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## Analysis of Skewness in Gini Index Estimation and Its Impact on Confidence Intervals

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## **Abstract:**

Studies on income inequality are of great interest to the scientific community and the general public. In this context, the Gini index is possibly the most popular measure. Numerous organisations such as EUROSTAT or INE include this index in their official reports and statistics on income and living conditions. The Gini index is usually unknown at the population level and is estimated from survey data. However, estimates of the Gini index may not have a symmetric distribution under certain scenarios, so there are certain techniques that do not perform optimally for this reason. For example, confidence intervals for the Gini index based on the normal distribution have worse properties due to the skewness of the Gini index estimates. On the other hand, symmetry is also a fundamental aspect for the use of multiple imputations in the case of samples with missing data. This paper analyses the skewness of Gini index estimates in populations with different characteristics that may occur in practice and assesses the consequences of non-compliance with this property. In addition, some solutions are suggested, and results are compared between different methodologies for the construction of confidence intervals.

## **Keywords:**

Normality, inequality, non-parametric estimation, Monte Carlo Simulation.

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