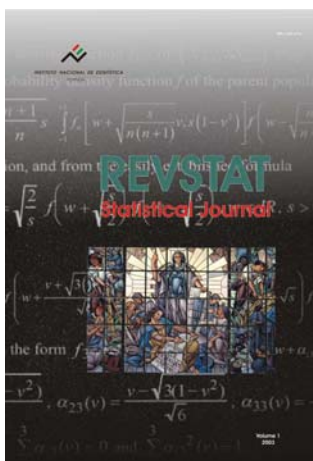


Estatísticas Gerais

Número 1 - 2005

REVSTAT-STATISTICAL JOURNAL

REVSTAT-STATISTICAL JOURNAL, Volume 3, No. 1 – June 2005



In 2003 the National Statistical Institute launched the scientific statistical journal **REVSTAT-STATISTICAL JOURNAL**, published in English two times a year, with a prestigious international Editorial Board, which came to substitute the *Revista de Estatística* [Statistical Review], published in Portuguese between 1996 and 2002.

The aim of the Editorial Board of **REVSTAT** is to publish articles of high scientific content, developing innovative statistical scientific methods and introducing original research, grounded in substantive problems, covering all branches of Probability and Statistics. Surveys of important areas of research in the field are also welcome.

REVSTAT hopes to become a place where scientists may feel proud of publishing their research results changing the character of the previous *Revista de Estatística* from a national to an international scientific journal.

For more information about **REVSTAT**, namely on-line articles, subscription of the publication, and submission of papers, please visit the link of the National Statistical Institute's website: <http://www.ine.pt/revstat.html>

This Volume of **REVSTAT: Volume 3, No. 1–June 2005**, which is now come out, publish four articles of which abstracts are presented down:

ROBUSTNESS OF TWO- PHASE REGRESSION TESTS

Author: *Carlos Diniz and Luís Brochi*

This article studies the robustness of different likelihood ratio tests proposed by Quandt ([1]) and ([2]), (Q-Test), Kim and Siegmund ([3]), (KS-Test), and Kim ([4]), (K-Test), to detect a change in simple linear regression models. These tests are evaluated and compared with respect to their performance taking into account different scenarios, such as, different error distributions, different sample sizes, different locations of the change point and departure from the homoscedasticity. Two different alternatives are considered: i) with a change in the intercept from one model to the other with the same slope and ii) with a change in both the intercept and slope.

The simulation results reveal that the KS-Test is superior to the Q-Test for both models considered while the K-Test is more powerful than the other two tests for nonhomogeneous models with a known variance.

ASYMPTOTIC BEHAVIOUR OF REGULAR ESTIMATORS

Authors: *Jean Diebolt* and *Armelle Guillou*

The P.O.T. (Peaks-Over-Threshold) approach consists of using the generalized Pareto distribution (GPD) to approximate the distribution of excesses over thresholds. We use the maximum likelihood estimators, or some other ones satisfying regularity conditions, to estimate the parameters of the approximating distribution. We study the asymptotic bias of these estimators and also the functional bias of the estimated GPD.

EXACT FORMULAS FOR THE MOMENTS OF THE FIRST PASSAGE TIME OF REWARD PROCESSES

Authors: *Parham* and *Soltani's*

Let $\{Z_\rho(t), t \geq 0\}$ be a reward process based on a semi-Markov process $\{\mathfrak{Y}(t), t \geq 0\}$ and a reward function ρ . Let T_z be the first passage time of $\{Z_\rho(t), t \geq 0\}$ from $Z_\rho(0) = 0$ to a prespecified level z . In this article we provide the Laplace transform of the $E[T_z^k]$ and obtain the exact formulas for ET_z , ET_z^2 and $\text{var}(T_z)$. Formulas for certain type I counter models are given.

PREDICTION OF TREATMENTS EFFECTS IN A BIASED ALLOCATION MODEL

Authors: *Magalhães*, *Dunsmore* and *Robson*

Robbins and Zhang (1991) provide consistent estimators of multiplicative treatment effects under a biased treatment allocation scheme, and illustrate their methodology within Poisson and binomial models. Here we use predictive criteria to assess the differential treatment effects, and develop predictive distributions for the Poisson errors in variables models. With a hierarchical prior structure, various approximations are investigated, and an illustrative example is included.

A LIKELIHOOD APPROACH TO DIAGNOSTIC TESTS IN CLINICAL MEDICINE

Author: *C Pereira*

This paper presents a pure likelihood approach to statistical inference and its relation to diagnostic tests in clinical medicine. The standard antagonistic frequentist approaches of Fisher and Neyman-Pearson-Wald, and the Bayesian perspective are discussed. We advocate that in medicine, usually, the likelihood is the only source of information available. Also, it is shown that there is no difference of interpretation of the concept of likelihood in statistics and in clinical diagnostic tests. This contradicts what is usually stated.