

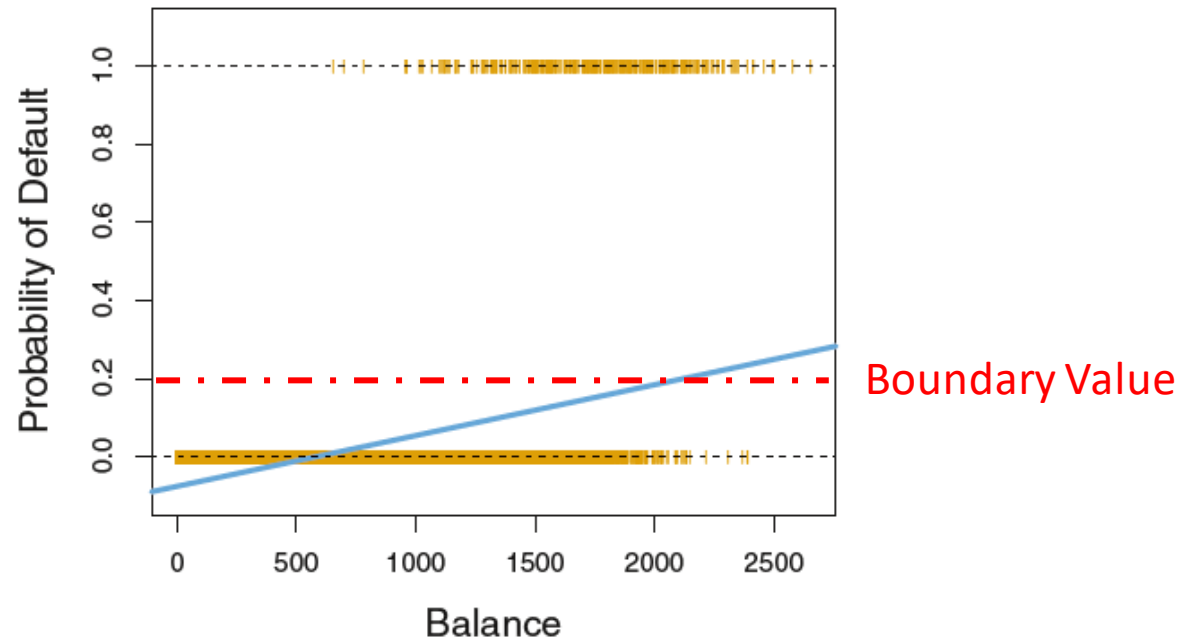


Start-Tech Academy

Logistic Regression

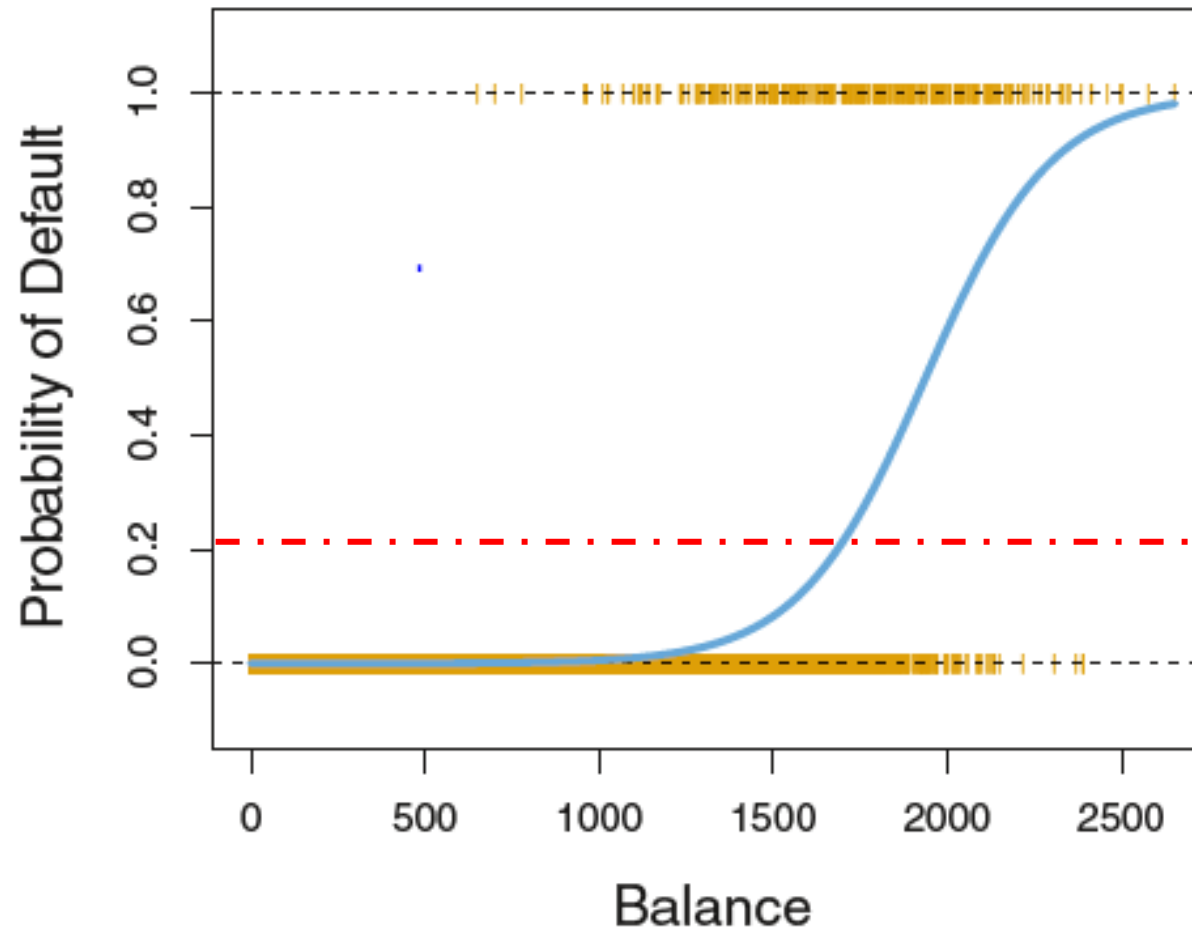
Data

	default	student	balance	income
1	No	No	729.52650	44361.625
2	No	Yes	817.18041	12106.135
3	No	No	1073.54916	31767.139
4	No	No	529.25060	35704.494



Logistic Regression

Sigmoid Function



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



Logistic Regression

Maximum Likelihood Method

$$\ell(\beta_0, \beta_1) = \prod_{i:y_i=1} p(x_i) \prod_{i':y_{i'}=0} (1 - p(x_{i'}))$$

Model	Method
Linear Regression	OLS (Ordinary Least Squares)
Logistic Regression	Maximum Likelihood method