

Bootstrap selection of the smoothing parameter in density estimation under the Koziol-Green model

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Abstract: An asymptotic representation of the mean weighted integrated squared error for the kernel estimator of the density under the Koziol-Green model of proportional censorship is obtained for a bootstrap resampling method. A new bandwidth selector based on the bootstrap is consequently proposed. Simulation results for different models using WARPed versions of the estimators show how the bootstrap selector behaves appreciably better than the classical cross-validation method. Finally a real example is analyzed.

Key words: Bandwidth selection, bootstrap, Koziol-Green model, mean integrated squared error, warping.

AMS subject classification: 62G07.

1 Introduction

A typical situation in survival analysis: let Y be the variable of interest with continuous distribution function F , let C be the right-censoring variable with continuous distribution function G , and let (Z, δ) be the observed pair, *i.e.*, $Z = \min(Y, C)$ and $\delta = 1_{\{Y \leq C\}}$. The general random censorship model assumes the independence between Y and C . Hence $E(\delta) = \int (1 - G)dF$ and the (continuous) distribution function H of Z satisfies $1 - \int H = (1 - F)(1 - G)$.

The Koziol-Green model of proportional censorship (Koziol and Green,