A special case of the Gamma-distribution

Parametrisation

We consider this distribution

$$\pi(y) = \frac{1}{\Gamma(a)} y^{a-1} \exp(-y), \qquad a > 0, \quad y > 0,$$

where $E(y) = \mu = a$.

Link-function

The linear predictor η is linked to the mean μ using a default log-link

$$\mu = \exp(\eta)$$

Hyperparameter

None.

Specification

- family = `gammajw` for regression models and family = `gammajw.surv` for survival models.

- Required arguments: for `gammajw.surv`, y (to be given in a format by using `inla.surv()`), and for `gammajw`, y.

Hyperparameter spesification and default values

gammajw:

doc A special case of the Gamma likelihood

hyper

survival FALSE

discrete FALSE

link default log neglog

pdf gammajw

gammajwsurv:

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hyper

> **theta1**
>> **hyperid** 58200
>> **name** beta1
>> **short.name** beta1
>> **initial** -7
>> **fixed** FALSE
>> **prior** normal

param -4 100

to.theta `function(x) x`

from.theta `function(x) x`

theta2

    hyperid 58201

    name beta2

    short.name beta2

    initial 0

    fixed FALSE

    prior normal

    param 0 100

    to.theta `function(x) x`

    from.theta `function(x) x`

theta3

    hyperid 58202

    name beta3

    short.name beta3

    initial 0

    fixed FALSE

    prior normal

    param 0 100

    to.theta `function(x) x`

    from.theta `function(x) x`

theta4

    hyperid 58203

    name beta4

    short.name beta4

    initial 0

    fixed FALSE

    prior normal

    param 0 100

    to.theta `function(x) x`

    from.theta `function(x) x`

theta5

    hyperid 58204

    name beta5

    short.name beta5

    initial 0

    fixed FALSE

    prior normal

    param 0 100

    to.theta `function(x) x`

    from.theta `function(x) x`

theta6

hyperid 58205

name beta6

short.name beta6

initial 0

fixed FALSE

prior normal

param 0 100

to.theta function(x) x

from.theta function(x) x

theta7

hyperid 58206

name beta7

short.name beta7

initial 0

fixed FALSE

prior normal

param 0 100

to.theta function(x) x

from.theta function(x) x

theta8

hyperid 58207

name beta8

short.name beta8

initial 0

fixed FALSE

prior normal

param 0 100

to.theta function(x) x

from.theta function(x) x

theta9

hyperid 58208

name beta9

short.name beta9

initial 0

fixed FALSE

prior normal

param 0 100

to.theta function(x) x

from.theta function(x) x

theta10

hyperid 58209

name beta10

short.name beta10

initial 0

fixed FALSE

prior normal

param 0 100

to.theta function(x) x

from.theta function(x) x

survival TRUE

discrete FALSE

link default log

pdf gammajw

Example

In the following example we estimate the parameters in a simulated example.

```
n <- 300
x <- rnorm(n, sd = 0.3)
eta <- 1 + x
mu <- exp(eta)
y <- rgamma(n, shape = mu, scale = 1)
r <- inla(y ~ 1 + x,
          data = data.frame(y, x),
          family = "gammajw",
          control.compute = list(cpo = TRUE),
          control.fixed = list(prec.intercept = 0.01),
          verbose = TRUE)
summary(r)

yy <- inla.surv(y, event = 1)
rr <- inla(yy ~ 1 + x,
          data = list(yy = yy, x = x),
          family = "gammajwsurv",
          control.compute = list(cpo = TRUE),
          control.fixed = list(prec.intercept = 0.01),
          verbose = TRUE)
summary(rr)

print(r$summary.fixed - rr$summary.fixed)
```

Notes

None.