

Title

Authors

University

15 or 16 July 2026

Preliminaries

Definition

A random vector $\mathbf{X}$ is said to be increasing (decreasing) vector dynamic CRE, if $\xi_i(t_1, t_2)$ is an increasing (decreasing) function of $t_i, i = 1, 2$.

Results

Theorem

Let X be a non-negative absolutely continuous random variable with survival function $\bar{F}(t)$, MRL $m_F(t)$, HR $r_F(t)$, and DCRE $\xi(X; t)$.

Then

$$\xi(X; t) = cm_F(t), \quad c > 0,$$

if and only if X distributed as

Results

Theorem

Let X be a non-negative absolutely continuous random variable with survival function $\bar{F}(t)$, MRL $m_F(t)$, HR $r_F(t)$, and DCRE $\xi(X; t)$.

Then

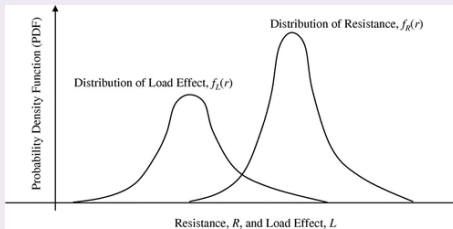
$$\xi(X; t) = cm_F(t), \quad c > 0,$$

if and only if X distributed as

- Exponential where $c = 1$,
- Power where $0 < c < 1$,
- Pareto where $c > 1$.

Applications and Examples

Figure



Example

Let....

The future of research:

References: