

Uniform-in-bandwidth kernel estimation for censored data

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Abstract

We present limit laws for the nonparametric kernel lifetime density and hazard rate estimators in a right random censorship model. These limit laws are uniform with respect to the choices of bandwidth and kernel and are established in the framework of convergence in probability. *Uniform-in-bandwidth* results are useful to describe the limiting behavior of kernel estimators with random or data-dependent bandwidths. Furthermore, we allow the bandwidth to vary within the complete range for which the estimators are consistent and we provide explicit values for the asymptotic limiting constant for the sup-norm of the estimation random error.

Keywords: Functional limit laws, Nonparametric kernel density estimation, Right random censorship model, Hazard rate function, Kaplan-Meier empirical process.

AMS subject classifications: 62G07, 62G20, 62N01, 62N02, 60F17.