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 $\mathrm{E}(y) = \mu = a$.

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:

doc `A special case of the Gamma likelihood (survival)`

hyper

theta1

hyperid `58200`
name `beta1`
short.name `beta1`
output.name `beta1 for GammaJW-Cure`
output.name.intern `beta1 for GammaJW-Cure`
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
output.name beta1 for GammaJW-Cure
output.name.intern beta1 for GammaJW-Cure
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
output.name beta3 for GammaJW-Cure
output.name.intern beta3 for GammaJW-Cure
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
output.name beta4 for GammaJW-Cure
output.name.intern beta4 for GammaJW-Cure
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
output.name beta5 for GammaJW-Cure
output.name.intern beta5 for GammaJW-Cure
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
output.name beta6 for GammaJW-Cure
output.name.intern beta6 for GammaJW-Cure
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
output.name beta7 for GammaJW-Cure
output.name.intern beta7 for GammaJW-Cure
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
output.name beta8 for GammaJW-Cure
output.name.intern beta8 for GammaJW-Cure
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`
output.name `beta9 for GammaJW-Cure`
output.name.intern `beta9 for GammaJW-Cure`
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`
output.name `beta10 for GammaJW-Cure`
output.name.intern `beta10 for GammaJW-Cure`
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.