MIXED ALLOCATION IN STRATIFIED SAMPLING

ABSTRACT

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In stratified sampling, before drawing a sample, the sampler has to decide about the allocation of the sample sizes to various strata. Equal, Proportional and Optimum √allocations are well known in sampling literature. In practice any one type of allocation is selected according to the nature of the population and is applied to all the strata. However, there are practical situations in which the nature of one group of strata differs markedly from the other. In such situations, some times, it would be advisable to divide the strata into non-overlapping and exhaustive groups that are similar in nature. Use of a particular type of allocation may then be advised in a particular group depending on the nature of that group. Since different types of allocations are used in different groups, this allocation may be called a "Mixed Allocation". In this paper the problem of finding the mixed allocation for estimating the population mean of a stratified population, for a fixed cost, is formulated as a nonlinear programming problem (*NLPP*). The minimum variance of the estimator under mixed allocation is worked out and compared with the variance under the over all optimum allocation. The relative increase in the variance due the use of the mixed allocation is studied to decide that whether a mixed allocation is advisable or not. A numerical example is also presented to illustrate the computational details.