A New Compound Probability Model Applicable to Count Data

Showkat Ahmad Dar*
*Department of Statistics, University of Kashmir,
Srinagar (J&K), India*

Anwar Hassan
*Department of Statistics, University of Kashmir,
Srinagar (J&K), India*

Peer Bilal Ahmad
*Department of Mathematical Sciences, Islamic University of Science &
Technology, Awantipora, Pulwama (J&K), India*

Bilal Ahmad Para
*Department of Mathematical Sciences, Islamic University of Science &
Technology, Awantipora, Pulwama (J&K), India*

In this paper, we obtained a new model for count data by compounding of Poisson distribution with two parameter Pranav distribution. Important mathematical and statistical properties of the distribution have been derived and discussed. Then, parameter estimation is discussed using maximum likelihood method of estimation. Finally, real data set is analyzed to investigate the suitability of the proposed distribution in modeling count data.

Keywords: *Poisson distribution, two parameter Pranav distribution, compound distribution, count data, simulation study, maximum likelihood estimation.*

1. Introduction

There has been a growing concern from the last few decades to obtain flexible parametric probability distributions that can be used to model different types of data sets which cannot be quartered by classical distributions. To obtain such flexible distributions, compounding of probability distribution is comprehensive and advanced technique as it provides a very powerful way to enlarge common

*Corresponding Author: darshowkat2429@gmail.com