

# Logistic Regression

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## Intuition

# Logistic Regression

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Linear Regression:

- **Simple:**

$$y = b_0 + b_1 * x$$

# Logistic Regression

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## Linear Regression:

- **Simple:**

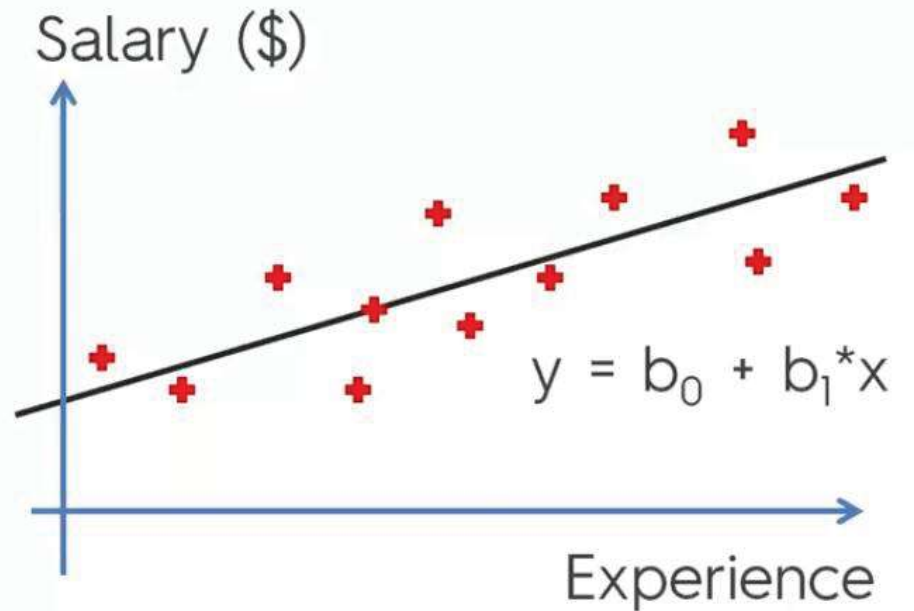
$$y = b_0 + b_1 * x$$

- **Multiple:**

$$y = b_0 + b_1 * x_1 + \dots + b_n * x_n$$

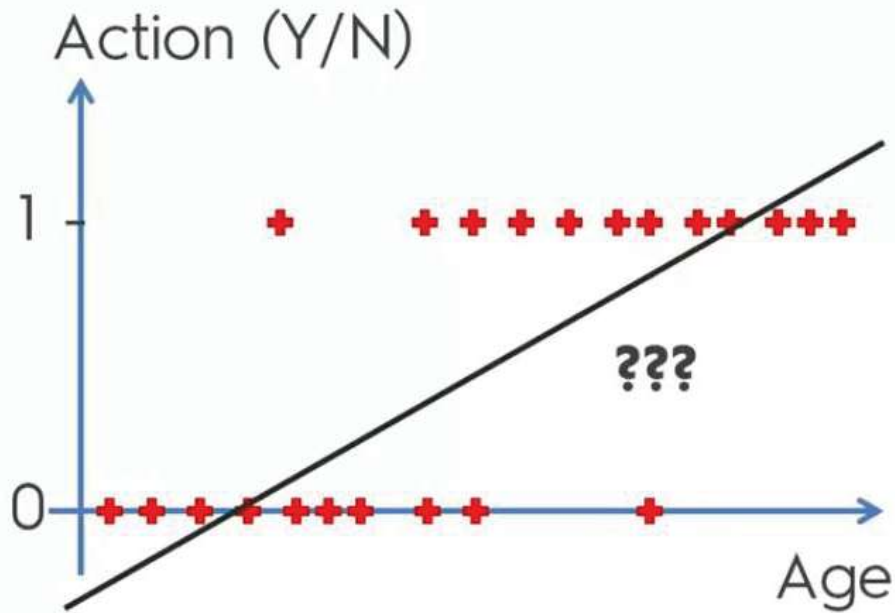
# Logistic Regression

We know this:

