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Weighted Komal Distribution with Properties and Applications to Model Failure Time Data from Engineering

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ABSTRACT

Weighted distributions are very important for efficient modeling of statistically biased data arising from different fields of knowledge including engineering, biomedical sciences, insurance, social sciences, etc and prediction from the biased data when the standard distributions are not appropriate. It has been observed that weighted distributions seem to occur very frequently in real life because of the stochastic nature of biased data. An attempt has been made to propose a weighted version of Komal distribution named weighted Komal distribution which includes Komal distribution for modeling lifetime failure time data from engineering. The probability density function, cumulative distribution function, hazard function, mean residual life function, stochastic ordering and descriptive measures based on moments of the weighted Komal distribution has been discussed. For the estimation of parameters maximum likelihood estimation has been discussed. For showing the applications and the goodness of fit of the weighted Komal distribution two dataset from engineering related to failure time of components has been considered. The goodness of fit of the weighted Komal distribution has been compared with several weighted and unweighted distributions.

Keywords: Komal distribution; Reliability Properties; Moments based measures

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