Package: dtgiw (via r-universe)

September 16, 2024

Type Package

Title Discrete Transmuted Generalized Inverse Weibull Distribution

Version 1.0.0

Language en-US

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Description The Discrete Transmuted Generalized Inverse Weibull (DTGIW) distribution is a new distribution for count data analysis. The DTGIW is discrete distribution based on Atchanut and Sirinapa (2021). <DOI:10.14456/sjst-psu.2021.149>.

License GPL-3

Encoding UTF-8

Imports stats,graphics

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

RoxygenNote 7.1.2

NeedsCompilation no

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Date/Publication 2022-03-31 07:20:05 UTC

Repository https://atchanut.r-universe.dev

RemoteUrl https://github.com/cran/dtgiw

RemoteRef HEAD

RemoteSha ec8435bc0b9d032323925e47098ebcd9783c2c4f

Contents

`dDTGIW` *The probability mass function (PMF) for Discrete Transmuted Generalized Inverse Weibull (DTGIW) distribution.*

Description

This function calculated the PMF of the DTGIW distribution.

Usage

```
dDTGIW(x, alpha, beta, lambda, theta, log = FALSE)
```

Arguments

`x`	vector of quantiles.
`alpha`	shape parameter#1.
`beta`	scale parameter.
`lambda`	shape pameter#2.
`theta`	the transmuted parameter.
`log`	logical(TRUE or FALSE); if log=FALSE, then return the PMF; if log=TRUE, then return the natural logarithms of the PMF.

Details

The PMF of the DTGIW distribution is shown in Theorem 1 based on the research paper in references.

Value

the PMF of DTGIW distribution

References

Atchanut Rattanalertnusorn and Sirinapa Aryuyuen (2021). The zero-truncated discrete transmuted generalized inverse Weibull distribution and its applications, Songklanakarin Journal of Science and Technology (SJST), Volume 43 No.4 (July - August 2021), pp. 1140 - 1151. DOI: 10.14456/sjst-psu.2021.149

Examples

```
x <- c(0:10)
dDTGIW(x,3.45,0.7,1.05,0)
```

`loglikeDTGIW` *Negative Log-Likelihood value of DTGIW distribution.*

Description

The function for calculating negative log-likelihood value of DTGIW distribution.

Usage

```
loglikeDTGIW(x, alpha, beta, lambda, theta)
```

Arguments

`x`	a vector of quantile
`alpha`	shape parameter#1
`beta`	scale parameter
`lambda`	shape pameter#2
`theta`	the transmuted parameter

Value

the negative log-likelihood value of DTGIW distribution

References

Atchanut Rattanalertnusorn and Sirinapa Aryuyuen (2021). The zero-truncated discrete transmuted generalized inverse Weibull distribution and its applications, Songklanakarin Journal of Science and Technology (SJST), Volume 43 No.4 (July - August 2021), pp. 1140 - 1151 <DOI: 10.14456/sjst-psu.2021.149>.

Examples

```
x <- rDTGIW(n=20,3.45,0.7,1.05,0)
loglikeDTGIW(x,3.45,0.7,1.05,0)
```

pDTGIW *The cumulative distribution function (CDF) for Discrete Transmuted Generalized Inverse Weibull (DTGIW) distribution.*

Description

This function calculated the CDF of the DTGIW distribution.

Usage

```
pDTGIW(q, alpha, beta, lambda, theta, lower.tail = TRUE, log.p = FALSE)
```

Arguments

q	vector of quantiles.
alpha	shape parameter#1.
beta	scale parameter.
lambda	shape pameter#2.
theta	the transmuted parameter.
lower.tail	logical; if TRUE (default), probabilities are Prob of X less than or equal to x. Otherwise, Prob of X greater than x.
log.p	logical(TRUE or FALSE); if log.p=FALSE, then return the CDF; if log.p=TRUE, then return the natural logarithms of the CDF.

Details

The PMF of DTGIW distribution is shown in Theorem 1. based on the research paper in references. For discrete random variables, the CDF of DTGIW distribution can be calculated by summation of the PMF.