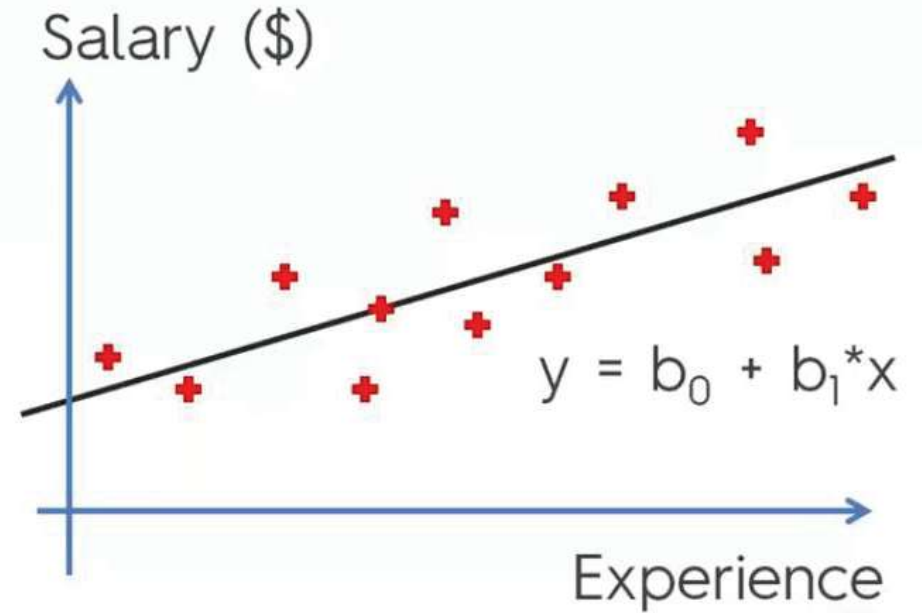


# Logistic Regression

This is new:

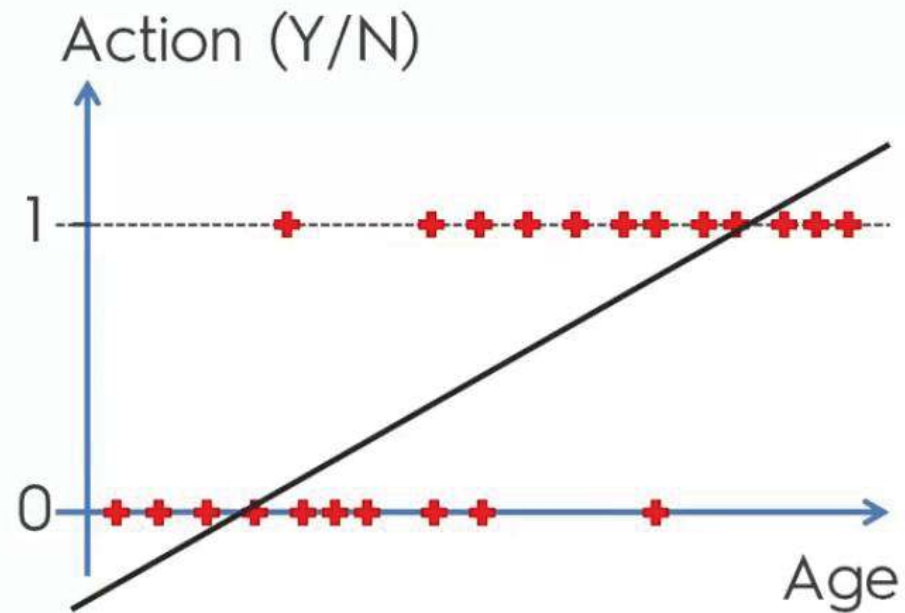


We know this:

