A Poisson XLindley Distribution with Applications

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Research Article

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Abstract

In this paper, a Poisson XLindley distribution (PXLD) has been obtained by compounding Poisson (PD) distribution with a continuous distribution. A general expression for its r^{th} factorial moment about origin has been derived and hence its raw moments and central moments are obtained. The expressions for its coefficient of variation, skewness, kurtosis and index of dispersion have also been given. In particular, the method of maximum likelihood and the method of moments for the estimation of its parameters have been discussed. Finally, two real-life data sets are analyzed to investigate the suitability of the proposed distribution in modeling a real data set on **Nipah virus infection**, number of Hemocytometer yeast cell count data and epileptic seizure counts data.

Full Text

Due to technical limitations, full-text HTML conversion of this manuscript could not be completed. However, the latest manuscript can be downloaded and [accessed as a PDF](#).

Declaration

Competing interests:

The authors declare no competing interests.

Figures

Figure 1

Plots of the p.m.f. of the Poisson XLindley distribution: (a) $\theta = 0.1$ (top left); (b) $\theta = 0.2$ (top right); (c) $\theta = 0.3$ (middle left); (d) $\theta = 0.4$ (middle right); (e) $\theta = 1$ (bottom left); and, (f) $\theta = 5$ (bottom right).

Figure 2

Graphs of coefficient of variation, coefficient of skewness, coefficient of kurtosis and index of dispersion of PXLD for varying values of the parameter .

Figure 3

OBS, PD, PLD, PPsLD and PXLD graphs

Figure 4

OBS, PD, PLD, PQLD and PXLD graphs