FAMILY OF POISSON DISTRIBUTION AND ITS APPLICATION

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ABSTRACT

The purpose of this paper is to introduce three discrete distributions named Poisson exponential distribution, Poisson size biased exponential distribution and size biased Poisson exponential distribution. These distributions apply to biological data sets, traffic datasets and thunderstorm datasets. These distributions are introduced with some of its basic properties including moments, coefficient of skewness and kurtosis are discussed. The method of moments and maximum likelihood estimation of the parameters of discrete PED, PSBED and SBPED are investigated. It is found that the reciprocal of MOM and MLE estimator is unbiased for the proposed distributions. Applications of the three models to different discrete data sets are compared with Poisson distribution, size biased Poisson distribution, size biased generalized Poisson distribution size biased geometric distribution and size biased Poisson lindley distribution to test their goodness of fit and the fit shows that the proposed distributions can be an important tool for modelling biological, traffic and other discrete data sets.

KEYWORDS: Goodness of Fit, Estimation of Parameters, Exponential Distribution, PED, Poisson Distribution, PSBED, SBPD Moments, Size-Biased Exponential Distribution, Size-Biased Poisson Distribution