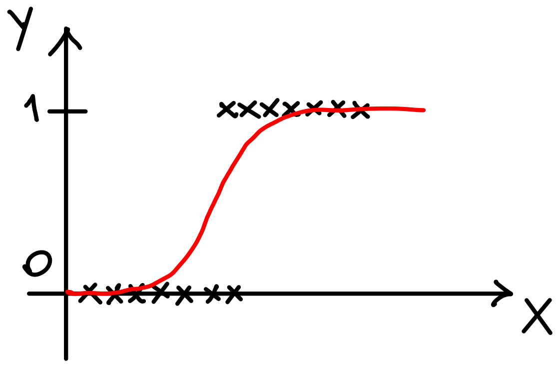
Modelo de regressão logística



$$Y_i = \begin{cases} 1, \text{ se a característica está presente} \\ 0, \text{ c.c.} \end{cases}$$

$$P(Y_i = 1 \mid X_i) = \pi_i$$

$$P(Y_i = 0 \mid X_i) = 1 - \pi_i$$

$$\eta_i = \log\left(\frac{\pi_i}{1-\pi_i}\right) = \alpha + \beta X_i, \quad i = 1, \dots, n$$

De forma geral, com p preditoras, podemos escrever

$$\log\left(\frac{\pi_i}{1-\pi_i}\right) = X_i^T \beta, \quad i = 1, \dots, n$$

$$= \beta_0 + \beta_1 X_{1i} + \dots + \beta_p X_{pi}$$

$$\log\left(\frac{\hat{\pi}_i}{1-\hat{\pi}_i}\right) = X_i^T \hat{\beta} \Rightarrow \frac{\hat{\pi}_i}{1-\hat{\pi}_i} = \exp\left(X_i^T \hat{\beta}\right)$$

<u>Chance</u>: $\dfrac{\hat{\pi}_i}{1-\hat{\pi}_i} = \exp\left(X_i^T \hat{\beta}\right)$

$$\hat{\pi}_i = (1-\hat{\pi}_i)\exp(X_i^T\hat{\beta}) = \exp(X_i^T\hat{\beta}) - \hat{\pi}_i \exp(X_i^T\hat{\beta})$$

$$\hat{\pi}_i\left(1 + \exp(X_i^T\hat{\beta})\right) = \exp(X_i^T\hat{\beta})$$

$$\hat{\pi}_i = \frac{\exp(X_i^T\hat{\beta})}{1+\exp(X_i^T\hat{\beta})} \qquad \hat{\beta} \text{ EMV de } \beta.$$