Bell

Parametrisation

The Bell distribution is

$$\text{Prob}(y) = \frac{\lambda^y \exp(1 - \exp(\lambda))B_y}{y!}$$

for responses $y = 0, 1, 2, \ldots$, where B_y are the Bell-numbers ($B_2 = 2, B_5 = 52, B_8 = 4140$, etc). The expected value is $\lambda \exp(\lambda)$ and the variance is $\lambda(1 + \lambda) \exp(\lambda)$.

Link-function

The mean is linked to the linear predictor by

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

where $E > 0$ is a known constant.

Hyperparameters

None.

Specification

- family = `bell`
- Required arguments: (integer-valued) y and E (default 1).

Example

In the following example we estimate the parameters in a simulated example with Poisson responses.

Notes