

**Computational Statistics (2021) 36:2289–2311**

<https://doi.org/10.1007/s00180-021-01082-7>

## **A new computational approach for estimation of the Gini index based on grouped data**

**Tatjana Miljkovic<sup>1</sup> · Ying-Ju Chen<sup>2</sup>**

Received: 29 April 2020 / Accepted: 28 January 2021 / Published online: 25 February 2021

© The Author(s), under exclusive licence to Springer-Verlag GmbH, DE part of Springer Nature 2021

### **Abstract**

Many government agencies still rely on the grouped data as the main source of information for calculation of the Gini index. Previous research showed that the Gini index based on the grouped data suffers the first and second-order correction bias compared to the Gini index computed based on the individual data. Since the accuracy of the estimated correction bias is subject to many underlying assumptions, we propose a new method and name it D-Gini, which reduces the bias in Gini coefficient based on grouped data. We investigate the performance of the D-Gini method on an open-ended tail interval of the income distribution. The results of our simulation study showed that our method is very effective in minimizing the first and second order-bias in the Gini index and outperforms other methods previously used for the bias-correction of the Gini index based on grouped data. Three data sets are used to illustrate the application of this method.

**Keywords** D-Gini index · Bias correction · Income inequality

Tatjana Miljkovic [miljkot@miamioh.edu](mailto:miljkot@miamioh.edu)

<sup>1</sup> Miami University, 100 Bishop Circle, Oxford, OH 45056, USA

<sup>2</sup> University of Dayton, 300 College Park, Dayton, OH 45469, USA

Full article available at:

<https://doi.org/10.1007/s00180-021-01082-7>