

6812 A.GONZALEZ MORENO (Instituto Nacional de Investigaciones Agrarias, Ctra. de la Coruña Km.7, 28040 Madrid, Spain), Ecogeographical. Characterization of 118 European Vici Sativa S.L. Vecht cultivars.

The variability of forage species is influenced both by ecological and geographical factors. The use of ecogeographical data in characterization of vetch, *Vicia sativa* s.l., provides an ecological interpretation that can be placed upon the results shown in this paper.

6813 A.GONZALEZ MORENO (Instituto Nacional de Investigaciones Agrarias, Ctra. de la Coruña Km.7, 28040 Madrid, Spain), Logarithmic Transformation in a Split-plot Trial.

An analysis of the data set of *Amaranthus* sp. was performed. Since the variance were not homogeneous, several types of transformation functions were used. The overall linear model presented a goodness of fit of 75% with the data.

6814 S.VICENTE TAVERA (Dpto. de Estadística y Matemática Aplicadas. Universidad de Salamanca, Spain), HJ-Biplot as a base for Cluster Searching with Applications.

This work tries to characterize the distribution of unemployment in the 18 Spanish Autonomous Communities. The technique of Agglomerating Hierarchical Classification by the Inertia Criterion, based on an HJ-Biplot representation, and carried out with a specially designed software, allows identify 4 clusters and the most important variables for this classification.

6815 A. BORGES (Area de Metodología, Universidad de la Laguna. Campus de Guajara, 38200 La Laguna, Spain), A Simulation Study of Student's t-test and Randomization Tests.

In the present paper we test the robustness of randomization tests and Student's t test for the differences of means, for several conditions of sample size and population values of variance, skewness and kurtosis.

6816 M.C. VILADRICH (Dep. de Psicologia de la Salut, Universitat Autònoma de Barcelona, 08193 Bellaterra, Spain) Strategies for a Complementary Use of Log-linear and Correspondence Analyses.

Different strategies for the analysis of interrelated categorical variables are presented. The main purpose is to describe with relative ease the relationship between variables underlying in a high order interaction, at the same time as its signification is tested. The analysis of ten variables illustrates the comparison of three strategies.

6817 J.M. TOMAS (Dpto. de Metodología, Universitat de València. Blasco Ibáñez, 21. 46010 València, Spain), Study of Goodness of Fit Indexes in Confirmatory Factor Analysis.

This work presents a study of the behaviour of several goodness of fit indexes (chi-square, chi-square/degrees of freedom, LHR, NFI, NNFI and CFI) in confirmatory factor analysis, using three estimation procedures (ML, GLS and AGLS), when chi-square is an adequate index (sample size around one hundred).

6818 G.GOMEZ (Dept. de Estadística e Investigación Operativa, Universidad Politécnica de Catalunya. Barcelona, Spain), A Comparison Study for Interval Censored Data.

In this work we perform a simulation study to compare the estimators proposed by DeGruttola and Lagakos (1989) and by Gómez and Lagakos (1994) when the infection time is interval censored and the latency time is right censored.

6819 G. FERRER (Centro Universitario de Salud Pública, Fundación General Universidad Autónoma de Madrid, Spain), Censored Sampling with Poisson or Negative Binomial Distributions.

The estimation of the mean of a negative binomially or Poisson distributed population is considered using quadrat censored sampling. Fisher information is derived and used to examine the efficiency of estimation as a function of the censoring value, the parameter k and the density. Optimum quadrat sizes are determined.

6820 J. SALA (CAP Torreforta- La Granja. Noguera s/n 43006 Tarragona, Spain) Nonlinear Principal Components Analysis Applied to Ambulatory Medical Care.

Nonlinear Principal Components Analysis has been applied in order to describe the typologies of ambulatory medical care episodes. An ordinal level of analysis has been chosen. With 12 dimensions the variability explained is 46% Five typologies has been obtained by means of cluster analysis applied to factorial scores.

6821 F. OLIVA (Departament d'Estadística. Universitat de Barcelona, Diagonal 645, 08028 Barcelona, Spain), Polynomial Regression Stability of Physiological Variables by Age Groups.

Estimation of normality percentiles of physiological variables by age groups in Epidemiology is frequently realized with lineal regression methods with low R-Squares. The aim is analyze the trend of the means in the cholesterol data of Menorca cross-sectional study, with polynomial regression and its stability by simulation.