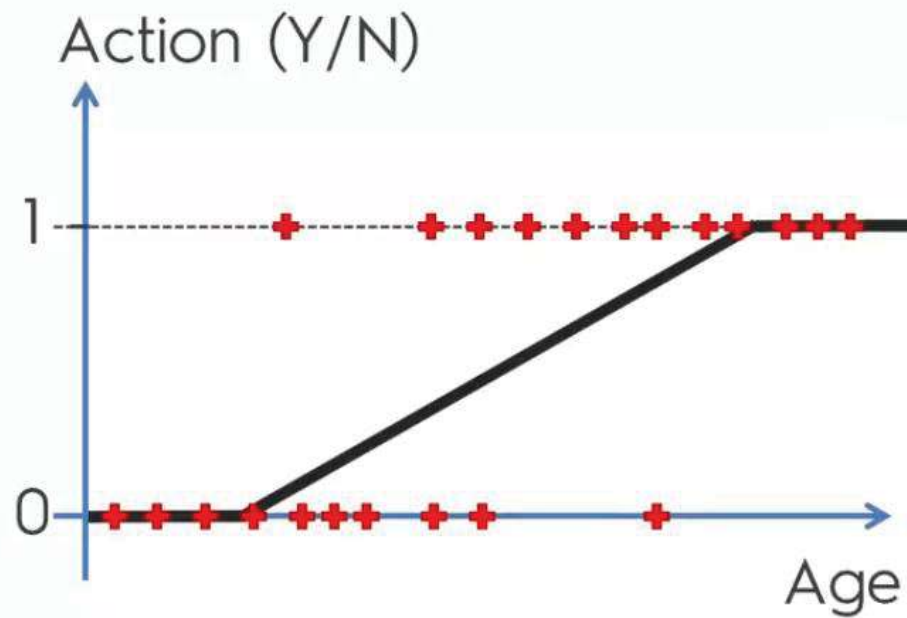


# Logistic Regression

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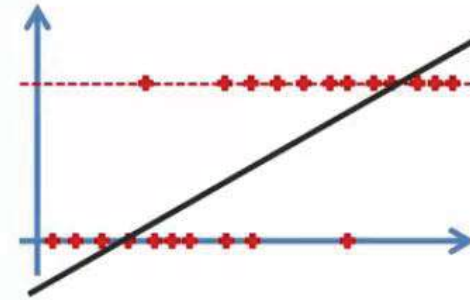


# Logistic Regression



# Logistic Regression

$$y = b_0 + b_1 * x$$

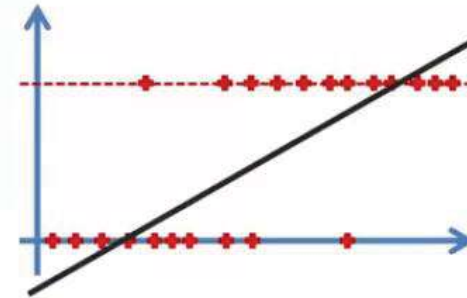


# Logistic Regression

$$y = b_0 + b_1 * x$$

Sigmoid Function

$$p = \frac{1}{1 + e^{-y}}$$



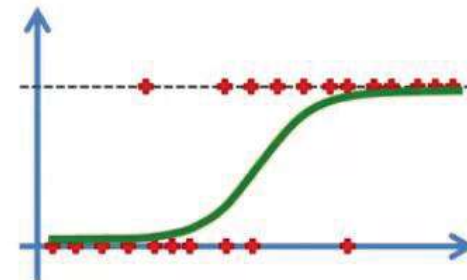
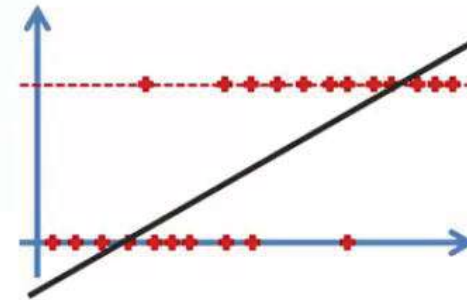
# Logistic Regression

