Estimating Coefficients: MLE

$$\prod_{i;y_i=1} p(x_i)$$

$$\prod_{i;y_i=0} 1 - p(x_i)$$

$$L(\beta_0, \beta_1) = \prod_{i;y_i=1} p(x_i) \cdot \prod_{i;y_i=0} 1 - p(x_i)$$

$$L(\beta_0, \beta_1) = \prod_{i=1} p(x_i)^{y_i}(1 - p(x_i))^{1-y_i}$$

$$l(\beta_0, \beta_1) = \sum_{i=1} y_i \log(p(x_i)) + (1 - y_i) \log(1 - p(x_i))$$

[full proof:https://arunaddagatla.medium.com/maximum-likelihood-estimation-in-logistic-regression-f86ff1627b67

Estimating Coefficients: MLE

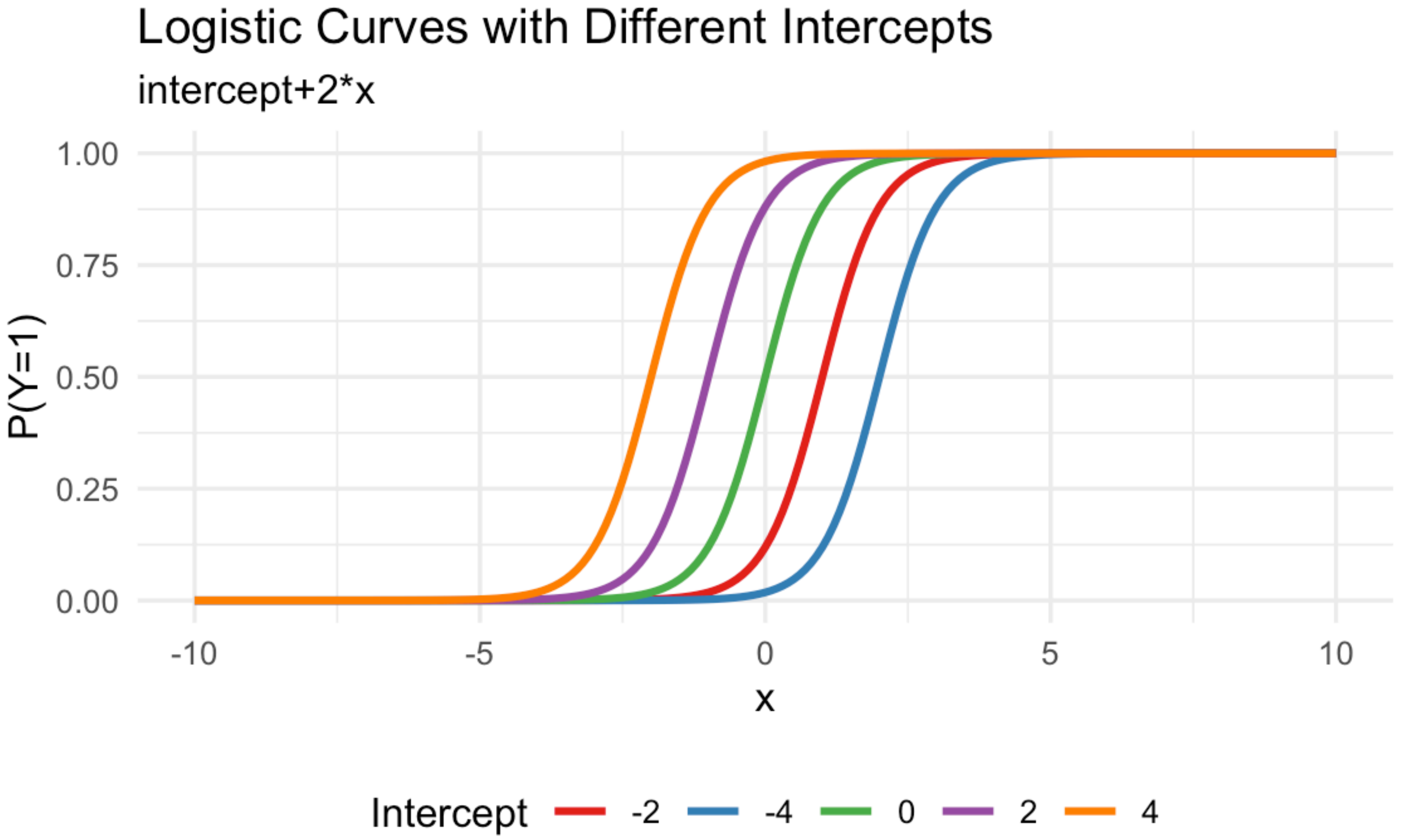
$$\prod_{i;y_i=1} p(x_i) \qquad\qquad \prod_{i;y_i=0} 1 - p(x_i)$$

$$L(\beta_0, \beta_1) = \prod_{i;y_i=1} p(x_i) \cdot \prod_{i;y_i=0} 1 - p(x_i)$$

$$L(\beta_0, \beta_1) = \prod_{i=1} p(x_i)^{y_i}(1 - p(x_i))^{1-y_i}$$

$$l(\beta_0, \beta_1) = \sum_{i=1} y_i \log(p(x_i)) + (1 - y_i)\log(1 - p(x_i))$$

[full proof:https://arunaddagatla.medium.com/maximum-likelihood-estimation-in-logistic-regression-f86ff1627b67


Logistic Curves with Different Intercepts
intercept+2*x
1.00
0.75
0.50
0.25
0.00
P(Y=1)
-10
-5
0
5
10
x
Intercept
-2
-4
0
2
4