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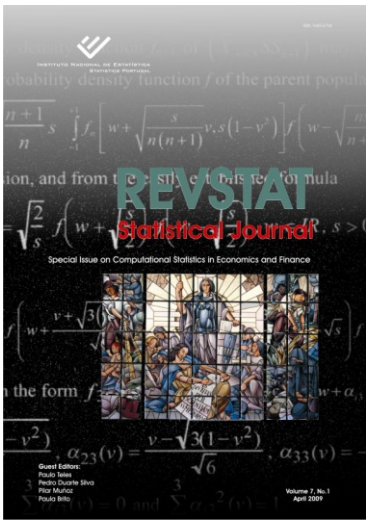

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This Volume of **REVSTAT: Volume 10, No. 3 - November 2012**, includes four articles. Their abstracts are presented below:

SMALL AREA ESTIMATION USING A SPATIO-TEMPORAL LINEAR MIXED MODEL

Authors: Luis N. Pereira and Pedro S. Coelho

In this paper it is proposed a spatio-temporal area level linear mixed model involving spatially correlated and temporally autocorrelated random effects. An empirical best linear unbiased predictor (EBLUP) for small area parameters has been obtained under the proposed model. Using previous research in this area, analytical and bootstrap estimators of the mean squared prediction error (MSPE) of the EBLUP have also been worked out. An extensive simulation study using time-series and cross-sectional data was undertaken to compare the efficiency of the proposed EBLUP estimator over other well-known EBLUP estimators and to study the properties of the proposed estimators of MSPE.

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INFERENCES FOR THE CHANGE-POINT OF THE EXPONENTIATED WEIBULL HAZARD FUNCTION

Authors: Josmar Mazucheli, Emílio Augusto Coelho-Barros and Jorge Alberto Achcar

In many applications of lifetime data analysis, it is important to perform inferences about the change-point of the hazard function. The change-point could be a maximum for unimodal hazard functions or a minimum for bathtub forms of hazard functions and is usually of great interest in medical or industrial applications. For lifetime distributions where this change-point of the hazard function can be analytically calculated, its maximum likelihood estimator is easily obtained from the invariance properties of the maximum likelihood estimators. From the asymptotical normality of the maximum likelihood estimators, confidence intervals can also be obtained. Considering the exponentiated Weibull distribution for the lifetime data, we have different forms for the hazard function: constant, increasing, unimodal, decreasing or bathtub forms. This model gives great flexibility of fit, but we do not have analytic expressions for the change-point of the hazard function. In this way, we consider the use of Markov Chain Monte Carlo methods to get posterior summaries for the change-point of the hazard function considering the exponentiated Weibull distribution.

REGULAR A-OPTIMAL SPRING BALANCE WEIGHING DESIGNS

Author: Malgorzata Graczyk

The problem of indicating an A-optimal spring balance weighing design providing that the measurement errors have different variances and are uncorrelated is considered. The lowest bound of the trace of the inverse information matrix is given and the conditions determining the optimal design are also presented. The incidence matrices of balanced incomplete block designs and group divisible designs are used in constructions of the regular A-optimal spring balance weighing design.

ESTIMATING OF THE PROPORTIONAL HAZARD PREMIUM FOR HEAVY-TAILED CLAIM AMOUNTS WITH THE POT METHOD

Author: Rassoul Abdelaziz

In this paper we propose a new estimator of the proportional hazard premium for heavy-tailed claim amounts, with a help of the peak-over-threshold (POT) method. We establish the asymptotic normality of the new estimator, and its performance is illustrated in a simulation study. Moreover, we compare, in terms of bias and mean squared error, our estimator with the estimator of Necir and Meraghni (2009).