

Package: skewt (via r-universe)

October 10, 2026

Version 1.0

Date 2021-12-10

Title The Skewed Student-t Distribution

Description Density, distribution function, quantile function and random generation for the skewed t distribution of Fernandez and Steel.

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Repository <https://newystats.r-universe.dev>

Date/Publication 2021-12-11 03:56:11 UTC

RemoteUrl <https://github.com/newystats/skewt>

RemoteRef HEAD

RemoteSha 8d654c60ea7aba5a588284631aad0aefdebbe994

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SkTDist	<i>The Skewed Student t Distribution</i>
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Description

Density, distribution function, quantile function and random generation for the skewed t distribution, as introduced by Fernandez and Steel, with df degrees of freedom.

Usage

```
dskt(x, df, gamma = 1)
pskt(x, df, gamma = 1)
qskt(p, df, gamma)
rskt(n, df, gamma)
```

Arguments

x	vector of quantiles.
p	vector of probabilities.
n	number of observations. If length(n) > 1, the length is taken to be the number required.
df	degrees of freedom (> 0, maybe non-integer).
gamma	skewing parameter, γ

Details

The Skewed t distribution with $df = \nu$ degrees of freedom has the following density, where $f(x)$ is the density of the t distribution, with $= \nu$ degrees of freedom :

$$f(x) = \frac{2}{\gamma + \frac{1}{\gamma}} f(\gamma x) \quad \text{for } x < 0$$

and

$$f(x) = \frac{2}{\gamma + \frac{1}{\gamma}} f\left(\frac{x}{\gamma}\right) \quad \text{for } x \geq 0$$

Value

dskt gives the density, pskt gives the distribution function, qskt gives the quantile function, and rskt generates random deviates.

References

- Fernandez, C. and Steel, M. F. J. (1998). On Bayesian modeling of fat tails and skewness, *J. Am. Statist. Assoc.* **93**, 359–371.
- Rohr, P. and Hoeschele, I. (2002). Bayesian QTL mapping using skewed Student- t distributions, *Genet. Sel. Evol.* **34**, 1–21.

See Also

[df](#) for the F distribution.

Examples

```
dskt(0.5, 2)
dskt(0.01, 2, 2)
pskt(1.25, 2, 2)
pskt(c(0.5, 1.25), 3)
qskt(c(0, 0.025, 0.25, 0.5, 0.75, 0.975, 1), 2, 2)
rskt(100, 2, 2)
plot(function(x) dskt(x, 2, 2), -3, 3, n=301)
```

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* **distribution**

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