6822 J. FERRANDIZ (Dpto. Estadística e I.O., Universitat de València, Dr. Moliner 50, 46100 Burjassot, Spain) Spatial Generalized Linear Models.

We extend GLM family to include spatial interaction terms when modelling spatial data on irregular lattices. We require conditional distributions on sites to belong to the GLM family. This can be considered its spatial autoregressive version. We illustrate statistical procedures with cancer mortality data in Valencia countries.

6823 M.C. VILADRICH (Dep. de Psicologia de la Salut, Universitat Autònoma de Barcelona, 08193 Bellaterra, Spain) Risk Tendency Analysis with n=1 Designs.

This study compares the polynomial regression with the results of the lag sequential analysis in order to detect intraindividual behavioral consistencies in risky situations. Choices of two subjects, who have played at two different computer games, one of them twice, have been studied. The two analyses show very similar results.

6824 J. RENOM (Dep. de Metodologia de les Ciències del Comportament, Universitat de Barcelona. Adolf Florensa s/n, 08028 Barcelona, Spain) Adaptative Measure of Linguistic Ability: "Syntax Bank".

This study describes the results obtained from a conventional administered test in comparison with those obtained using a computerized procedure based on 180 items bank about syntax rules. Following calibration under 2PM logistic IRT model ($n=800$) theta parameters were compared and various adaptative strategies are discussed.

6825 J. ARNAU (Dep. de Metodologia de les Ciències del Comportament, Universitat de Barcelona. Adolf Florensa s/n, 08028 Barcelona, Spain) Problems in Evaluation of Significant Autocorrelation in Short Time-series.

The present work is a reply to Matyas & Greenwood (1991) report,

to verify if r_1 values are normally distributed at small sample sizes, and so we examine the shape of the distribution (central tendency, skewness and kurtosis).

6826 M.C. GRANADO (Area de Metodología, Universidad de Sevilla. San Francisco Javier s/n, 41005 Sevilla, Spain) Error Source in University Lecture's Evaluation.

Plausible uses of Theory of Generalizability are exemplified in this paper with lecturers' evaluation data from Sevilla and Granada Universities. Such theory may be employed for controlling several aspects or circumstances causing measure instability.

6827 J. TEJADA (Dep. de Estadística e I.O. Universidad Complutense de Madrid. 28040, Madrid, Spain) The Impact of Some Labour Factors on the Nosocomial Infection.

The aim of this communication is to relate some disturbances and modifications of hospital personal routine with the production of nosocomial infection. The data have been provided by a Spanish hospital and the analysis has been developed by using time series techniques.

6828 E. COBO (Dept. de Estadística e Investigación Operativa, Universidad Politècnica de Catalunya. Barcelona, Spain) Neonatal Evolution as Function of Birth Weight and Gestational Age.

We show an example of the application of Loglinear Models and conditional hypothesis to study the effect of two risk factors highly correlated: birth weight and gestational age.

6829 J.M. CORCUERA (Dept. d'Estadística, Universitat de Barcelona. Diagonal 645, 08028 Barcelona, Spain), Multi-stage Mixed Sampling for the epidemiological study of allergic diseases.

This paper describes the methodological basis of the first epidemiological study made in Spain about allergic diseases in the children population, in this study a multi-stage stratified sampling was applied. The unbiased estimate of the variance is deduced for a three-stage sampling with proportional probability for the first stage.

6830 C. HERNANDEZ (Dept. d'Informàtica Mèdica, Institut Municipal d'Investigació Mèdica. Doctor Aiguader, 80. 08003 Barcelona, SPAIN) Cluster Analysis from Mahalanobis Distances.

The computer program POEMA computes distances (city-block, euclidean and Mahalanobis) between vectors of quantitative variables. When several matrices of distances are obtained (i.e., comparing the scores supplied by several raters over the elements of a sample) they are averaged. Hierarchical cluster analysis is carried out using average linkage method.

6831 M. MARTIN (Dept. d'Informàtica Mèdica, Institut Municipal d'Investigació Mèdica. Doctor Aiguader, 80. 08003 Barcelona, SPAIN) Validation of the Medical Expert System PNEUMON-IA: Measures of Concordance.

Kappa-like indexes are considered as agreement measures between PNEUMON-IA etiologic diagnosis and those provided by five human experts. A weighted Kappa is computed in the general context of E experts, D diagnoses and an ordinal classification variable. Cluster analysis is then used to classify PNEUMON-IA among experts.

