Competing risk models in reliability systems, an Exponential distribution model with Gamma prior distribution, a Bayesian analysis approach

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Abstract:

This paper is a second paper on the use of Exponential distribution in competing risk problems. The difference is this model is developed using Gamma distribution as its prior distribution. For the cases where the failure data together with their causes of failure are simply quantitatively inadequate, time consuming and expensive to perform the life tests, especially in engineering areas, Bayesian analysis approach is used. This model is limited for independent causes of failure. In this paper our effort is to introduce the basic notions that constitute an exponential competing risks model in reliability using Bayesian analysis approach and presenting their analytic methods. Once the model has been develop through the system likelihood function and individual posterior distributions then the parameter of estimates are derived. The results are the estimations of the failure rate of individual risk, the MTTF of individual and system risks, and the reliability estimations of the individual and of the system of the model.

Keywords: Reliability; Competing Risks; Exponential Distribution; Bayesian

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