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Estimation of exponential population with nonconstant parameters under constant-stress model

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Abstract

Accelerated life test (ALT) was introduced which provides a feasible and efficient way by testing units at higher-than-use condition. This paper considers inference of constant-stress ALT model for exponential population under a general assumption that both exponential scale and location parameters are nonconstant and follow log-linear life-stress model with stress level. Under progressive Type-II censoring, maximum likelihood and pivotal quantities based point estimates for unknown coefficient parameters are proposed. Confidence interval estimates are also constructed by using asymptotic theory and bootstrap techniques. Simulation study and an illustrative example are provided for illustrative purpose.

Keywords: Accelerated life test, Constant-stress model, Nonconstant parameters, Pivotal based estimation, Monte-Carlo simulation.

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