COMPROMISE ALLOCATION FOR COMBINED LINEAR REGRESSION ESTIMATES IN MULTIVARIATE STRATIFIED SAMPLING

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ABSTRACT

In multivariate stratified sample surveys when auxiliary information is available it can be used to construct separate and combined ratio and regression estimates of the population means (see Khan et al. (2010)). This paper deals with the complex problem of obtaining a compromise allocation for constructing combined linear regression estimates of the population means of a multivariate stratified population when apart from the measurement cost there are also significant within stratum travelling costs resulting in a nonlinear cost constraint. The problem is formulated as a Multi-objective Integer Nonlinear Programming Problem (MINLPP) and a solution procedure is developed using Goal Programming Technique. The solution obtained is compared with some other allocations to show that the proposed procedure gives more precise result. The numerical results are obtained by using the optimization software LINGO.

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