

Identifying sensitive subset based on ultra-high dimensional correlated covariates for survival data

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Abstract: In this paper, we consider a single-index threshold Cox proportional hazard model to identify patients who are sensitive to a specific treatment, based on ultra-high dimensional correlated covariates.

A smoothed partial likelihood is proposed to estimate the parameters, and furthermore a functional regularization technique is used to select the effective region of a treatment. Asymptotic analysis reveals that the proposed estimator is consistent and can identify null subregions with probability tending to one. The proposed approach is evaluated through two simulation studies and an application to analyze TCGA skin melanoma data.