$$y = b_0 + b_1 * x$$

Sigmoid Function

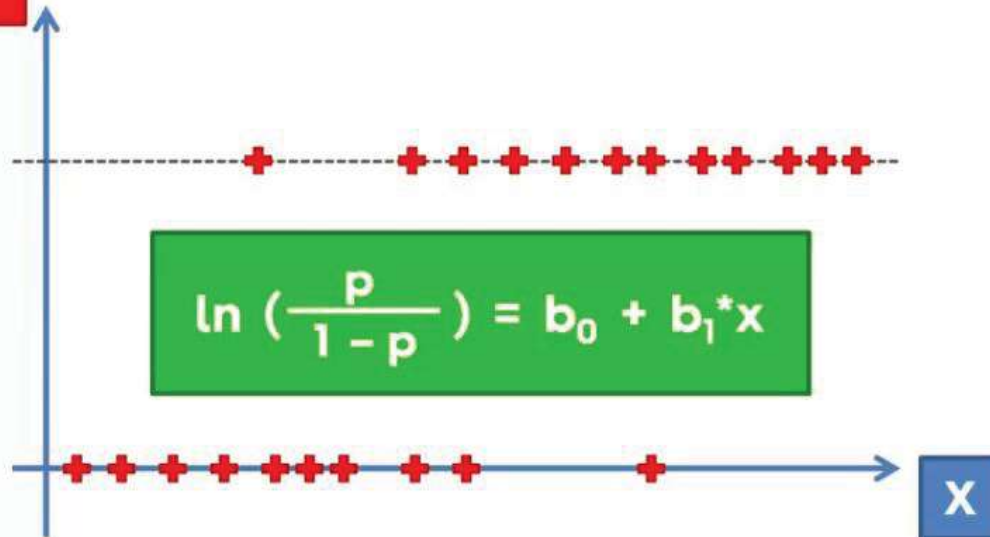
$$p = \frac{1}{1 + e^{-y}}$$

$$\ln \left( \frac{p}{1 - p} \right) = b_0 + b_1 * x$$



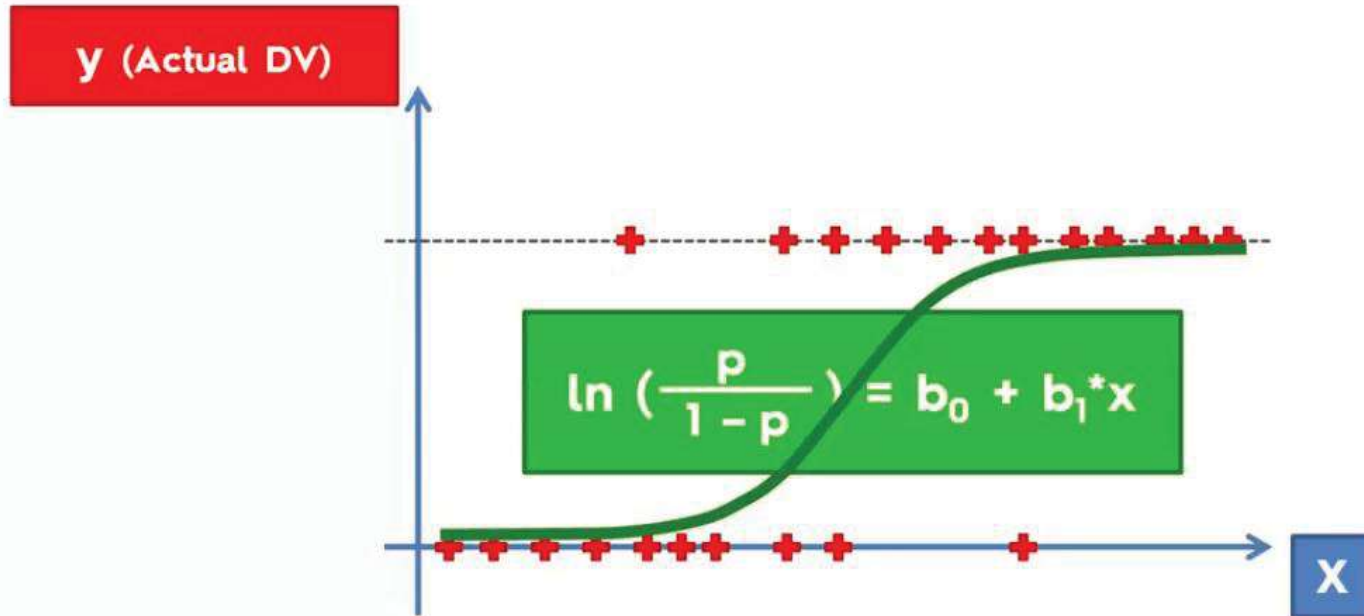
# Logistic Regression

y (Actual DV)

