Package 'llogistic'

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Title The L-Logistic Distribution

Version 1.0.3

Description Density, distribution function, quantile function and random generation for the L-Logistic distribution with parameters m and phi. The parameter m is the median of the distribution.

Imports stats

Depends R (>= 3.3.0)

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 6.1.0

NeedsCompilation no

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Contents

`llogistic` *The L-Logistic Distribution*

Description

Density, distribution function, quantile function and random generation for the L-Logistic distribution with parameters m and phi.

Usage

```
dllogistic(x, m, phi, log = FALSE)

pllogistic(q, m, phi, lower.tail = TRUE, log.p = FALSE)

qllogistic(p, m, phi, lower.tail = TRUE, log.p = FALSE)

rllogistic(n, m, phi)
```

Arguments

x, q	vector of quantiles.
m, phi	parameters of the L-Logistic distribution. The parameter m lies in the interval (0,1) and phi is positive.
log, log.p	logical; if TRUE, probabilities p are given as log(p).
lower.tail	logical; if TRUE (default), probabilities are $P[X \leq x]$, otherwise, P[X > x].
p	vector of probabilities.
n	number of observations.

Details

The llogistic distribution has density

$f(x) = phi(1-m)^{p}him^{p}hi(x(1-x))^{(}phi-1)/((1-m)^{p}hix^{p}hi+m^{p}hi(1-x)^{p}hi)^{2}$,

for 0< x < 1, where m is a median of the distribution and phi is a shape parameter.

Value

dllogistic(x,m,phi) gives the density function, rllogistic(n,m,phi) gives n random variates and qllogistic(p,m,phi) gives the quantile.

Source

The L-Losgistic distribution was introduced by Tadikamalla and Johnson (1982), which refer to this distribution as Logit-Logistic distribution. Here, we have a new parameterization of the Logit-Logistic with the median as a parameter.

References

Paz, R.F., Balakrishnan, N and Bazán, Jorge L. (2016). L-Logistic Distribution: Properties, Inference and an Application to Study Poverty and Inequality in Brazil. São Carlos: Universidade Federal de São Carlos. Tecnical-Scientific Report No. 261, Teory and Method. Sponsored by the Department of Statistical, <URL:http://www.pipges.ufscar.br/publicacoes/relatorios-tecnicos/arquivos-1/rt261.pdf>.

TADIKAMALLA, P. R.; JOHNSON, N. L. (1982). Systems of frequency curves generated by transformations of logistic variables. Biometrika, v. 69, n. 2, p. 461.

Examples

```
dllogistic(0.3, 0.5, 2)
pllogistic(0.7, 0.5, 2)
qllogistic(0.2, 0.5, 2)
rllogistic(10, 0.5, 2)
```

Index