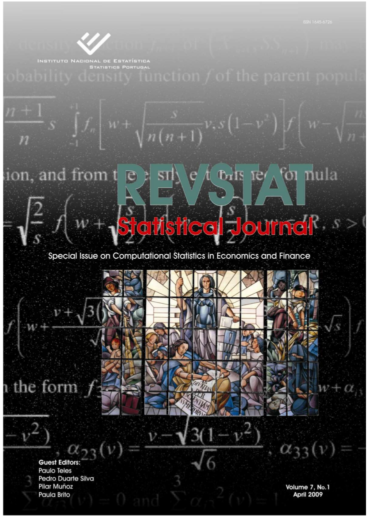
25 July, 2012

REVSTAT-STATISTICAL JOURNAL

Volume 10, Number 2, June 2012

REVSTAT- STATISTICAL JOURNAL



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.

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This Volume of **REVSTAT: Volume 10, No. 2 - June 2012**, includes four articles. Their abstracts are presented below:

MONTE CARLO TEST FOR POLYNOMIAL COVARIATES

Authors: *Abdeljelil Farhat* and *Sami Mestiri.*

In this paper, we review the score test procedure used for testing polynomial covariate effects in a semi parametric additive mixed model. This test is based on the mixed model representation of the smoothing spline estimator of the nonparametric function and treating the inverse of the smoothing parameter as an extra variance component. Zhang and Lin (2003) found that the score test of polynomial test for non Gaussian responses follows a scaled chi-squared distribution. Simulation studies showed that their approximation is less satisfactory for binary data. To overcome this deficiency, we apply the technique of Monte Carlo in order to obtain provably exact procedures. Derivation and performance of each testing procedure are discussed throughout the simulations that we conducted.

ON AN EXTREME VALUE VERSION OF THE BIRNBAUM–SAUNDERS DISTRIBUTION

Authors: *Marta Ferreira, M. Ivette Gomes* and *Víctor Leiva*.

The Birnbaum–Saunders model is a life distribution originated from a problem of material fatigue that has been largely studied and applied in recent decades. A random variable following the Birnbaum–Saunders distribution can be stochastically represented by another random variable used as basis. Then, the Birnbaum–Saunders model can be generalized by switching the distribution of the basis variable using diverse arguments allowing to construct more general classes of models. Extreme value distributions are useful to determinate the probability of events that are larger or smaller than others previously observed. In this paper, we propose, characterize, implement and apply an extreme value version of the Birnbaum–Saunders distribution.

COMPARISON OF CONFIDENCE INTERVALS FOR THE POISSON MEAN: SOME NEW ASPECTS

Authors: *V.V. Patil* and *H.V. Kulkarni*.

We perform a comparative study among nineteen methods of interval estimation of the Poisson mean, in the intervals (0,2), [2,4] and (4,50], using as criteria coverage, expected length of confidence intervals, balance of noncoverage probabilities, E(P-bias) and E(P-confidence). The study leads to recommendations regarding the use of particular methods depending on the demands of a particular statistical investigation and prior judgment regarding the parameter value if any.

NONPARAMETRIC ESTIMATES OF LOW BIAS

Authors: *Christopher S. Withers* and *Saralees Nadarajah*.

We consider the problem of estimating an arbitrary smooth functional of $k \geq 1$ distribution functions (d.f.s) in terms of random samples from them. The natural estimate replaces the d.f.s by their empirical d.f.s. Its bias is generally $\sim n^{-1}$, where n is the minimum sample size, with a p^{th} *order* iterative estimate of bias $\sim n^{-p}$ for any p. For $p \leq 4$, we give an explicit estimate in terms of the first $2p-2$ von Mises derivatives of the functional evaluated at the empirical d.f.s. These may be used to obtain *unbiased* estimates, where these exist and are of known form in terms of the sample sizes; our form for such unbiased estimates is much simpler than that obtained using polykays and tables of the symmetric functions. Examples include functions of a mean vector (such as the ratio of two means and the inverse of a mean), standard deviation, correlation, return times and exceedances. These p^{th} order estimates require only $\sim n$ calculations. This is in sharp contrast with computationally intensive bias reduction methods such as the p^{th} order bootstrap and jackknife, which require $\sim n^p$ calculations.