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OBJECTIVE BAYESIAN ANALYSIS OF A MEASUREMENT ERROR SMALL AREA MODEL

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ABSTRACT

We consider small area model estimation under a nested error linear regression model with measurement errors in the covariates. We propose an objective Bayesian analysis of the model. In particular, we derive the Jeffreys' prior for the small area model with measurement error in the covariates. We also show that the use of the improper Jeffreys' prior leads, under very general conditions, to a well defined proper posterior distribution.We have also performed a simulation study where we have compared objective posterior means of the strata mean parameters with other Bayesian estimates obtained via the use of the standard flat prior and with non Bayesian estimates, i.e. the corresponding Empirical Bayes estimates and the direct estimates.

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