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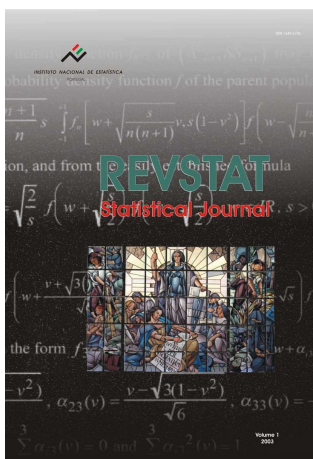
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REVSTAT - STATISTICAL JOURNAL

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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 6, No. 3 - November 2008**, includes four articles. Their abstracts are presented below:

SPECIAL CHARACTERIZATIONS OF STANDARD DISCRETE MODELS

Authors: *Carlos Alberto de Bragança Pereira* and *Julio Michael Stern*.

This article presents important properties of standard discrete distributions and its conjugate densities. The Bernoulli and Poisson processes are described as generators of such discrete models. A characterization of distributions by mixtures is also introduced.

This article adopts a novel singular notation and representation. Singular representations are unusual in statistical texts. Nevertheless, the singular notation makes it simpler to extend and generalize theoretical results and greatly facilitates numerical and computational implementation.

POST ENUMERATION SURVEY OF THE 2001 PORTUGUESE POPULATION AND HOUSING CENSUSES

Authors: *Pedro Simões Coelho* and *Fernando Casimiro.*

Within the framework of the quality control and evaluation program for the Portuguese 2001 Census, the Portuguese statistical office (INE) conducted a Post Enumeration Survey (PES) to measure quality. The main aims of the PES were to evaluate coverage errors and content errors for the target populations. The PES is a probabilistic sampling survey representative at NUTS II level. This paper describes the methodology for this survey. The paper includes a discussion of sample size and allocation resulting from the imposition of maximum coefficients of variation for a set of variables both at regional and national level. The methodology used to obtain predictions for resident populations and dwellings is also presented. These predictions are used in the definition of inclusion probabilities for the primary sampling units. The sampling design is finally compared with two alternative designs (with a smaller number of stages), concluding for the advantage of the proposed design in regard to the survey goals.

ESTIMATION AND FORECASTING IN SUINAR(1) MODEL

Authors: *Nélia Silva, Isabel Pereira* and *M. Eduarda Silva*.

This work considers a generalization of the INAR(1) model to the panel data first order Seemingly Unrelated INteger AutoRegressive Poisson model, SUINAR(1). It presents Bayesian and classical methodologies to estimate the parameters of Poisson SUINAR(1) model and to forecast future observations of the process. In particular, prediction intervals for forecasts — classical approach — and HPD prediction intervals — Bayesian approach — are derived. A simulation study is provided to give additional insight into the finite sample behaviour of the parameter estimates and forecasts.

OPTIMAL AND QUASI-OPTIMAL DESIGNS

Authors: *João Paulo Martins, Sandra Mendonça* and *Dinis Duarte Pestana*.

Optimal design theory deals with the choice of the allocation of the observations to accomplish the estimation of some linear combination of the coefficients in a regression model in an optimal way. Canonical moments provide an elegant framework to the theory of optimal designs. An optimal design for polynomial regression of a given degree r can be fatally inappropriate in case the polynomial degree should in fact be s, and hence when r is unknown it would be preferable to consider designs that show good performance for different values of the polynomial degree. Anderson's (1962) pathbreaking solution of this multidecision problem has originated many developments, as optimal discriminant designs and optimal robust designs. But once again a design devised for a specific task can be grossly inefficient for a slightly different purpose. We introduce mixed designs; tables for regression of degrees r=2,3,4 exhibiting the loss of efficiency when the optimal mixed design is used instead of the optimal discriminant or of the optimal robust design show that the loss of efficiency is at most 1% and 2%, respectively, while the loss of efficiency when using a discriminant design instead of a robust design or vice-versa can be as high as 10%. Using recursive relations we compute pseudo-canonical moments for measures with infinite support, showing that such pseudo-canonical moments do not share the good identifiability properties of canonical moments of measures whose support is a subset of a compact interval of the real line.