

## INTRODUCTION

The conferences on Multivariate Statistical Analysis have been organized every year since 1981.

Their goal has been focused on the latest achievements in the field of theory of multivariate statistical analysis and its applications. The set of papers we would like to present is the result of the 20 International Conference of Multivariate Statistical Analysis – MSA 2001. The conference was organised by the Chair of Statistical Methods of the University of Łódź in cooperation with the Polish Statistical Association. It was held on November 5–7, 2001, in the Conference Centre of the University of Łódź. The range of subjects of interest of the Conference papers was fairly wide, from the theory of probability, through statistical methods to their applications in finance, insurance and risk theory. The papers are divided in to three thematic groups:

- 1) Statistical Methods,
- 2) Statistical Inference,
- 3) Application of Statistical Methods.

The first group includes articles with statistical method in a general sense, some of them are illustrated with examples.

Jerzy Korzeniewski (*Method of Colour Segmentation in Two Dimensional Images*) considered some selected algorithms of segmenting two dimensional imager. He presents a new algorithm and comparison with other algorithms.

Wojciech Gamrot (*A Two-phase Sampling Strategy for Estimating Multiple Mean Values in the Presence of Nonresponse*) formulate the optimization problem for selecting sample and subsumable sizes minimizing the expected value of the cost of simultaneous investigation of many attributes of population.

The second group of papers deals with testing and estimation procedures. Czesław Domański (*The Estimate of Power of Random Tests Based on Length of Runs*) formulated some conclusion concerning power of the most often applied tests for randomness based on the length of runs and restricted its to stationary two state Markov chain.

Krystyna Pruska (*Testing the Identity of Distributions of two Discrete Random Variables*) tested the identity of distributions for two univariate and two bivariate random variables. The power of proposed tests is also analysed.

Agnieszka Rossa (*Analysis of Censored Life-tables with Covariates by means of Log-linear Models*) proposed the unbiased estimator of the survival probability and studied its asymptotic properties.

Janusz Wywiał (*Estimation of Population Averages on the Basis of a Vector of Cluster Means*) considered the estimation of a vector of mean values when the population is divided into clusters.

Tomasz Żądło (*On Mean Square Error of Synthetic Regression Estimator*) presented the problem of estimation of the total in a small domain. He proposed the synthetic regression estimator.

Marcin Skibicki (*On Maximization of Estimation Accuracy in Multi-parameter Twostage Drawing*) considered the problem of determining sample sizes down in two stages so that the accuracy of a number of means estimation would be maximized.

Robert Pietrzykowski and Wojciech Zieliński (*A New Procedure of Multivariate Multiple Comparisons*) presented the problem of division the set of vector of means into homogenous groups on the basis of  $k$  samples. On the basis of Monte-Carlo simulations they shown that proposed multiple comparisons procedure has high probability of correct decision for the special cases.

Janusz Wywiał and Tomasz Żądło (*On Some Robust Against Outliers Predictor of the Total Value in Small Domain*) considered the problem of prediction of total value in domain based on simple regression superpopulation model. They shown the robust estimation against outliers of regression function's parameter.

Wiesław Pasiewicz and Wiesław Wagner (*Probabilistic Model of Ties in Multistage Decision Process*) discussed the probability model on multistage decision process with particular emphasis on special case. An idea of importance graph ties is presented.

In the third group of articles dealing with applications in finance, insurance, sport, credit risk.

Adam Biela (*Multidimensional Scaling in Economic Research*) presented the possible directions of applying multidimensional scaling to social and economic analysis.

Bronisław Ceranka and Małgorzata Graczyk (*Optimum Chemical Balance Weighing Designs Constructed from the Incidence Matrices of the Ternary Balanced Block Designs*) studied the problem of estimation of the weights of  $p$  objects in  $n$  weighings using a chemical balance design.

Jacek Olesinkiewicz and Anna Rutkowska-Ziarko (*Application of the Wolf's Algorithm to Constructing Effective Portfolios*) presented the method of constructing the effective portfolio with application of Wolf's algorithm.

Sebastian Sitarz (*Dynamic Programming with Returns in Random Variables Spaces*) described a model of dynamic, discrete decision – making problem. He shown how this model could be applied for multi-stage, multi-criteria decision making problem.

Grażyna Trzpiot (*Preference Relations in Ranking Multivalued Alternatives in Finance Using Stochastic Dominance*) propose a two-step procedure for ranking alternatives under ambiguity. In decision situation she compared many alternatives.

Anna Szymańska (*Selected Statistical Methods of Insurance Risk Assessment – the Review of Basic Methods*) presented the most often applied statistical methods for estimating insurance risk. These methods are applied to the investigation of the distribution of the number of pay-off.

Agata Szczukocka (*Selected Methods of Credit Risk Evaluation*) presented the selection methods of credit risk: these methods allow to estimate the risk of single credit transaction and credit portfolio.

Małgorzata Misztal (*The Use of Some Pattern Recognition Algorithms to Classify Patients Undergoing CABG*) considered some methods useful for predicting mortality risk after Coronary Artery Bypass Grafting (CABG). She applied some pattern recognition algorithms to classify patients to one of the risk subgroups.

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