

Statistics

Fall 2021

Lecture 9



Given

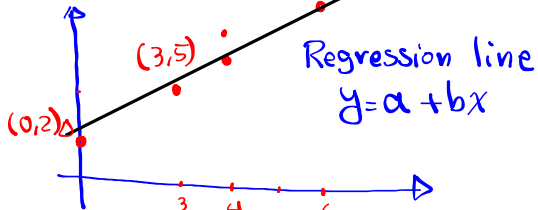
$(0,2)$, $(3,5)$, $(4,8)$, $(4,10)$, $(6,12)$

① Make a table, draw Scatter Plot

x	y
0	2
3	5
4	8
4	10
6	12

$x \rightarrow L1$

$y \rightarrow L2$



Use L1 & L2 with LinReg(a+bx)

$a = 1.5$

$b = 1.7$

$$y = 1.5 + 1.7x$$

Linear
Correlation

Coef. $r = .953$

$r^2 \approx 91\%$

$r = .953$

Coef. of determination

$r^2 = 91\%$

91% of Y-values are explained by X-values.

r is close to 1

\Rightarrow Linear Regression is significant.

How to make predictions:

IF r is significant \Rightarrow Use regression line for Predictions
 Plug in x to find y

IF r is not significant \Rightarrow Use \bar{y}

$$\bar{y} = \frac{\sum y}{n}$$

OR

VARS 5: statistics 5: \bar{y} Enter

$$\bar{y} = 7.4$$

Predict y if $x = 5$

1) Assume r is significant \Rightarrow Use regression line

$$y = 1.5 + 1.7x$$

$$= 1.5 + 1.7(5) = 10$$

2) Assume r is not significant. \Rightarrow Use $\bar{y} = 7.4$

Suppose $n = 8$, $\sum y = 75$, $y = 6 + 4x$

Predict y when x is 1.5

1) Assume r is significant \Rightarrow Use regression line

$$y = 6 + 4x$$

$$= 6 + 4(1.5) \rightarrow y = 12$$

2) Assume r is not significant \Rightarrow Use \bar{y}

$$\bar{y} = \frac{\sum y}{n} = \frac{75}{8} \Rightarrow \bar{y} = 9.375$$

WORK on SG 9, Attend office hrs
 NO emails Regarding exam.