

**SOME PROPERTIES OF THE GUMBEL'S TYPE I  
BIVARIATE EXPONENTIAL DISTRIBUTION  
WITH APPLICATION TO RAINFALL DATA**

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- *ABSTRACT: In order to accommodating crossing hazard curves, which are non-proportional hazards, we consider in this paper a generalized time-dependent logistic hazard survival model, which has a time-dependent term. The model is a wholly parametric competitor for the Cox proportional hazard model. We compare different procedures to compute confidence intervals for the model parameters in presence of random censoring. Our simulation study focus on the study of the coverage probabilities of these different confidence intervals and on the significance levels of some hypothesis tests. We discovered that parametric and non-parametric resampling methods can be successfully used for hypothesis testing and generating precise confidence intervals for the parameters even on small and moderate sized samples..*
- *KEYWORDS: Bootstrap method; coverage probability; Monte Carlo simulation; non-PH model; generalized time-dependent logistic.*

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