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Functional and Structural Methods with Mixed Measurement Error and Misclassification in Covariates

Covariate measurement imprecisions or errors arise frequently in many areas. It is well known that ignoring such errors can substantially degrade the quality of inference or even yield erroneous results. Although in practice both covariates subject to measurement error and covariates subject to misclassication can occur, research attention in the literature has mainly focused on addressing either one of these problems separately. In this paper, we develop estimation and inference methods that accommodate both characteristics simultaneously. Specifically, we consider measurement error and misclassication in generalized linear models under the scenario that an external validation study is available, and develop several functional and structural methods.