Individual Assignment 12:

12.1.4 Interpret the slope and y-intercept in context for a given linear equation.
12.2.1 Create a scatterplot for bivariate data.
12.2.2 Given a scatterplot, describe the strength, direction and form of the relationship between the variables.
12.3.1 Find the equation of the least-squares regression line using technology.
12.3.2 Interpret the slope and y-intercept of a least-squares regression line.
12.3.3 Describe the strength and direction of a linear relationship from a correlation coefficient.
12.3.4 Interpret the coefficient of determination in context.
12.5.1 Make a prediction for a given value of the independent value using a regression equation.

Predicting Used Car Prices

1) Do you think it is better to predict the price for a used car from its age (in years) or its mileage? Explain your choice.

2) Data has been gathered from 11 used cars. If you open this google sheet, you will be able to see data on the 11 used cars. Create a scatterplot with price as the response variable (variable on the y-axis) and either age or mileage as the explanatory variable (on the x-axis).

3) Based on your scatterplot, describe the relationship between the two variables.

4) Using technology, create the least-squares regression line for your scatterplot. Write the equation of the least-squares regression line. Be sure to describe the variables in your equation.

5) Interpret the slope of the least-squares regression line in context.

6) Interpret the y-intercept of the least-squares regression line in context.

7) Find the value of the correlation coefficient and the value of the coefficient of determination for your least-squares regression line. Interpret both values in context.

8) If you chose to create a least-squares regression line based on age, use your least-squares regression equation to predict the price for a car that is 4 years old. How does your prediction compare to the actual price of the car that was 4 years old?

If you chose to create a least-squares regression line based on mileage, use your least-squares regression equation to predict the price for a car with 19,860 miles. How does your prediction compare to the actual price of the car that had a mileage of 19,860?

9) Is it better to predict used car prices based on the age of the car or based on the mileage? To help you make the decision, you will need to compare the model using the explanatory variable you chose with the model using the other explanatory variable.

   If you chose to predict price from age, click on this link to see the other model.
   If you chose to predict price from mileage, click on this link to see the other model.
   Note: The column labeled e_1 is the value of the residuals for each car.

   After you examine the other model, do you think it is better to predict used car prices from age or from mileage? Justify your choice.

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