

Absolute Penalty and Shrinkage Estimation in Weibull censored regression model

S. Ejaz Ahmed

Brock University, St. Catharines, Canada

Abstract

In this talk we address the problem of estimating a vector of regression parameters in the Weibull censored regression model. Our main objective is to provide natural adaptive estimators that significantly improve upon the classical procedures in the situation where some of the predictors may or may not be associated with the response. In the context of two competing Weibull censored regression models (full model and candidate sub-model), we consider an adaptive shrinkage estimation strategy that shrinks the full model maximum likelihood estimate in the direction of the sub-model maximum likelihood estimate. The shrinkage estimators are shown to have higher efficiency than the classical estimators for a wide class of models. Further, we consider a LASSO type estimation strategy and compare the relative performance with the shrinkage estimators. Monte Carlo simulations reveal that when the true model is close to the candidate sub-model, the shrinkage strategy performs better than the LASSO strategy when, and only when, there are many inactive predictors in the model. Shrinkage and LASSO strategies are applied to a real data set from Veteran's administration (VA) lung cancer study to illustrate the usefulness of the procedures in practice.