

Many imputation methods are based on a statistical model that assumes the variable of interest is a noisy observation of a function of the auxiliary variables or covariates. Misspecification of this function may lead to severe errors in estimation and to misleading conclusions. Imputation techniques can therefore benefit from flexible formulations that can capture a wide range of patterns. We consider the use of smoothing splines within an additive model framework to estimate the functional dependence between the variable of interest and the auxiliary variables. The estimator obtained allows us to build an imputation model in the case of multiple auxiliary variables. The performance of our method is assessed via numerical experiments involving simulated and real data.