

Linkmodel: logoffset

Parametrization

This model is an extension of the “log”-link, to include an additional scaled offset, so that

$$y_i \sim \text{Poisson}(\beta x_i + \exp(\eta_i))$$

where $\beta \geq 0$ is an optional hyperparameter (default fixed to be 1), x_i is a (required) non-negative covariate.

Hyperparameters

The parameter β represented as

$$\theta = \log \beta$$

and the prior is defined on θ .

Specification

Use `model="logoffset"` within `control.link`. The `variant=0` in `control.link` gives the link function above, while `variant=1` gives $\beta x_i - \exp(\eta_i)$ (for other likelihoods).

Hyperparameter specification and default values

doc Log-link with an offset

hyper

```
theta
  hyperid 49001
  name beta
  short.name b
  prior normal
  param 0 100
  initial 0
  fixed TRUE
  to.theta function(x) log(x)
  from.theta function(x) exp(x)
```

pdf logoffset

Example

```
n = 1000
off = rpois(n, lambda = 1)
x = rnorm(n)
lambda = off + exp(1 + x)
y = rpois(n, lambda = lambda)

r = inla(y ~ 1 + x, data = data.frame(y, x, link.cov = off),
        family = "poisson",
        control.family = list(
          control.link = list(
```

```
model = "logoffset",  
hyper = list(  
  beta = list(  
    initial = 0,  
    ##fixed = TRUE  
    fixed = FALSE  
  )),  
link.covariates = link.cov)
```

Notes