Value

the cdf of DTGIW distribution

References

Atchanut Rattanalertnusorn and Sirinapa Aryuyuen (2021). The zero-truncated discrete transmuted generalized inverse Weibull distribution and its applications, Songklanakarin Journal of Science and Technology (SJST), Volume 43 No.4 (July - August 2021), pp. 1140 - 1151. DOI: 10.14456/sjst-psu.2021.149

Examples

```
x <- c(0:10)
pDTGIW(x,3.45,0.7,1.05,0)
```

plotDTGIW *Plot Discrete Transmuted Generalized Inverse Weibull(DTGIW) distribution.*

Description

This function for the plot of DTGIW distribution.

Usage

```
plotDTGIW(x, fx, alpha = 3.45, beta = 0.7, lambda = 1.05, theta = 0)
```

Arguments

x	a vector of quantile
fx	probability mass function
alpha	shape parameter#1.
beta	scale parameter.
lambda	shape pameter#2.
theta	the transmuted parameter.

Value

the figure of DTGIW distribution

Examples

```
x <- c(0:10)
fx<- dDTGIW(x,3.45,0.7,1.05,0)
plotDTGIW(x,fx,alpha=3.45,beta=0.7,lambda=1.05,theta=0)
fx2 <- dDTGIW(x,2.50,0.5,1.00,0)
plotDTGIW(x,fx2,alpha=2.50,beta=0.5,lambda=1.00,theta=0)
```

qDTGIW *The quantile function for Discrete Transmuted Generalized Inverse Weibull (DTGIW) distribution.*

Description

This function calculated the quantile values of the DTGIW distribution.

Usage

```
qDTGIW(p, alpha, beta, lambda, theta, lower.tail = TRUE, log.p = FALSE)
```

Arguments

p	vector of probabilities
alpha	shape parameter#1.
beta	scale parameter.
lambda	shape pameter#2.
theta	the transmuted parameter.
lower.tail	logical; if TRUE (default), probabilities are Prob of X less than or equal to x. Otherwise, Prob of X greater than x.
log.p	logical(TRUE or FALSE); if log.p=FALSE, then return the cdf; if log.p=TRUE, then return the natural logarithms of the cdf.

Details

The R script calculated the quantile values of the DTGIW distribution is shown based on the research paper in references.

Value

the quantile values of DTGIW distribution

References

Atchanut Rattanalertnusorn and Sirinapa Aryuyuen (2021). The zero-truncated discrete transmuted generalized inverse Weibull distribution and its applications, Songklanakarin Journal of Science and Technology (SJST), Volume 43 No.4 (July - August 2021), pp. 1140 - 1151. DOI: 10.14456/sjst-psu.2021.149.

Examples

```
x <- c(0:10)
p<- pDTGIW(x,3.45,0.7,1.05,0)
qDTGIW(p,3.45,0.7,1.05,0)
```

---

rDTGIW *The random generating function for Discrete Transmuted Generalized Inverse Weibull(DTGIW) distribution.*

Description

This function generates random numbers for the DTGIW distribution.

Usage

```
rDTGIW(n, alpha, beta, lambda, theta)
```

Arguments

n	number of observations. If length(n) > 1, the length is taken to be the number required.
alpha	shape parameter#1.
beta	scale parameter.
lambda	shape pameter#2.
theta	the transmuted parameter.

Details

The R script generates the n random values of the DTGIW distribution is shown based on the research paper in references.

Value

the n random number of DTGIW distribution.

References

Atchanut Rattanalertnusorn and Sirinapa Aryuyuen (2021). The zero-truncated discrete transmuted generalized inverse Weibull distribution and its applications, Songklanakarin Journal of Science and Technology (SJST), Volume 43 No.4 (July - August 2021), pp. 1140 - 1151. DOI: 10.14456/sjst-psu.2021.149.

Examples

```
rDTGIW(n=100,3.45,0.7,1.05,0)
```

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