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INFERENCE USING PROGRESSIVELY TYPE-II CENSORED DATA WITH BINOMIAL REMOVALS: BAYESIAN AND NON-BAYESIAN APPROACH

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Abstract

This study considers the estimation problem for the Rayleigh distribution (RD), when the lifetimes are collected under Type-II progressive censoring with random removals, where the number of units removed at each failure time follows a binomial distribution. We use the methods of maximum likelihood as well as the Bayes procedure to derive both point and interval estimates of the parameters. The expected test time to complete the censoring test is computed and analyzed for different censoring schemes. The effect of the binomial distribution parameter p on the expected test time under progressive censoring and the relative expected test time over the complete sample are investigated. Monte Carlo simulations are performed to compare and evaluate the performance of the different methods. Furthermore, an example is presented for illustrative purposes.

Keywords and phrases: Rayleigh distribution, maximum likelihood estimator, boot-strap confidence intervals, Bayes estimator, progressive censoring with random removals, expected test time.

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