

Calibration Estimators by Penalty Function Method

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Abstract

Estimation of finite population total using calibration has been considered by several authors. A distance measure is minimized subject to some calibration constraints, usually by way of introducing Lagrange equation whose solution gives the design weights used in estimation of population total. Sometimes a solution to the Lagrange constants does not exist. In this paper, we have considered the calibration problem as a nonlinear constrained minimization problem, which we transform to an unconstrained optimization problem using penalty functions. The design weights are obtained iteratively in a numerical manner. We show that the resulting estimator is more accurate than the popular Horvitz Thompson design estimator. Keywords: calibration, interior penalty function, exterior penalty function.

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See more at: <http://www.iiste.org/Journals/index.php/MTM/article/view/37686/38771>