



# Type-II Left Censoring of Some Finite Support Family Lifetime Distributions

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**Abstract:** Reliability systems are uncertain random systems, where the failure times are random variables that follow some probability distributions. Due to the difficulty of having complete failure times data for different units in a certain given test, different censoring schemes are proposed and studied in the literature. This paper considers Type-II left censoring of certain popular members of finite support family distributions, namely, the  $J$ -family distributions, regular power function distribution, and generalized uniform distribution. The maximum likelihood estimators (MLEs) for these distributions parameters were derived under the Type-II left censoring scheme. A comprehensive simulation study was performed using different sample sizes, parameter values, and censored proportions to investigate the behavior of the estimators via bias and root mean square error (RMSE) criteria. Two lifetime data sets from engineering were analyzed to illustrate the Type-II left censoring scheme which prevailed appropriate results.

**Keywords:** *generalized uniform distribution; J-family distributions; power function distribution; type-II left censoring.*

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