

Semiparametric Estimation of Survival Function with Cause-of-Death Data Missing at Random

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Abstract

In survival analysis and reliability study, estimation of the survival function is an important topic. In this paper, we consider the semiparametric random censorship model with cause of death missing at random. A regression imputation estimator and an inverse probability weighted estimator are proposed. It is shown that both estimators are uniformly consistent and weakly converge to Gaussian process. Further, the inverse probability weighted estimator is found to have the very desiring robust property against the model assumption. A class of consistent estimators are also proposed, which work well even if the semiparametric model information is absence. Simulation studies are conducted to compare the finite sample behaviors of the proposed estimators.

Keywords: Missing censoring indicator, imputation, inverse probability weighted method, semiparametric estimation, double robust property.

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