ESTIMATION FOR THECOMPOUND RAYLEIGH DISTRIBUTION BASED ON PROGRESSIVE FIRST-FAILURE-CENSORED SAMPLING

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Abstract

This article considers estimation of the unknown parameters for the compound Rayleigh distribution (CRD) based on a new life test plan called a progressive first failure-censored plan introduced by Wu and Kuş [On estimation based on progressive first-failure-censored sampling, Comput. Statist. Data Anal. 53(10) (2009), 3659-3670]. We consider the maximum likelihood and Bayesian inference of the unknown parameters of the model, as well as the reliability and Hazard rate functions. This has been done using the conjugate prior for the shape parameter, and discrete prior for the scale parameter. The Bayes estimators have been obtained relative to both symmetric (squared error) and asymmetric (LINEX and general entropy (GE)) loss functions. It has been seen that the symmetric and asymmetric Bayes estimators are obtained in closed forms. Also, based on this new censoring scheme, approximate confidence intervals for the parameters of CRD are developed. A practical example using real data set is used for illustration. Finally, to assess the performance of the proposed estimators, some numerical results using Monte Carlo simulation study are reported.