

New non-parametric inferences for low-income proportions

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Abstract Low-income proportion is an important index in describing the inequality of an income distribution. It has been widely used by governments in measuring social stability around the world. Established inferential methods for this index are based on the empirical estimator of the index. It may have poor finite sample performances when the real income data are skewed or has outliers. In this paper, based on a smooth estimator for the low-income proportion, we propose a smoothed jackknife empirical likelihood approach for inferences of the low-income proportion. Wilks theorem is obtained for the proposed jackknife empirical likelihood ratio statistic. Various confidence intervals based on the smooth estimator are constructed. Extensive simulation studies are conducted to compare the finite sample performances of the proposed intervals with some existing intervals. Finally, the proposed methods are illustrated by a public income dataset of the professors in University System of Georgia.

Keywords Bootstrap · Confidence interval · Cross-validation · Empirical likelihood · Jackknife · Low-income proportion

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