

SUMMARY

In this thesis, the study of Inverted Weibull distribution has been carried out by deriving its properties together with the properties of truncated-Inverse Weibull distribution and their record values. The fractional moments of truncated-Inverse Weibull distribution have also been derived.

The properties such as mean, variance, moments, entropy of Inverse Weibull distribution and right-truncated Inverse Weibull distribution have been derived. The properties of the order statistics with respect to the Inverse Weibull distribution and truncated-Inverse Weibull distribution have also been derived.

In this thesis, the method of fractional moments, method of maximum likelihood, method of moments have been applied to estimate the parameters of the right-truncated Inverse Weibull distribution. The asymptotic variance covariance of the parameters estimates have also been obtained for the truncated Inverse Weibull distribution by the above mentioned three methods.

The determinant of the variance covariance matrix of the fractional moment estimators has been minimized to determine the value of r (r is the order of fractional moments) for use in fractional moments.

The distributional properties of the record values from Inverse Weibull distribution and truncated Inverse Weibull distribution are derived. It has been observed that for the lower record values of Inverse Weibull distribution

$$E(X_{L(n)}) \rightarrow 0 \text{ as } n \rightarrow \infty$$

when $\lambda = 1$ & $\beta = 1$ (the parameters of Inverse Weibull distribution) then

$$E(X_{L(n)}) = \frac{1}{n-1}.$$

It has also been observed from variances and covariances of lower record values of the Inverse Weibull distribution that for $n \geq 1$,

$$\text{Cov}(X_{L(1)}, X_{L(n)}) \rightarrow \infty$$

and for $m \leq n$, and fixed m ,

$$\text{Cov}(X_{L(m)}, X_{L(n)}) \rightarrow 0 \quad \text{as } n \rightarrow \infty.$$

Some recurrence relations satisfied by the single and product moments of lower record values from the Inverted Weibull distribution and from the truncated-Inverse Weibull distribution are obtained.

Estimation of the parameters of Inverse Weibull distribution and truncated-Inverse Weibull distribution based on series of observed record values and their properties are also presented.