

SEMIPARAMETRIC MAXIMUM LIKELIHOOD INFERENCE FOR TRUNCATED OR BIASED-SAMPLING DATA

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Abstract: Sample selection bias has long been recognized in many fields including clinical trials, epidemiology studies, genome-wide association studies, and wildlife management. This paper investigates the maximum likelihood estimation for censored survival data with selection bias under the Cox regression models, where the selection process is modeled parametrically. A novel expectation-maximization algorithm is proposed and shown to have considerable computational advantages. Rigorous asymptotic properties of the estimator are established. Extensive simulation studies and a real data analysis are conducted to investigate the performance of the proposed estimation procedure.

Key words and phrases: Biased sampling, length bias data, truncated and right-censored survival data.