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On Estimating the Low Income Proportion with Several Auxiliary Variables

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Abstract : Poverty measurement is a very important topic in many studies in social sciences. One of the most important indicators when measuring poverty is the low income proportion. This indicator gives the proportion of people of a population classified as poor. This indicator is generally unknown, and for this reason, it is estimated by using survey data, which are obtained by official surveys carried out by many statistical agencies such as Eurostat. The main feature of the mentioned survey data is the fact that they contain several variables. The variable used to estimate the low income proportion is called as the variable of interest. The survey data may contain several additional variables, also named as the auxiliary variables, related to the variable of interest, and if this is the situation, they could be used to improve the estimation of the low income proportion. In this paper, we use Monte Carlo simulation studies to analyze numerically the performance of estimators based on several auxiliary variables. In this simulation study, we considered real data sets obtained from the 2011 European Union Survey on Income and Living Condition. Results derived from this study indicate that the estimators based on auxiliary variables are more accurate than the naive estimator.

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