

# Package ‘skewt’

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**Title** The Skewed Student-t Distribution

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

**License** GPL

**Repository** CRAN

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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, $\gamma$  |

**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)
```

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