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ON SIZE BIASED POISSON AILAMUJIA DISTRIBUTION AND ITS APPLICATIONS

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ABSTRACT

In this paper, we obtained a new model for count data by compounding of size biased Poisson distribution(SBPD) with Size biased Ailamujia distribution(SBAD). Important mathematical and statistical properties of the distribution have been derived and discussed. The expression for coefficient of variation, skewness and kurtosis has been obtained. Then, parameter estimation is discussed using momemts method and maximum likelihood method of estimation. Finally, real data set is analyzed to investigate the suitability of the proposed distribution in modeling count data.

KEYWORDS

Size Biased Poisson distribution, Size Biased Ailamujia Distribution, Compound Distribution, Count Data.

1. INTRODUCTION

Compounding a discrete distribution with a continuous one is a technique to create new distribution. Discrete compound probability distributions are of great significance in several applications for theoretical research and applied fields such as biological, engineering, insurance, medical and life testing. Compound probability distribution provides great flexibility in modelling data in practice. By compounding technique we can obtain both continuous and discrete probability distributions. Green wood and Yule started work in this field in 1920 by establishing relation between Poisson and negative binomial distribution through compounding technique by setting rate parameter in Poisson distribution as gamma variable. Skellam (1948) derived a probability distribution from the binomial distribution by regarding the probability of success as a beta variable between sets of trials. Sankaran (1970) establishing a relation between Poisson and Lindley distribution for modeling count data. Gerstenkorn (1993, 1996) obtain the relationship between gamma distribution and exponential distribution through compounding technique by setting the parameters in gamma distribution as exponential variable and also constructed polya with beta distribution through compounding technique. Shanker and Hagos (2016) constructed a new Size biased Poisson Sujatha

