

Nonparametric estimation of a conditional distribution from length-biased data

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Abstract In this paper we consider the problem of estimating a conditional distribution function in a nonparametric way, when the response variable is nonnegative, and the observational procedure is length-biased. We propose a proper adaptation of the estimate to right-censoring provoked by limitation in following-up. Large sample analysis of the introduced estimator is given, including rates of convergence, limiting distribution, and efficiency results. We show that the length-bias model results in less variance in estimation, when compared to methods based on observed truncation times. Practical performance of the proposed estimator is explored through simulations. Application to unemployment data analysis is provided.

Keywords Cross-sectional sampling · Left-truncation · Regression · Unemployment duration