

Logistic Regression Formulas

$$\ln \left(\frac{P(Y = 1 | \mathbf{X} = \mathbf{x})}{P(Y = 0 | \mathbf{X} = \mathbf{x})} \right) = \beta_0 + \beta_1 x_1 + \dots + \beta_{p-1} x_{p-1}$$

$$\begin{aligned} \frac{P(Y = 1 | \mathbf{X} = \mathbf{x})}{P(Y = 0 | \mathbf{X} = \mathbf{x})} &= e^{\beta_0 + \beta_1 x_1 + \dots + \beta_{p-1} x_{p-1}} \\ &= e^{\beta_0} e^{\beta_1 x_1} \dots e^{\beta_{p-1} x_{p-1}} \end{aligned}$$

$$P(Y = 1 | \mathbf{X} = \mathbf{x}) = \frac{e^{\beta_0 + \beta_1 x_1 + \dots + \beta_{p-1} x_{p-1}}}{1 + e^{\beta_0 + \beta_1 x_1 + \dots + \beta_{p-1} x_{p-1}}}$$