MODEL-BASED OPTIMAL SAMPLE ALLOCATION FOR PLANNED AREAS USING EBLUP ESTIMATION

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This paper studies sample allocations used in surveys when it is a question of model-based area estimation and an area coincides with a stratum of stratified sampling. Although model-assisted and model-based estimations are common in the production of area statistics, utilization of the used model and estimation method are not included in sample area allocation solutions. This is the reason why two model-based allocation methods, which deploy a model and an estimator, have been developed here. The first one, g1-allocation, is based on a measure of homogeneity within areas measured of an auxiliary variable, and Sim-allocation is based on sample sizes obtained from medians of area-specific simulation results. To compare efficiency of new developed methods five allocation methods are picked up from literature. Empirical comparisons of performances of different area allocations are based on EBLUP estimation results obtained from simulated samples.

Key words: optimal area sample size, criteria, auxiliary information, homogeneity measure.

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