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An approximate Bayesian approach to model-assisted survey estimation with many auxiliary variables. (English) Zbl 0748.62128

Summary: Model-assisted estimation based on complex survey data is an important practical problem in survey sampling. When there are many auxiliary variables, selecting the significant variables associated with the study variable is necessary to achieve an efficient estimation of the population parameters of interest. In this study, we formulate a regularized regression estimator in a Bayesian inference framework using the penalty function as the shrinkage prior for model selection. The proposed Bayesian approach enables both efficient point estimates and valid credible intervals. Lastly, we compare the results from two limited simulation studies with those of existing frequentist methods.

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generalized regression estimation; regularization; shrinkage prior; survey sampling

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References:

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