

MODEL-ASSISTED ESTIMATION IN A HIGH-DIMENSION SETTING FOR SURVEY DATA

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Abstract

In sample surveys, model-assisted estimators are commonly used to obtain efficient estimators for interest parameters such as totals or means. Nowadays, it is no longer rare to be confronted with a very large number of auxiliary variables and model-assisted estimators can be less efficient. In this talk, I will discuss the asymptotic efficiency of model-assisted estimators in the presence of a very large number of auxiliary variables and show that they can suffer from additional variability under certain conditions. I will also present two techniques to improve the efficiency of the model-assisted estimator in a high-dimensional context: the first is based on dimension reduction and the second one on ridge-type penalization. The methodology is illustrated on real electricity consumption data for Irish households and companies.