

25th Oct 2017

log logistic model.

variant = 0

$$f(t) = \frac{1}{1 + \lambda t^{-\alpha}} \quad \begin{matrix} \alpha > 0 \\ t > 0 \end{matrix}$$

variant = 1

$$F(t) = \frac{1}{1 + (\lambda t)^{-\alpha}}$$

$$\log \lambda = y$$

the quantile model.

$$F(k(q)) = q$$

↑
quantile function.

then. for variant = 1

$$\lambda = \frac{1}{k} \left(\frac{q}{1-q} \right)^{1/\alpha}$$

$$\log(k) = y$$

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print

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```

> simplify(diff(1/(1+lambda * time^(-alpha)), time));
              lambda time          alpha
              -----
              (-alpha) 2
              (1 + lambda time      )

> simplify(diff(1/(1+(lambda * time)^(-alpha)), time));
              (-alpha)
              (lambda time)      alpha
              -----
              (-alpha) 2
              (1 + (lambda time)  ) time

>

```