6832 A.J. RUEDA (Dept. de Matemàtica Aplicada, Universidad de Alcalá de Henares) A Positioning Method According to Multivariate Information.

The distribution function gives the relative position of several values in a data set, according to one variable. We present a

method could be useful in Quality Control, Banking problems, etc. A simulated application is built to illustrate the method.

6833 M. VASQUEZ (Dpto. de Estadística y Matemática Aplicadas. Universidad de Salamanca, Spain) An Estimator of Missing Values in Longitudinal Principal Component Analysis.

An estimator of missing values in longitudinal multivariate studies is proposed. This estimator is a linear function of the known values with weights reflecting the distance between the individual missing value and the others. The method was applied in a study of growth pattern of biochemical variables in Venezuelan children.

6834 J.A. HERNANDEZ (Area de Metodología, Universidad de la Laguna. Campus de Guajara, 38200 La Laguna, Spain) Elliptical Estimates in Covariance Structures under Severe Non-normal Data.

Many researchers have concluded that standard errors, statistical tests and parameter estimates in covariance structure analyses are biased under severe non-normal data and other less restrictive estimates have been proposed. This paper is a Monte Carlo study with these models in order to compare the performance of ML in front ERLS.

6835 R. ESPEJO (Dpto. de Estadística, Universidad de Córdoba. Avda. Menéndez Pidal S/n. 14040 Córdoba, Spain) The ADEST System.

ADEST is a software intelligent environment, user friendly, oriented toward categorical data analysis. It is based on a generalization of Havranek procedure for log-linear model specification. It also includes a semiautomatic model to aggregate categories with low marginal frequencies, and several tools like a generator of BMDP statistical package.

6836 C. SAN LUIS (Area de Metodología, Universidad de la Laguna. Campus de Guajara, 38200 La Laguna, Spain) The Measure of Responsible Ecological Behavior.

In this paper we present the results of the construction and reliability studies of a questionnaire about responsible ecological behavior on individual level. The internal structure has been determined through exploratory factor analysis in first place and then with confirmatory analysis.

6837 J. RENOM (Dep. de Metodologia de les Ciències del Comportament, Universitat de Barcelona. Adolf Florensa s/n, 08028 Barcelona, Spain) The Dimensionality and Validity of the Spanish Version of Wiig's Language Inventory.

This study reports results of a recent analysis of data on 850 schoolchildren obtained in 580 items of Wiig's Language Inventory. The factorial structure and relationship with other measures shows that this is a powerful instrument for language assessment. Authors also describe different age-ability functions for predictive diagnostic.

6838 M. J. SOSPEDRA (Dpto. de Metodología, Universitat de València. Blasco Ibáñez, 21. 46010 València, Spain), A EDA Unidimensional Scaling Method.

This paper presents a new unidimensional scaling method oriented to avoid assumptions. This method can be understood as an Exploratory Data Analysis tool designed to produce simple questionnaire scales rank-based.

6839 E. GARCIA (Dpto. de Metodología, Universidad Complutense de Madrid. Campus de Somosaguas, 28223 Madrid, Spain), Psychometric Models for the Psychophysiological Response.

This paper studies the application of psychometric models to

main aim is to find the best fit to a psychometric model in order to perform an adequate statistical data analysis. Reliability and validity studies of this measurement are also carried out.

6840 P. PRIETO (Area de Metodologia, Universidad de la Laguna. Campus de Guajara, 38200 La Laguna, Spain), Effects of Assumption Violations on Parameters Robustness in Rasch Model.

We test the robustness of parameters b and θ estimations in the Rasch model when some assumptions are violated. Some changes have been introduced with respect to previous work of Muñiz, Rogers and Swaminathan (1989). New programs for further applications in some researchs about latent trait models are checking.

6841 A. SANCHEZ (Dept. d'Estadística, Universitat de Barcelona. Diagonal 645, 08028 Barcelona, Spain), Significance Testing and Comparison between Genetic Distances Using Prevosti's Index.

Bootstrap methods have been used to estimate the standard error of Prevosti's estimate of Genetic Distance and to construct test of significance and comparison between distances. Simulated studies suggest that bootstrap and classical theory perform equally well in certain situations, whereas the bootstrap works fine where the classical theory fails.

6842 C. ARENAS (Dept. d'Estadística, Universitat de Barcelona. Diagonal 645, 08028 Barcelona, Spain), Distance based Regression Model with Mixed Variables and Missing Values.

