

Exponentiated Transmuted Weibull Distribution: A Generalization of the Weibull Probability Distribution

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Abstract : This paper introduces a new generalization of the two parameter Weibull distribution. To this end, the quadratic rank transmutation map has been used. This new distribution is named exponentiated transmuted Weibull (ETW) distribution. The ETW distribution has the advantage of being capable of modeling various shapes of aging and failure criteria. Furthermore, eleven lifetime distributions such as the Weibull, exponentiated Weibull, Rayleigh and exponential distributions, among others follow as special cases. The properties of the new model are discussed and the maximum likelihood estimation is used to estimate the parameters. Explicit expressions are derived for the quantiles. The moments of the distribution are derived, and the order statistics are examined.

Keywords : exponentiated, inversion method, maximum likelihood estimation, transmutation map

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