A Stratification for Multiple Populations

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Abstract

An attempt will be made here to extend Dalenius'(1950) theory of univariate stratification for one population to multiple population. If k mutiple populations have the same or different domains, then they can be divided simultaneously into L strata according to the variable *y* under study. The gross population is composed of the k populations. The ith stratified simple random sample of size n_i ia drawn from the ith population,*i*= 1, 2,...,*k*. The gross population mean is estimated by the k sample means. The variance of the gross sample mean will be taken as a measure. We will call a system of stratification, if it minimizes the variance of the sample mean. This paper will discuss the method for finding optimum stratification points for multiple populations under Neyman allocation. A numerical illustration is also given.

Keywords: Hessian Matrix, Multiple Population, Neyman Allocatin, Optimum Stratification, Optimum stratification Points.