Mathematics, Statistics, and Computer Science   **@ UIC**

Statistics and Data Science Seminar

Weighted empirical minimum distance estimators in Berkson measurement error regression models

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Abstract: We develop analogs of the two classes of weighted empirical min- imum distance estimators of the underlying parameters in linear and nonlinear regression models when covariates are observed with Berk- son measurement error. One class is based on the integral of the square of symmetrized weighted empirical of residuals while the other is based on a similar integral involving a weighted empirical of residual ranks. The former class requires the regression and measurement errors to be symmetric around zero while the latter class does not need any such assumption. The first class of estimators includes the analogs of the least absolute deviation and Hodges-Lehmann estimators while the second class includes an estimator that is asymptotically more effi- cient than these two estimators at some error distributions when there is no measurement error. In the case of linear model, no knowledge of the measurement error distribution is needed. Such information is typically needed for non-linear models. We first develop these esti- mators for nonlinear models when the measurement error distribution is known and then their analogs, when this distribution is not known but validation data is available.

Wednesday, October 9 at 4:00 PM in 636 SEO