

Competing risk models in reliability systems, an exponential distribution model with Bayesian analysis approach

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ABSTRACT

The exponential distribution is the most widely used reliability analysis. This distribution is very suitable for representing the lengths of life of many cases and is available in a simple statistical form. The characteristic of this distribution is a constant hazard rate. The exponential distribution is the lower rank of the Weibull distributions. In this paper our effort is to introduce the basic notions that constitute an exponential competing risks model in reliability analysis using Bayesian analysis approach and presenting their analytic methods. The cases are limited to the models with independent causes of failure. A non-informative prior distribution is used in our analysis. This model describes the likelihood function and follows with the description of the posterior function and the estimations of the point, interval, hazard function, and reliability. The net probability of failure if only one specific risk is present, crude probability of failure due to a specific risk in the presence of other causes, and partial crude probabilities are also included.

KEYWORDS:

Failure analysis; Manufacture; Risk assessment; Safety engineering; Weibull distribution