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MODIFIED FLEXIBLE WEIBULL DISTRIBUTION

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ABSTRACT

This article is devoted to propose a new five-parameter novel probability model, named as Modified Flexible Weibull distribution. The proposed model is a mixture of two components: first component is a flexible Weibull model and another component is exponential distribution, and exhibits bathtub-shaped failure rate. Some of the mathematical properties of the proposed model, including moments, generating functions, quantile and order statistics are derived. The model parameters are estimated by the maximum likelihood method. To show the workability of the proposed model, a real life example is analyzed and it is observed that, the proposed model performs better than the prominent lifetime distributions, including: Weibull, flexible Weibull (FW), flexible Weibull extension (FWEx), exponentiated Weibull (EW), exponentiated flexible Weibull extension (EFWEx), exponential flexible Weibull extension (EFWEx), transmuted Weibull (TW), and Kumaraswamy Weibull (Ku-w).

KEYWORDS: Flexible Weibull Distribution, Bathtub Shaped Failure Rates, Moment Generating Function, Order Statistics, Maximum Likelihood Estimates