

A Note on the PARETO Distribution

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In a recent paper MALIK derived the distributions of several statistics obtained from independent observations from the PARETO distribution with density

$$f(x) = va^v x^{-v-1} \quad a > 0, v > 0, x \geq a. \quad (1.1)$$

This brief note points out that all the results in the above paper can be obtained almost immediately from the properties of exponential distribution in virtue of the following well-known and easily proved Theorem.

Theorem:

A random variable X is distributed with density given by (1.1) if and only if $Y = \log X$ is distributed with density $g(y) = ve^{-v(y-b)}$, $y \geq b$; $v > 0$ where $b = \log a$.

In fact many of the properties associated with order statistics from the exponential distribution can be translated to the case of the PARETO distribution.

Reference

MALIK, H. J.: Distribution of Product Statistics from a Pareto Population, *Metrika* **15**, 1970, 19–22.

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