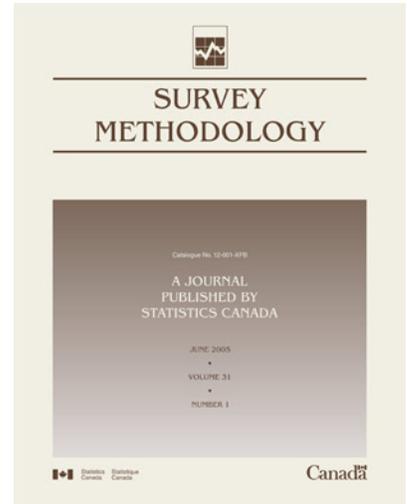




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# Survey Methodology

June 2004



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## Note of appreciation

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## In This Issue

This issue of *Survey Methodology* contains the fourth in the annual invited paper series in honour of Joseph Waksberg. A brief description of the series and a short biography of Joseph Waksberg were given in the June 2001 issue of the journal. I would like to thank the members of the awards selection committee for having selected Norman Bradburn as the author of this year's Waksberg invited paper.

In his paper entitled "Understanding the Question-Answer Process", Bradburn traces the history of conceptualization of the survey process over the past couple of decades, in which concepts from social and cognitive psychology and linguistics have been applied to improving our understanding of this process, and cognitive tools and approaches have been adapted for use in formulating survey instruments. He presents a conceptual model for the survey interview, and discusses various cognitive processes in survey response such as comprehension, retrieval, answer formulation and response. In his concluding summary he outlines challenges and priorities for further research in this area.

In Demnati and Rao, the authors present an approach for obtaining Taylor linearization variance estimators that is easier to apply than the usual Taylor linearization approach. The new method leads to a unique variance estimator and is applicable in many situations and estimators. The method is illustrated for calibration estimators, estimating equations and under two-phase sampling. For calibration estimators, the calibration weight is automatically captured in the variance formulae thus justifying what is commonly done in practice. Discussions of this paper are provided by Phil Kott, Babubhai Shah, and Chris Skinner.

Isaki, Tsay and Fuller propose a new method of household weighting for the 2000 U.S. Census long form, using quadratic programming to ensure that the weighted sums of household and individual characteristics match control totals derived either from the Census short form or from the Accuracy and Coverage Evaluation (A.C.E.) study. The weights are then rounded to integer values. They propose a jackknife procedure for estimation of the variance that incorporates the effects of both rounding and the random controls from A.C.E. Results of the proposed weighting procedures are compared to the 1990 weighting procedures using the 1990 Census data.

The theoretical properties of the estimator through reweighting within cells are studied in the article by da Silva and Opsomer. In contrast with numerous other studies on the subject, which involve a response model in which the population units are homogeneous within cells, it is not necessary to correctly specify the response model. It is necessary, however, to determine an auxiliary variable that is correlated with the response probability. The proposed approach can thus be seen as non-parametric. A simulation study explores the properties of the estimator being considered under various scenarios. The authors also provide some recommendations on the size and number of reweighting cells.

Brick, Kalton and Kim deal with the estimation of variance in the presence of hot-deck imputation within imputation cells for linear estimators. Särndal's decomposition (1992) and a model for the variable of interest are used to estimate variance. The originality of the proposed approach comes from the fact that, not only are the sampled and responding units conditioned, but also the units selected at the time of imputation. The article also deals with estimation for domains and a simulation study is carried out to evaluate the proposed method when certain model assumptions do not hold.

Hidiroglou and Patak study the properties of a number of small area estimators. They classify the estimators into two types, Horvitz-Thompson and Hájek, and by the detail of auxiliary information required. Conditional and unconditional properties of the estimators are investigated both analytically and in a simulation study. They conclude that the Hájek-type estimators have the best conditional properties, both in terms of bias and coverage, but these estimators do not have the additive property and their weights are domain dependent.

In their paper, Sverchkov and Pfeffermann develop prediction of finite population totals using a model for a variable of interest conditional on the unit not being in the sample (the sample-complement distribution) and possibly some covariates. They first describe the sample distribution and the sample-complement distribution, and then develop semi-parametric estimation of the sample complement model. A resampling procedure is proposed for mean-square error estimation. The method is illustrated by examples and it is compared to alternative approaches in a simulation study.

The article by Grilli and Pratesi considers the problem of parametric estimation for ordinal and binary models at a number of levels for informational sample plans. The authors extend the pseudo maximum likelihood method to deal with this problem. This method uses the inverse of the inclusion probabilities at each degree to weight the logarithm of the likelihood function. The estimator's properties thereby obtained are tested in a simulation study. The bootstrap method is also used to obtain a variance estimator.

Rowe and Nguyen explore longitudinal analysis using data from an overlapping panel survey, specifically, the Canadian Labour Force Survey. Successive six-month longitudinal panels can be used to provide estimates relating to cohorts of people over time, provided that cohort members can be identified in each panel. They develop a likelihood function for the longitudinal data observed in each six-month window, and show how this can be used to obtain estimates of parameters of interest. They then give an illustration of this approach for estimating transition probabilities between employment states and validate it by comparing simulated and observed data.

Finally, in a paper somewhat related to Bradburn's, Callens and Croux look at individual level and municipality level predictors of contact and cooperation in the Belgian Fertility and Family Survey using multilevel logistic regression models. They discuss some social theory models for contact and cooperation that imply an important role for different indicators, and then fit models using data from the survey. Their qualitative findings, in particular with respect to socio-economic status (SES) indicators, seem to conflict with the results of similar studies in the literature. In this study, SES was found to be positively related to cooperation. Some possible explanations of the observed results are offered.

M.P. Singh