BIAS AND MEAN SQUARE ERROR OF A VARIANCE ESTIMATOR BASED ON CONDITIONAL SPECIFICATION IN SPLIT-PLOT DESIGN

M.S. Dulawat and S.S. Dulawat

ABSTRACT

In this paper, an estimator of the error variance for a split-plot design in analysis of variance model-II incorporating two preliminary tests of significance has been proposed. Expressions for bias and mean square error (MSE) of the proposed estimator have been derived and partial checks have been made. It has been observed that the proposed estimator dominates unbiased estimator of error variance in certain range of nuisance parameters. Recommendations regarding its applications have been made.

CONDITIONALLY UNBIASED RATIO-TYPE ESTIMATORS

Girish Kumar Jha, A.K. Srivastava and Anil Rai

ABSTRACT

This paper proposes a conditional bias adjusted Hartley–Ross type estimator as well as Mickey type estimator corresponding to their unconditional counterparts. A simulation study involving two populations, one is based on the linear form of model and other is based on the quadratic form of model, has been carried out to illustrate the improvements provided by the proposed estimators as compare to exiting estimators.

ON THE ROBUSTNESS OF CHARTS FOR VARIABLES

K.K. Sharma and Bhupendra Singh

ABSTRACT

Assuming lot-to-lot quality variations, the acceptance sampling plans and related concepts have been put in the Bayesian framework. However, in this set up, updating the basic distribution in view of prior variations in its parameters is still to be investigated. Following the concept, the study deals with the analysis of the robust character of charts for variables when variations in lot-to-lot quality (or standards) are suspected.

ON POOLING THE ESTIMATES OF SHAPE PARAMETERS OF TWO PARETO DISTRIBUTION

B.N. Pandey, B.P. Singh and A.K. Srivastava

ABSTRACT

In this paper, we have proposed some pooled estimators of common shape parameter of two Pareto distributions from the estimates obtained from two independent random samples. We have also proposed sometimes pooled estimators when it is suspected but not known for certain that the shape parameters of two Pareto distributions are equal. The properties of these estimators have been studied and recommendations are provided.

APPROXIMATE OPTIMUM STRATA BOUNDARIES FOR RATIO AND REGRESSION ESTIMATORS

R.K. Gupta, Ravindra Singh and P.K. Mahajan

ABSTRACT

The paper considers the problem of optimum stratification when the information on the auxiliary variable x is used to estimate the populations mean Y of study variable y using ratio and regression methods of estimation. Cum $3P'(X)$ rule has been proposed for finding approximate optimum strata boundaries $(ASOB)$. The paper concludes with numerical illustration.

ON OPTIMUM STRATIFICATION FOR TWO SENSITIVE VARIABLES

M.R. Verma, J.P. Singh Joorel and R.K. Agnihotri

ABSTRACT

This paper considers the problem of optimum stratification for two sensitive quantitative variables Y_j $(j=1,2)$ when samples from different strata are selected with simple random sampling with replacement $(srswr)$ and an auxiliary variable X is taken as stratification variable. A cumulative cube root rule has been proposed for determination of optimum strata boundaries for proportional allocation method. The paper concludes with a numerical illustration.

MULTIPLE MEASURES OF DEPARTURE FROM MARGINAL HOMOGENEITY FOR COLLAPSED 2×2 TABLES IN A SQUARE CONTINGENCY TABLE WITH ORDERED CATEGORIES

Nobuko Miyamoto and Sadao Tomizawa

ABSTRACT

For the analysis of square contingency tables with *ordered* categories, Tomizawa, Miyamoto and Ashihara (2003) considered a measure to represent the degree of departure from the marginal homogeneity (MH). Consider the $R-1$ ways of collapsing the $R\times R$ table into a 2×2 table by choosing cut points after the $k-$th row and after the $k-$th column for $k=1,2,\cdots,R-1$. The purpose of this note is (1) to propose the measure to represent the degree of departure from MH for each collapsed 2×2 table, and (2) when the MH does not hold, to propose (as further approach to analysis) the use of these measures in order to diagnose which collapsed 2×2 table influences more to the degree of departure from MH in an $R\times R$ table.

MIXED ALLOCATION IN STRATIFIED SAMPLING

ABSTRACT

M.J. Ahsan, Najmussehar and M.G.M. Khan

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.
