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Characterization of generalized Gamma-Lindley distribution using truncated moments of order statistics. Appendix a.  (English)  

Summary: Having only two parameters, the Gamma-Lindley distribution does not provide enough flexibility for analyzing different types of lifetime data. From this perspective, in order to further enhance its flexibility, we set forward in this paper a new class of distributions named Generalized Gamma-Lindley distribution with four parameters. Its construction is based on certain mixtures of Gamma and Lindley distributions. The truncated moment, as a characterization method, has drawn a little attention in the statistical literature over the great popularity of the classical methods. We attempt to prove that the Generalized Gamma-Lindley distribution is characterized by its truncated moment of the first order statistics. This method rests upon finding a survival function of a distribution, that is a solution of a first order differential equation. This characterization includes as special cases: Gamma, Lindley, Exponential, Gamma-Lindley and Weighted Lindley distributions. Finally, a simulation study is performed to help the reader check whether the available data follow the underlying distribution.

MSC:
62G30  Order statistics; empirical distribution functions
62E10  Characterization and structure theory of statistical distributions
62N05  Reliability and life testing
62E05  Probability distributions: general theory

Keywords:
Gamma-Lindley distribution; characterization; survival function; order statistics; truncated moments

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References:


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