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# Bayesian Inference of Weibull Distribution Based on Left Truncated and Right Censored Data

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**Abstract**

This article deals with the Bayesian inference of the unknown parameters of the Weibull distribution based on the left truncated and right censored data. It is assumed that the scale parameter of the Weibull distribution has a gamma prior. The shape parameter may be known or unknown. If the shape parameter is unknown, it is assumed that it has a very general log-concave prior distribution. When the shape parameter is unknown, the closed form expression of the Bayes estimates cannot be obtained. We propose to use Gibbs sampling procedure to compute the Bayes estimates and the associated highest posterior density credible intervals. Two data sets, one simulated and one real life, have been analyzed to show the effectiveness of the proposed method, and the performances are quite satisfactory. We further develop posterior predictive density of an item still in use. Based on the predictive density we provide predictive survival probability at a certain point along with the associated highest posterior density credible interval and also the expected number of failures in a given interval.

Key Words and Phrases: Fisher information matrix; maximum likelihood estimators; Gibbs sampling; Prior distribution; Posterior analysis; Credible intervals.

AMS 2000 Subject Classification: Primary 62F10; Secondary: 62H10

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