

GaussianJW

Parametrisation

The GaussianJW likelihood is a two-part likelihood for $\{(y, v)_i\}$. First a Gaussian observation y

$$y | \dots \sim \mathcal{N}(p, V(p, n))$$

with mean (probability) p and a variance function

$$\log(V(p, n)) = \beta_1 + \beta_2 \log(p(1 - p)) + \beta_3 \log(n),$$

and then an (conditional independent) observed variance v , where

$$\nu \frac{v}{V(p, n)} | \dots \sim \chi^2_\nu.$$

The case $\beta_1 = 0, \beta_2 = 1, \beta_3 = -1$ resembles the case where a Binomial is approximated with a Normal. (n, ν) is considered as fixed.

Link-function

The probability p is linked to the linear predictor η with a (default) logit link

$$p = \frac{1}{1 + \exp(-\eta)}$$

but other links are also possible.

Hyperparameters

The hyperparameters are

$$\theta_1 = \beta_1$$

$$\theta_2 = \beta_2$$

$$\theta_3 = \beta_3$$

and the prior is defined on $(\theta_1, \theta_2, \theta_3)$.

Specification

- family = `gaussianjw`
- Required arguments: y , n and ν (all vectors of the same length) as an `inla.mdata()`-object with this specific ordering, see the example.

Hyperparameter spesification and default values

Example