

Logistic Regression

$$Y = \frac{1}{1 + e^{-(a_0 + a_1x)}}$$

Y = dependent

X = independent

a_0 = intercept

Study Hour X	Exam Result Y
2	0
3	0
4	1
1	1
2	1
5	?

$$= a_0 + a_1x$$

$$= 1.5 + (0.6)5$$

$$= -0.6$$

$$Y = \frac{1}{1 + e^{-(-0.6)}}$$

$$Y = \frac{1}{1 + e^{+0.6}}$$

$$Y = 3.5 = \text{means } 35\% \text{ below Mid}$$

$$Y = 0$$