We present different examples in order to illustrate the DB-regression model introduced by Cuadras and Arenas (1990). This model is obtained from the observed variables via classical MDS. Different procedures are introduced in order to choose the most predictive dimensions, and a solution is proposed in presence of missing data.

6843 C. M. CUADRAS (Dept. d'Estadística, Universitat de Barcelona. Diagonal 645, 08028 Barcelona, Spain), Distance based Approach in Discriminant Analysis for Recognizing DNA Sequences.

The distance-based approach to discrimination is a recent method applied here to allocate an individual to one of several known human groups on the basis of DNA sequences, by using an appropriate distance between strings. This method performs well since it can handle easily a great number of categorical variables.

6844 A. SANCHEZ (Area de Metodología, Universidad de la Laguna. Campus de Guajara, 38200 La Laguna, Spain), A Non-Linear Model for the Resolution of the Catecol's Peak.

In this paper we present and discuss a non-linear method in order to determinate mathematically the heights of the curves corresponding to the different substances which contribute to a single oxidation peak, such as the obtained by the DNPV "in vivo" voltammetry procedure.

6845 J. GOMEZ (Dept. de Metodologia de les Ciències del Comportament, Universitat de Barcelona. Adolf Florensa s/n, 08028 Barcelona, Spain), Comparison of CFA and IRT Procedures as Bias Detection Techniques.

The purpose is to investigate sexual differences in numerical ability. In order to study the existence of bias, two procedures have been followed: a confirmatory factor analysis using Lisrel-7, and an IRT-based approach using the weighted squared difference between the item characteristic curves estimated in male and female subsamples.

València. Blasco Ibàñez, 21. 46010 València, Spain), Comparison of Linear Trends and Power of Chi-square Test.

The comparison of proportions quantitatively ordered is illustrated by means of different statistics, such as the chi-square statistic due to Cochran (1954) and Armitage (1955), as well those derived by Chapman and Nam (1968) and Wood (1978). The power of chi-square test for the linear trend has been computed.

6847 R. ESTARELLES (Dpto. de Metodología, Universitat de València. Blasco Ibàñez, 21. 46010 València, Spain), Gradient with Qualitatively Ordered Groups.

We deal the comparison of a number of proportions, taking into account the gradient with qualitatively ordered groups. We point out the properties of the procedures and present a subroutine to compute the tests.

6848 R. ESTARELLES (Dpto. de Metodología, Universitat de València. Blasco Ibàñez, 21. 46010 València, Spain), The Coefficient Phi as an Instrument of Synthesis and Inference.

The coefficient Phi is an association measure very used in the social and behavioral research as a descriptive index. In this study we emphasize an inferential approach. The estimation of this coefficient and the standard error is derived by jackknife methods and its use as a research synthesis tool is considered.

Authors and Speakers for the 40th Biometric Conference of the German Region in cooperation with Netherlands Region held at Munster (15-18 March 1994).

6849 Uwe Pichlmeier (Institute of Mathematics and Computer Science in Medicine, University of Hamburg, Martinistr. 52, 20246 Hamburg, F.R.G.), Optimal Designs for quantal dose response experiments

An overview of various approaches for designing quantal logist dose-response experiments with special interest in estimating the ED50 is given. Local optimal designs maximising the determinant and the trace of the informations- matrix are discussed as well as criteria minimizing the length of confidence intervals for the ED50 obtained by applying the Delta-method and Fieller's theorem. Since these criteria depend heavily on prior informations about the parameters to be estimated more robust design criteria are introduced supposed to attenuate this drawback. Two-Stage desings are shown to be superior to static design methods. Minimax strategies, methods using dose-densities and bayesian criteria are presented and their pros and cons are highlighted.

6850 Guenter Tusch (Medical School Hannover, D-30623 Hannover, Germany) Partial Classification based on Decision Analysis.

Partial classification generalizes forced classification by controlling the total classification costs. When defining suitable criteria you can show that similar optimality conditions as in the classical case apply. For more than two classed the maximum probability of a unique classification may serve. There are relationships to threshold and sequential analysis.

6851 Hermann Brenner (Inst. of Med. Informatics, Biometry and Epidemiology, University of Munich, Germany) Estimating Completeness of Population Based Cancer Registration by Capture-Recapture-Methods.

Recently, several authors propagated use of capture-recapture methods to estimate completeness of disease monitoring system. We give an overview on various methodologic approaches and their underlying assumptions, and illustrate their application with data from the population-based cancer registry of Saarland/Germany.