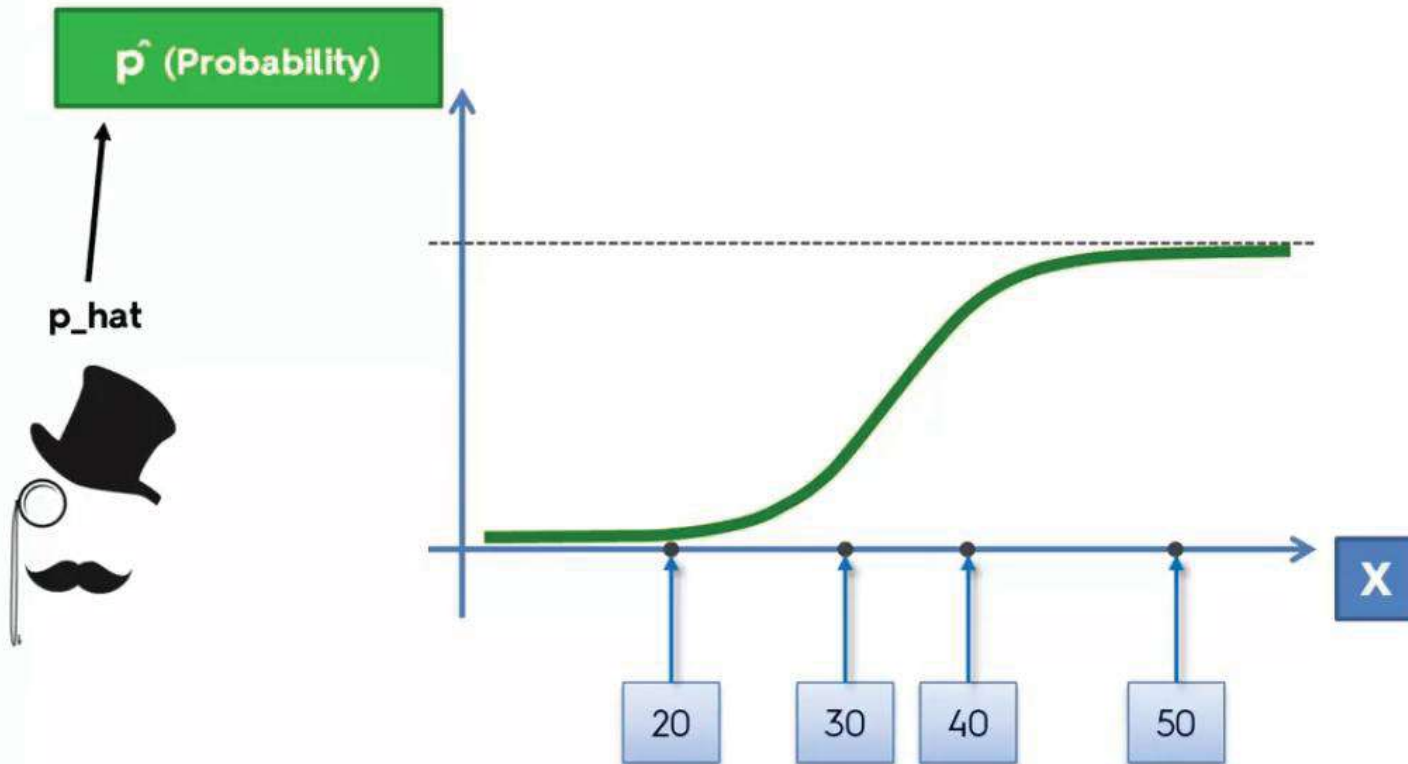


X

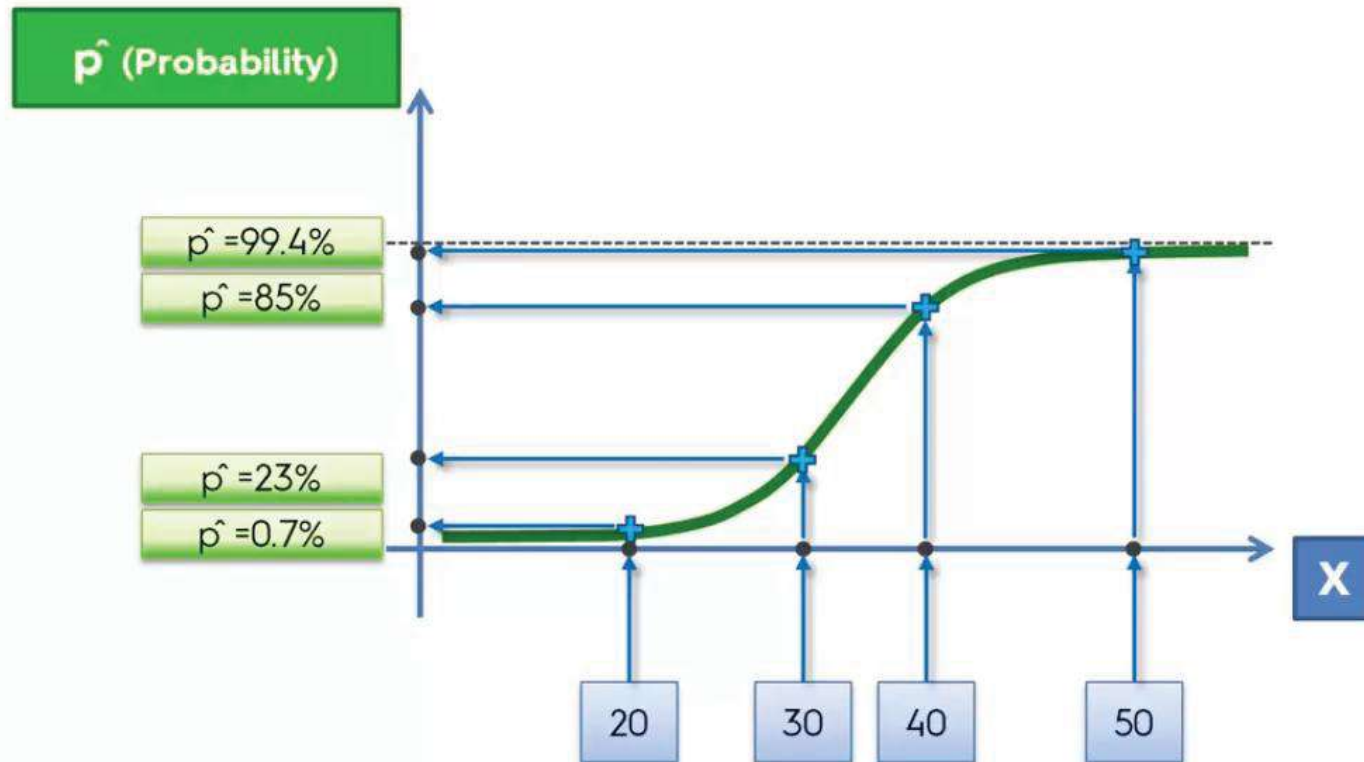
