

4.3 Linear Correlation Coefficient pg 155 1-9

Diagnostic On - Adds r and r^2 to LinReg data

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Enter

r = Correlation coefficient - describes the strength of the linear association
 $-1 \leq r \leq 1$

Closer to ± 1 signifies a stronger linear correlation of the data

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meaning
of r values

positive r values - positive slope
negative r values - negative slope

r^2 = coefficient of determination - measure of the proportion of variation in y using x as a predicting value

i.e. If $r = .9$ $r^2 = .81$

Therefore 81% of the behavior of y can be explained by x . Remaining 19% is unexplained.

* r and r^2 measure the strength of a linear relationship. Does NOT imply cause.

* Correlation does not imply causation

Example 4 pg. 154 Attending church and people in jail $r = .9 \Rightarrow$ correlation not causation

Examples 1, 2, 10

① Safety inspection stickers and accidents

② Teacher's Salaries and liquor consumption

⑨ $x = \text{length of a femur (in)}$
 $y = \text{height (in)}$

x	17.5	20	21	19	15.5	18.5	16	18
y	50	80	78	73	63	71	64	71

⑩ scatter diagram

⑪ estimate r

⑫ $r = .706$ $r^2 = .49855$

Approximately 49.855% of the data can be explained by x .

50.145% is unexplained

length of the femur can predict height about 50% of the time.