

Penalized Generalized Empirical Likelihood with a Diverging Number of General Estimating Equations for Censored Data

Xingqiu Zhao

The Hong Kong Polytechnic University

E-mail: xingqiu.zhao@polyu.edu.hk

Abstract: This article considers simultaneous variable selection and parameter estimation as well as hypothesis testing in censored survival models without a parametric likelihood available. For the problem, we utilize certain growing dimensional general estimating equations and propose a penalized where the general estimating equations are constructed based on the semiparametric efficiency bound of estimation with given moment conditions. The proposed penalized generalized empirical likelihood estimators enjoy the oracle properties, and the estimator of any fixed dimensional vector of nonzero parameters achieves the semiparametric efficiency bound asymptotically. Furthermore, we show that the penalized generalized empirical likelihood ratio test statistic has an asymptotic central chi-square distribution. The conditions of local and restricted global optimality of weighted penalized generalized empirical likelihood estimators are also discussed. We present a two-layer iterative algorithm for efficient implementation, and investigate its convergence property. The performance of the proposed methods is demonstrated by extensive simulation studies, and a real data example is provided for illustration.