# Logistic Regression



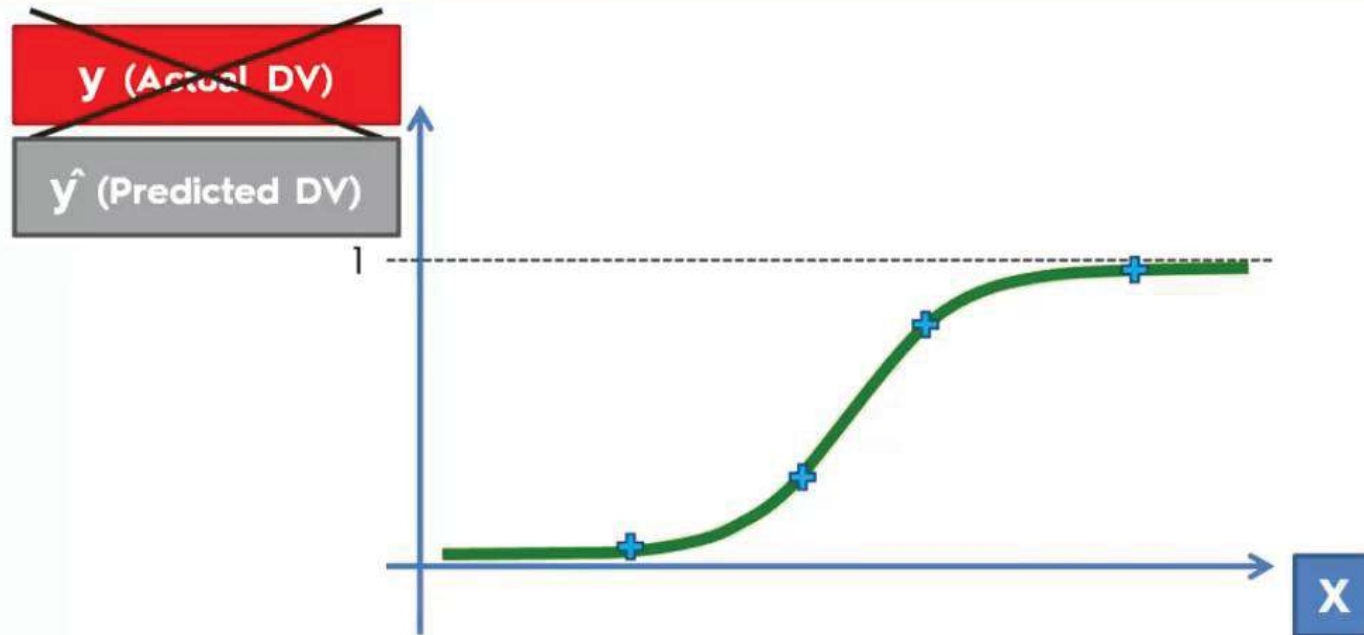
# Logistic Regression



