

Function sigmoid

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 x$$

$$\exp\left(\ln\left(\frac{p}{1-p}\right)\right) = \exp(\beta_0 + \beta_1 x)$$

$$\frac{p}{1-p} = e^{\beta_0 + \beta_1 x}$$

$$p = e^{\beta_0 + \beta_1 x} \times (1-p)$$

$$p = e^{\beta_0 + \beta_1 x} - p e^{\beta_0 + \beta_1 x}$$

$$p + p e^{\beta_0 + \beta_1 x} = e^{\beta_0 + \beta_1 x}$$

$$p(1 + e^{\beta_0 + \beta_1 x}) = e^{\beta_0 + \beta_1 x}$$

$$p = \frac{e^{\beta_0 + \beta_1 x}}{1 + e^{\beta_0 + \beta_1 x}} =$$

sigmoid

$$p = \frac{1}{1 + e^{-z}}$$

$$p = \frac{e^z}{1 + e^z}$$

$$\frac{e^{h_\theta(x)}}{1 + e^{h_\theta(x)}}$$