Exponential

Parametrisation

The Exponential distribution is

$$\text{Prob}(y) = \lambda \exp(-\lambda y) \qquad \lambda > 0$$

for responses $y > 0$.
In survival analysis, models are generally specified through the hazard function. For exponential model, the baseline hazard is constant over time and the hazard function is:

$$h(y) = \lambda$$

Link-function

The parameter λ is linked to the linear predictor as:

$$\lambda = \exp(\eta)$$

Hyperparameters

None.

Specification

- family = `Exponential`
- Required arguments: y (to be given in a format by using `inla.surv()` function)

Example

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

```
n = 10000
x = runif(n)
lambda = exp(1+x)
y = rexp(n, rate=lambda)
event = rep(1,n)
data = list(y=y, event=event, x=x)
formula = inla.surv(y,event)~ x
model = inla(formula, family ="exponential", data=data, verbose=T)
```

Notes

- Exponential model can be used for right censored, left censored and interval censored data.

- A general frame work to represent time is given by `inla.surv()`