Logistic Regression for Binary Sentiment Classification

Binary Response Variable: Y ∈{0,1} **Predictors:** $X = (x_1, x_2, \ldots, x_M),\ x_i \in \Re$

$$Y = \begin{cases} 1 & X \text{ is POSITIVE} \\ 0 & X \text{ is NEGATIVE} \end{cases}$$

$$\log \frac{p(Y=1|X)}{p(Y=0|X)} = \log \frac{p(Y=1|X)}{1-p(Y=1|X)} = \beta_0 + \sum_{i=1}^{M} x_i \beta_i \quad \beta_i \in \Re$$

$$p(Y=1|X) = \frac{e^{\beta_0 + \sum_{i=1}^{M} x_i \beta_i}}{e^{\beta_0 + \sum_{i=1}^{M} x_i \beta_i} + 1}$$