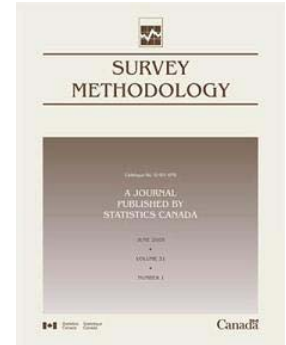


Article

In this issue



June 1999

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Dear Readers,

I would like to share with you good news on two fronts. First, the upcoming December issue will mark the 25th anniversary of *Survey Methodology*. This issue of the journal will be slightly larger than usual and will contain papers from some very prominent statisticians of our time. Second, we are looking into producing an electronic version of the Journal. Our current plan is to make the December 1999 issue available on a special Web site. All current subscribers will be able to download the Journal free of charge. Based on the response to this trial we will see if it is feasible to offer the Journal in that medium instead of or in addition to the current paper version. Watch for further information in the next issue. As usual your comments and suggestions are always welcome.

This issue covers a variety of topics - three papers on small area estimation, four papers on general estimation issues and two each on new sampling designs and data analysis.

Kröger, Särndal and Teikari they introduce a new family of sampling designs, called Poisson Mixture Sampling, which comprises of a weighted mixture of Poisson and Bernoulli sampling. Through a Monte Carlo study using Finnish data, they empirically show that, for a variety of point estimators, Poisson Mixture Sampling is more efficient than the usual Poisson sampling.

Bell and Kramer deal with the long standing problem of estimating the variance of X-11 estimators. Each month, statistical bureaus throughout the world publish the raw estimates of variables along with a corresponding measure of error, usually a standard error or a coefficient of variation. However, the corresponding seasonally adjusted or trend estimates, obtained by application of the X-11 method, do not have such an associated measure of error. Bell and Kramer present an interesting approach that offers a practical solution to this problem. They calculate two sources of error: one resulting from the sampling error and the other resulting from the use of ARIMA extrapolations at the two ends of the series.

De Haan, Opperdoes and Schut discuss sampling the items in a commodity group for input to the Consumer Price Index using scanner data. While most statistical offices currently use a judgmental selection procedure, this naturally leads to biased estimates. The authors address the question of whether probability sampling would lead to better results in terms of mean square error, with interesting results.

Pierre Duchesne considers a new class of robust calibration estimators used to obtain constrained weights at given intervals. The process involves changing carefully selected robust default weights into calibrated weights. In a brief empirical study, the new estimators are illustrated and compared to estimators which have already been proposed.

Tillé investigates a repeated sampling approach which takes into account auxiliary information. First he generalizes the use of conditional inclusion probabilities for use with any sampling design. He then constructs estimators that can be viewed as optimal linear estimators, and compares them with the GREG-estimator. He contrasts all of the estimators via a set of simulations. Finally he discusses the problem of interaction between the design and the auxiliary variables.

Prasad and Rao consider the problem of small area estimation through the use of a random effects model. While traditional methods rely on model-based methods to obtain estimates of small area means, Prasad and Rao obtain design-based (model-assisted) estimates by integrating survey weights. Corresponding model-based estimators of the mean squared errors (MSE) of the small area estimates are also derived. Through simulation results, they show that their MSE estimator has low bias and is quite stable.

In their paper on small area estimation, Moura and Holt focus on multilevel models, which make use of auxiliary information at both the unit and the small area levels, and allow small area random effects for both the intercepts and the regression slopes. The fixed and random effects parameters are estimated using restricted iterative generalized least squares. The mean square error is approximated. Simulations show that the model can lead to better small area estimators than those based on simpler models, that overspecification of the model does not lead to a serious loss of efficiency, and that the MSE approximation and associated MSE estimator work well.

Chattopadhyay, Lahiri, Larsen and Reimnitz consider estimation of proportions for rare events in small areas. Their method is illustrated and compared to other approaches using data from a telephone survey of alcohol and drug use. Their proposed estimator combines census-based demographic estimates of population within age/sex/county groups with survey-based empirical Bayes estimates of proportions within those groups. A jackknife estimator of mean square error is proposed which captures variability due to estimation of model parameters.

The problem of estimating longitudinal low income proportions from a longitudinal survey having a complex design is studied in Rubin-Bleuer and Kovačević. Two design-based estimators are considered: one based on both the longitudinal and cross-sectional sample, called the “mixed estimator”, and one based entirely on the longitudinal sample. Through simulation, the two estimators are compared in the presence of attrition using models of compensation that assume “missing at random” and “completely missing at random” underlying mechanisms. The results are illustrated using data from two longitudinal surveys.

Tate considers linking data on the same individuals from subsequent quarters of the British Labour Force Survey, a rotating panel survey in which one fifth of the sample is renewed at each occasion. She analyzes the various factors which can introduce bias into analyses derived from such linked data. In particular, she studies the possible effects of sample attrition, respondent errors and proxy respondents. She also considers various approaches to adjusting for these biases.

Finally, in a short note, Gabler, Haeder and Lahiri present a model-based justification for Kish’s well known formula for design effects. They show that the result is actually a conservative value for the actual design effect.

The Editor