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FAMILIES OF q_T - EXPONENTIAL DISTRIBUTIONS INDUCED BY GENERALIZED LAMBDA OF TYPE V: SOME PROPERTIES WITH APPLICATION

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Abstract

The four-parameter generalized lambda distribution (GLD) was proposed in [1]. We say the GLD is of type V, if the quantile function corresponds to Case (v) in Table 2 of [2], that is,

$$Q(u;\, a,\, b) = \frac{1-(1-u)^a}{b},$$

where $u \in (0, 1)$ and $a, b \in (-\infty, 0)$. Inspired by quantile generated probability distributions [3] we introduce a so-called q_T - exponential family of distributions induced by generalized lambda of type V, and obtain some properties for this class of distributions. A sub-class of this family is shown to be competitive in fitting the Wheaton river data, [2, Table 6].

Keywords and phrases: generalized lambda distribution, exponential distribution, quantile generated probability distribution.

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