

Circular Normal (von Mises distribution)

Parametrisation

The circular Normal or von Mises distribution, has density

$$f(y) = \frac{1}{2\pi I_0(\kappa)} \exp(\kappa \cos(y - \mu)),$$

for continuously responses y where $|y| \leq \pi$ and $|\mu| \leq \pi$. Here,

μ is a measure of location, and

κ is a measure of the precision.

Link-function

The “mean” of y is given as μ and the mean is linked to the linear predictor as

$$\mu = 2 \arctan(\eta)$$

(Link function “tan”)

Hyperparameters

The “precision” κ is represented as

$$\theta = \log \kappa$$

and the prior is defined on θ .

Specification

- family = `circularnormal`
- Required arguments: y

Hyperparameter spesification and default values

hyper

theta

name log precision parameter

short.name prec

initial 4

fixed FALSE

prior loggamma

param 1 0.005

to.theta

from.theta

survival FALSE

discrete FALSE

link default tan

pdf circular-normal

Example

In the following example we estimate the parameters in a simulated example with circular Normal responses.

Notes

None.