Package ‘gbeta’

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Type Package
Title Generalized Beta and Beta Prime Distributions
Version 0.1.0
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Description Density, distribution function, quantile function, and random generation for the generalized Beta and Beta prime distributions. The family of generalized Beta distributions is conjugate for the Bayesian binomial model, and the generalized Beta prime distribution is the posterior distribution of the relative risk in the Bayesian 'two Poisson samples' model when a Gamma prior is assigned to the Poisson rate of the reference group and a Beta prime prior is assigned to the relative risk. References: Laurent (2012) <doi:10.1214/11-BJPS139>, Hamza & Vallois (2016) <doi:10.1016/j.spl.2016.03.014>, Chen & Novick (1984) <doi:10.3102/10769986009002163>.
License GPL (>= 2)
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NeedsCompilation yes
Repository CRAN
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R topics documented:

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Description

Density, distribution function, quantile function, and random generation for the generalized Beta distribution.

Usage

dgbeta(u, c, d, kappa, tau, log = FALSE)

pgbeta(q, c, d, kappa, tau)

rgbeta(n, c, d, kappa, tau, method = "mixture")

qgbeta(p, c, d, kappa, tau)

Arguments

u
numeric vector

c, d, kappa, tau
parameters; they must be strictly positive numbers, except kappa which can take any value

log
logical, whether to return the log-density

q
numeric vector of quantiles

n
positive integer, the desired number of simulations

method
the method of random generation, "mixture" or "arou"; only a positive kappa is allowed for the "mixture" method, but this method is faster

p
numeric vector of probabilities

References


Examples

library(gbeta)
curve(dgbeta(x, 4, 12, 10, 0.01), axes = FALSE, lwd = 2)
axis(1)
Description

Density, distribution function, quantile function, and random generation for the generalized Beta prime distribution.

Usage

\begin{itemize}
\item \texttt{dgbetap(x, c, d, kappa, tau, scale = 1, log = FALSE)}
\item \texttt{pgbetap(q, c, d, kappa, tau, scale = 1)}
\item \texttt{rgbetap(n, c, d, kappa, tau, scale = 1, method = "mixture")}
\item \texttt{qgbetap(p, c, d, kappa, tau, scale = 1)}
\end{itemize}

Arguments

\begin{itemize}
\item \texttt{x} numeric vector
\item \texttt{c, d, kappa, tau} parameters; they must be strictly positive numbers, except kappa which can take any value
\item \texttt{scale} scale parameter, a strictly positive number
\item \texttt{log} logical, whether to return the log-density
\item \texttt{q} numeric vector of quantiles
\item \texttt{n} positive integer, the desired number of simulations
\item \texttt{method} the method of random generation, "mixture" or "arou"; only a positive kappa is allowed for the "mixture" method, but this method is faster
\item \texttt{p} numeric vector of probabilities
\end{itemize}

References


Examples

\begin{itemize}
\item \texttt{library(gbeta)}
\item \texttt{curve(dgbetap(x, 4, 12, 10, 0.01), to = 10, axes = FALSE, lwd = 2)}
\item \texttt{axis(1)}
\end{itemize}
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