

Generalizations of Tukey distributions

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The Generalized Lambda Distribution ($G\lambda D$) is a four-parameter generalization of Tukey's Lambda family. Several methods for estimating the parameters of the $G\lambda D$ have been reported in the literature, but the most popular one is the moment-method matching proposed by Ramberg and Schmeiser (1974). One of the drawbacks of the $G\lambda D$ is that the shape parameter also determines skewness. It seems reasonable that there should be three linear parameters determining position, scale, and skewness and two parameters determining the shapes of the two tails. This suggests a natural generalization of the $G\lambda D$ to give a five-parameter lambda distribution (FPLD).

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