

# Moments of Order Statistics from Lindley Distribution in the Presence of Multiple Outliers

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## ABSTRACT

In this article, exact expressions for the single and product moments of order statistics from Lindley distribution under the contamination model have been derived. Contamination model is an outlier model where one considers the possibility that some of the observations come from altered form of the originally anticipated distribution. The most commonly studied contamination model, and the one which we have considered is called the slippage model. Generally, in literature most of the works have considered the single outlier model with regard to slippage model due to the fact that; the algebraic and computational difficulties arise when the number of outliers increases. Suppose  $X_1, X_2, \dots, X_n$  be  $n$  random variables then we assume that  $X_1, X_2, \dots, X_{n-k}$  are independently distributed with probability density function (p.d.f.)  $f(x)$  while the remaining  $k$  (i.e. Outliers)  $X_{n-k+1}, \dots, X_n$  are assumed to be independent with p.d.f. arises from some modified version of  $f(x)$ , which is called  $g(x)$ , in which the location and/or scale parameters have been shifted in value. Next, we have obtained the effect of the outliers on the Best Linear Unbiased Estimator (BLUE) of the scale parameter.

**Keywords:** Lindley distribution, Contamination model, Outlier model, Slippage model, BLUE.

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