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The odd lindley power rayleigh distribution: properties, classical and bayesian estimation with applications

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ABSTRACT

In this paper, we propose and investigate the odd Lindley Power Rayleigh (OLPR) distribution, which is derived by combining the odd Lindley-G family and power Rayleigh distribution. The proposed distribution, which is comparable to the Lindley distribution, Rayleigh distribution and other Rayleigh generalizations have the desirable attribute of allowing greater flexibility than some of its well known extensions. A comprehensive account of the mathematical and statistical properties along with the estimation of parameters using classical and Bayesian estimation methodologies is presented. An extensive simulation study is carried out to assess the behaviour of estimators based on their biases and mean square errors. Finally, we consider two practical real-life applications, we observe that the proposed model outperforms other competing models using the Akaike information criterion (AIC), the Bayesian information criterion (BIC), Anderson-Darling (A*), Cramer-von Mises (W*) and other goodness-of-fit measures.

Introduction

The process of handling both small and large datasets has benefited significantly from the idea of probability distribution. In many fields, including physics, health care, business management, engineering and food, probability distribution models are crucial and frequently used. They are also relevant to the study of social sciences like economics and psychology. For modelling real-world issues, they are perfectly suited for forecasting and prediction. Because of the numerous applications of probability distributions in various fields, progress in probability distributions has been steady. Many new probability

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