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**A new upside-down bathtub shaped hazard rate model for survival data analysis.** (English)

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Summary: In medical, engineering besides demography and other applied disciplines, it is pronounced in some applications that the hazard rate of the data initially increased to a peak in the beginning age, declined abruptly till it stabilized. In statistics literature, such hazard rate is known as the upside-down bathtub shaped hazard rate and propound in the various survival studies. In this paper, we proposed a transmuted inverse Rayleigh distribution, which possesses the upside-down bathtub shape for its hazard rate. The fundamental properties such as mean, variance, mean deviation, order statistics, Renyi entropy and stress-strength reliability of the proposed model are explored here. Further, three methods of estimation namely maximum likelihood, least squares and maximum product spacings methods are used for estimating the unknown parameters of the transmuted inverse Rayleigh distribution, and compared through the simulation study. Finally, the applicability of the proposed distribution is shown for a set of real data representing the times between failures of the secondary reactor pumps.

**MSC:**

62N05 Reliability and life testing

62E15 Exact distribution theory in statistics

60E05 Probability distributions: general theory

Cited in 7 Documents

**Keywords:**

transmuted inverse Rayleigh model; upside-down bathtub shaped hazard rate; statistical inference; goodness-of-fit

**Full Text:** DOI

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