

Title: Step-Stress Partially Accelerated Life Tests with Progressive Type-II Censored Sample from Two-Parameter Inverted Exponential Distribution

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Abstract

In this paper, the topic of step-stress partially accelerated life tests with progressive Type-II censoring scheme is investigated when the lifetimes of test units follow the two-parameter inverted exponential distribution. The maximum likelihood estimation method is used to estimate the unknown parameters and acceleration factor. Under the normal use condition, the maximum likelihood estimators of the reliability and hazard rate functions are also calculated. In addition, the observed Fisher information matrix is produced and employed to determine the approximate confidence intervals of the unknown parameters. Furthermore, for the reliability and hazard rate functions, the delta method is used to construct the approximate confidence interval. To compare and examine the effectiveness of the suggested estimation methods, a Monte Carlo simulation study is conducted with various sample sizes and different censoring schemes. Finally, a numerical example is provided to show how the paper's findings can be applied.