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.