

**Interval Estimation of the Weibull Distribution
under the Failure-Censored Sampling Plan**

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Abstract

In this paper, we provide a method for constructing an exact confidence interval for the shape parameter and an exact joint confidence region for the shape and scale parameters of the Weibull distribution under the failure-censored sampling plan. The above joint confidence region is used to obtain a conservative lower confidence bound for the reliability function. Further, an exact confidence interval and an exact joint confidence region for some interested parameters of the type I Extreme-Value distribution are also given. In addition, under the failure-censored sampling plan, we provide optimal criteria to find a best exact confidence interval for the shape parameter and a best exact joint confidence region for the shape and scale parameters. Finally, we give two examples to illustrate the proposed method.

Keywords: Weibull Distribution, Failure-Censored, Joint Confidence Region, Reliability Function,