A nonparametric mode estimate under doubly truncated model

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Abstract

The current piece of work concentrate on a non parametric mode estimate under doubly truncated model. highlights that the phenomenon of simultaneous left and right double truncation is prevalent in various fields, such as medical research. Note that the problem of estimating the mode function for this type of data has not been adequately addressed in the statistical literature. To fill this gap, we propose a new kernel estimator of the mode within the framework of randomly and doubly truncated models. We establish the strong consistency of the proposed estimate with a rate and demonstrate its asymptotic normality. A simulation study is conducted to illustrate and evaluate the finite sample behavior of the proposed estimator.

The main objective of this work was to propose a new estimator. We present two simulated models (exponential decreasing case and heavy tail case) and analyze the finite sample behavior of their estimator. The results indicate that the asymptotic normality is generally preserved, contingent on the selection of an appropriate bandwidth, which is a critical yet delicate issue. We also mention that small sample cases, typically involving sample sizes between 20 and 50, could benefit from robust estimators, a consideration for future work.

Keywords: non parametric, mode estimation, asymptotic normality, doubly truncation.

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