Inferences based on generalized order statistics under truncated type I generalized Logistic distribution.

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Abstract:

In this paper, estimation of the parameters of a truncated Type I generalized logistic distribution \( \text{TTIGL}(\beta, \alpha, \tau) \), when \( \beta = 0 \), is obtained based on a doubly truncated sample of generalized order statistics. This model is introduced by [AL-Angary, Truncated logistic distributions as lifetime models, M.Sc. thesis, Department of Statistics, Faculty of Science, King Abdulaziz University, Jeddah, Kindom of Saudi Arabia, 1997] and the finite mixture of \( \text{TTIGL}(\bar{l}, l, \tau) \) component model studied by [Ateya, Mixtures of logistic distributions as life-time models, M.Sc. thesis, Department of Mathematics, Faculty of Science, Assiut University, Assiut, Egypt, 2001] and [AL-Hussaini and Ateya, Maximum likelihood estimations under a mixture of truncated type I generalized logistic components model, J. Stat. Theory Appl. 2(1) (2003), pp. 47–60; AL-Hussaini and Ateya, Bayes estimations under a mixture of truncated type I generalized logistic components model, J. Stat. Theory Appl. 4(2) (2005), pp. 183–208]. The maximum-likelihood and Bayes methods are used in the estimation and then we compare these methods by computing the mean squared errors of the estimates in both cases considering order statistics and upper record values cases. Also, the Bayesian prediction intervals for the future generalized order statistics are computed based on a one-sample scheme.

Keywords:

logistic distribution; maximum-likelihood estimation; Bayes estimation; Bayesian prediction intervals; one-sample scheme; generalized order statistics; MCMC technique; Monte Carlo integration

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