

ABSTRACTS OF PAPERS

(Abstracts of papers presented at the Central Regional meeting, Dallas, Texas, April 8–10, 1970.
Additional abstracts have appeared in previous issues.)

124-5. On the Behrens–Fisher problem. J. S. MEHTA AND R. SRINIVASAN, Temple University.

We consider here the relative merits of several statistics available for the Behrens–Fisher problem of testing two means with unknown and possibly unequal population variances. The statistics considered are due to Banerjee, Fisher, Pagurova, Wald and Welch. They are compared on the basis of the stability of their sizes, and the magnitude of their powers for variations in the nuisance and non-centrality parameters and for various combinations of sample sizes. Recommendations are made on the basis of these comparisons. It is shown that if the sample sizes are both larger than seven, then the solutions due to Pagurova and Welch are very good in the above sense. However, for smaller values of the sample sizes none of the solutions stabilize the size adequately. For these values certain modifications of Pagurova's solution are presented. (Received January 19, 1970.)

124-6. Model building for prediction in regression analysis based on repeated significance tests. W. J. KENNEDY AND T. A. BANCROFT, Iowa State University.

This paper considers two different sequential procedures for model building in regression. The bias and mean square error of predicted y are derived for each procedure assuming unknown error variance σ^2 . For each procedure the relative efficiency of the respective sequential procedure to the procedure retaining all predictors is defined to be the inverse ratio of the arithmetic average of the respective mean square errors and is obtained to make comparisons and recommendations regarding probability levels for the preliminary tests. The results provide a usable extension of those results obtained in the two papers by H. J. Larson and T. A. Bancroft [Sequential model building for prediction in regression analysis I. *Ann. Math. Statist.* **34** (1963); and Biases in prediction by regression for certain incompletely specified models. *Biometrika* **50** (1963)]. Confidence limits for the expected value of predicted y are derived by extending the results of B. M. Bennett [On the use of preliminary tests in certain statistical procedures. *Ann. Inst. Statist. Math.* **8** (1955)]. (Received January 26, 1970.)

124-7. A multivariate sequential discrimination procedure. CAMPBELL B. READ, Southern Methodist University and Southwestern Medical School of the University of Texas.

An extension of a procedure by Hall and Baker for testing the mean of a normally distributed rv with unknown variance is made to the case of the mean of a multinormally distributed rv with covariance matrix known except for a scalar multiplier. The test replaces the multiplier by an estimator, otherwise following the steps of a Wald SPRT. The error probabilities have known bounds; approximations to the OC function and to the ASN are presented. (Received January 29, 1970.)

124-8. Sequential confidence interval for the regression coefficient based on Kendall's tau. MALAY GHOSH AND P. K. SEN, University of North Carolina.

A robust procedure is considered for the problem of providing a bounded length confidence interval for the regression coefficient (in a simple regression model) based on Kendall's tau. The