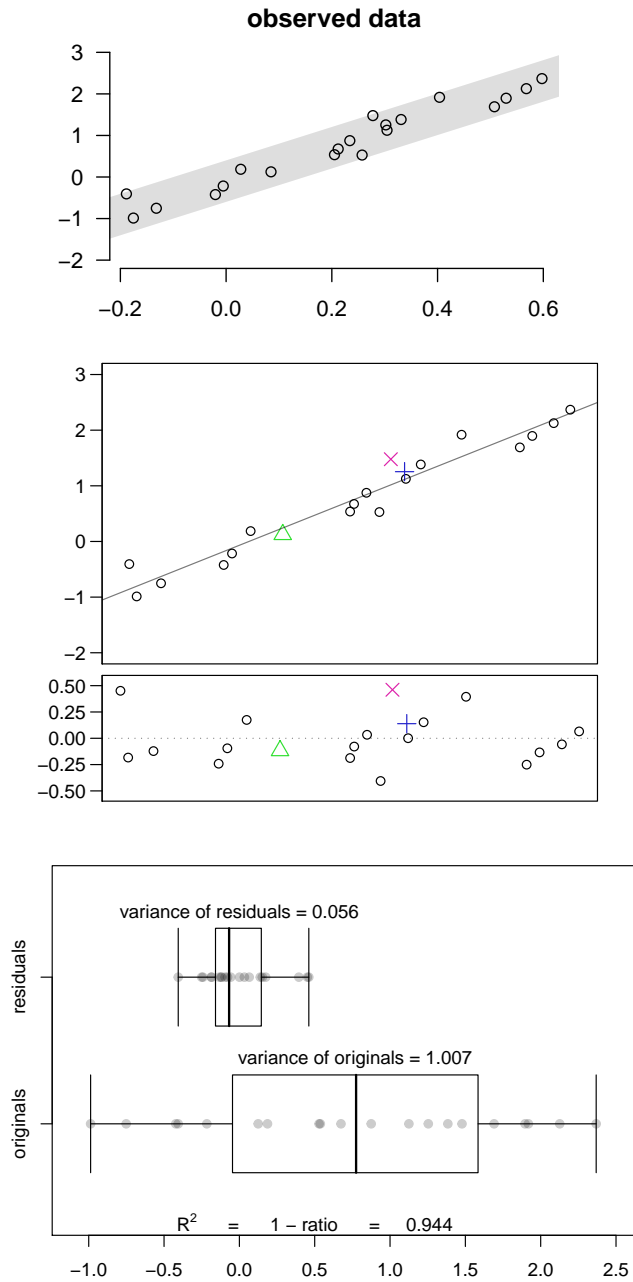


Stat 10, Section 1A
Thursday, May 27th, 2010

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Which of the following is NOT a property of the Least Squares Regression Line?

- (a) The sum of squared residuals is minimized.
- (b) The sum of the distances between each point and the LSR Line is minimized.
- (c) The sum of the residuals = 0.
- (d) The average x value and the average y value lie on the LSR

Interpretation of correlation coefficient

True or False: When the correlation coefficient is close to 1, a change in the explanatory variables causes a strong positive change in the response variable. When the correlation coefficient is close to -1, the independent variable causes a strong negative change in the dependent variable.

Interpreting slope

A study on the effects of a restricted calorie diet on overweight, healthy adults fit the following regression line:

$$\text{predicted weight change} = 3 - 0.232(\text{adherence})$$

Weight was measured in kilograms. "Adherence" measures how well the dieter stuck to the diet: a high score (100) means they followed the diet perfectly. A score of 0 means they did not follow the diet at all. A scatterplot shows a linear association.

Which of the following is the best interpretation of the slope?

- (a) Dieters who lost 10 kilograms more weight had an average adherence of 2.32 more points than the others.
- (b) If a dieter can increase his adherence by 10 points, he will lose an additional 2.32 kilograms.
- (c) The low value for the slope means that the correlation coefficient was close to 0, and that this is therefore not a strong association.
- (d) Dieters whose adherence score was 10 points higher, lost, on average, 2.32 kilograms more than those with the lower adherence.

Prediction and residuals

What weight change would you predict for an adherence rating of 75?

If a person with an adherence rating of 75 lost 10 kg, is this person a positive or negative residual? Compute the residual explicitly.