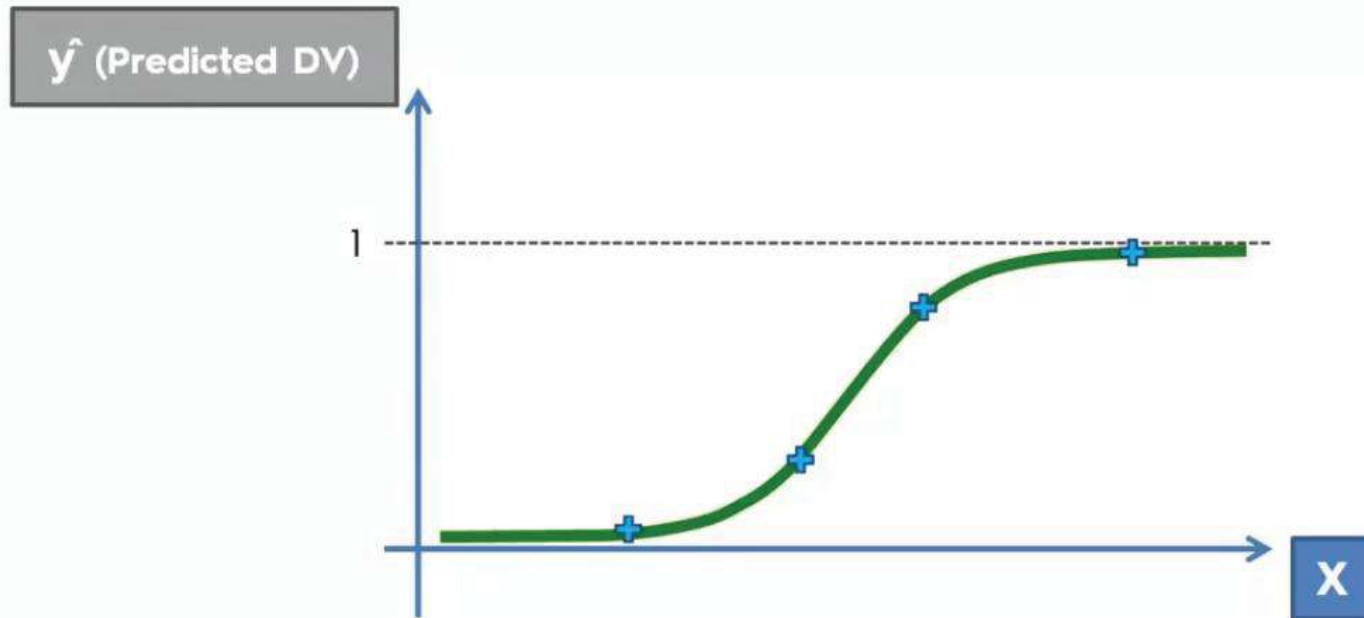
# Logistic Regression



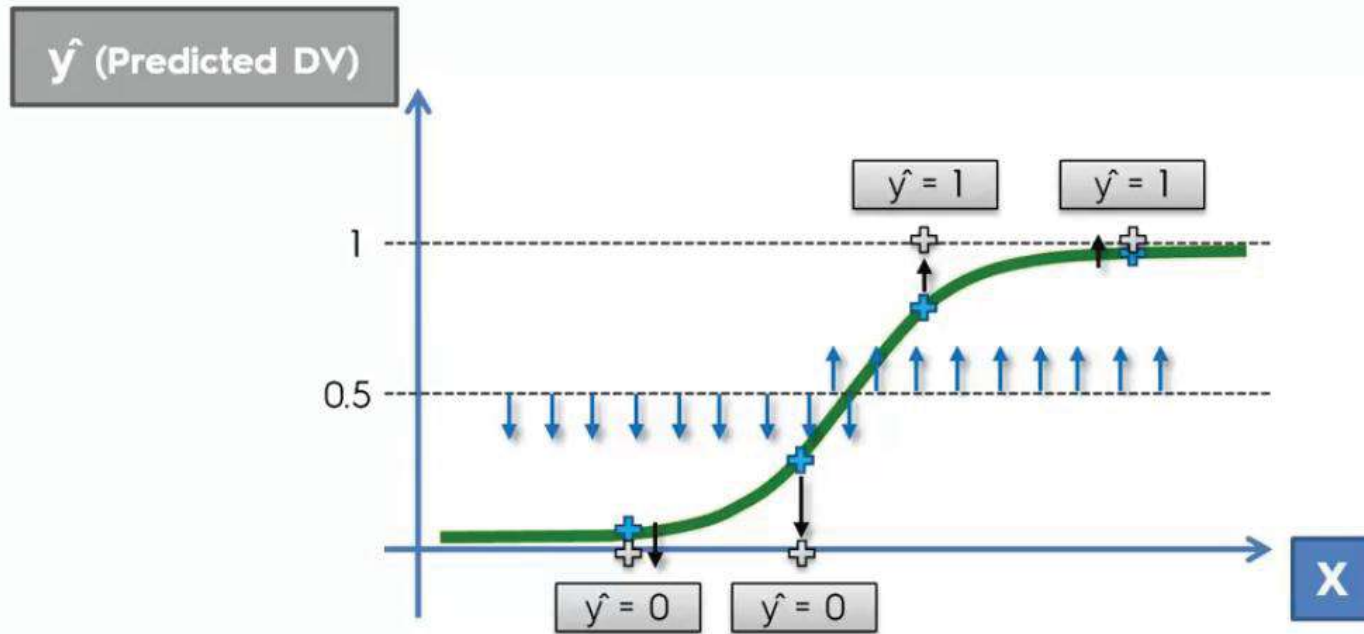
# Logistic Regression



# Logistic Regression



# Logistic Regression



Fin.