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A Robust Dual to Ratio Estimator for Population Mean Through Modified Maximum Likelihood in Simple Random Sampling

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SUMMARY

In simple random sampling setup, ratio-type estimators are widely used for estimating population mean when the correlation between study and auxiliary variables is high. In this paper, we incorporate a robust modified maximum likelihood estimator (MMLE's) into Srivenkataraman dual to ratio estimator and the properties have been obtained theoretically. For the support of the theoretical outcomes, simulations under several super-population models have been made. We study the robustness properties of the modified estimators. We show that the utilization of MMLE's in estimating finite population mean results to robust estimates, which is very gainful when we have non-normality or common data anomalies such as outliers.

Keywords and phrases: Ratio estimator, Dual to ratio estimator, Auxiliary variable, Simulation study, Modified Maximum likelihood, Transformed auxiliary variable.

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