

# **Objective hazard function estimators for the censored Rayleigh model under the Al-Bayyati loss function and the general entropy loss function**

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The Rayleigh distribution (as a special case of the Weibull distribution), and in particular the censored model, is widely acknowledged for its extensive applications in reliability theory and communication engineering. The literature has demonstrated the simplicity of this model in comparison with other more complex models, such as the Weibull- and the compound Rayleigh models. A host of theory has been derived and juxtaposed the Bayesian estimators under certain loss functions, with specific reference to the Jeffreys prior and other objective prior choices. This model's hazard function is shown to be linear, and this presentation aims to generalize the chosen objective prior distribution to derive estimates for the hazard functions under each loss function considered, all in the Bayesian paradigm. The Al-Bayyati loss function is compared to the well-known squared-error loss, and the general entropy loss is compared to the linear exponential (LINEX) loss. These hazard estimators are compared to each other subsequently via a Monte Carlo simulation approach, whilst simultaneously considering different objective prior distributions. A short application is discussed and future directions are proposed regarding subjective prior choices.

*Key words:* Bayesian inference, LINEX loss, general entropy loss, Al-Bayyati loss

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