

Stat 100

MINITAB Project 2 (modified for version 15)

Purpose: To use MINITAB to produce a scatter diagram, regression line, regression line equation, and correlation coefficient from sample data.

Reading: Section 3.4 on scatter diagrams, 3.5 on Pearson's correlation coefficient, and 3.6 on the equation of the regression line.

Turn in: A print out of the session window, regression plot, and the answers to the questions at the end of this assignment. (You may type your answers in the session window.)

Instructions: What follow are the MINITAB commands for producing a scatter diagram with the graph of the regression line, the equation of the regression line, and the correlation coefficient. Words in capital letters followed by the symbol > indicate a sequence of menu items to be selected/clicked.

We will use stored sample data from the file "DrivingCosts" to investigate the extent to which the variables "Year" and "Cost" are linearly related.

To access the file on version 15 go to FILE>OPEN WORKSHEET>Click "Look in Minitab Sample Data folder" icon at lower left and select the data file "DrivingCosts" (Make sure you are in the Student14 subdirectory.)

OPEN>OK. These commands will load the data automatically in 2 columns, C1 and C2. Type your name and MINITAB Project 2 in the session window.

To obtain a scatter diagram with regression line, regression line equation, and correlation coefficient all in one display, go to

STAT>REGRESSION>FITTED LINE PLOT.

Select C2 (Cost) for Response [Y] and C1 (Year) for Predictor [X] then OK.

MINITAB will produce a scatter diagram with the graph of the regression line. Above the graph will appear the equation of the regression line. In the box on the right is the coefficient of determination, r^2 , denoted R-Sq. The correlation coefficient is the square root, r (with the appropriate sign).

Print the graph from the print icon then minimize it and print the session window after you have answered the questions below.

FILE>PRINT SESSION WINDOW>OK.

Questions: Answer precisely and concisely the following.

1. Write the equation of the regression line. What is the slope and y-intercept?
2. What is the value of the correlation coefficient r ? What does it indicate about the linear relationship between Cost and Year?
3. Use the regression line equation to predict the Cost of driving in the Year 2003.