

Logistická regrese

Model

... alternativní rozdělení pro $y \in \{0, 1\}$ - $p = P(y = 1)$

$$\text{logit}(p) = x\theta + e$$

Logit je $\text{logit}(p) = \ln \frac{p}{1-p} \quad (0, 1) \rightarrow R$

Inverzní logit

$$\ln \frac{p}{1-p} = x\theta$$

$$\frac{p}{1-p} = \exp(x\theta)$$

$$p = \exp(x\theta) - p \exp(x\theta)$$

$$p(1 + \exp(x\theta)) = \exp(x\theta)$$

$$p = \frac{\exp(x\theta)}{1 + \exp(x\theta)} = \text{logit}^{-1}(x\theta)$$

$$P(y = 0) = 1 - p = 1 - \frac{\exp(x\theta)}{1 + \exp(x\theta)} = \frac{1}{1 + \exp(x\theta)}$$

Odtud

$$f(y|x\theta) = \frac{\exp(yx\theta)}{1 + \exp(x\theta)}$$

... když je $y = 0$, tak v čitateli je 1.