



PROJECT-SET

Statistics Education for Teachers

Crime & Coffee #1

Task adopted from www.illustrativemathematics.org aligned with standard S-ID.B6

Written task aligned with LR: Loop 1

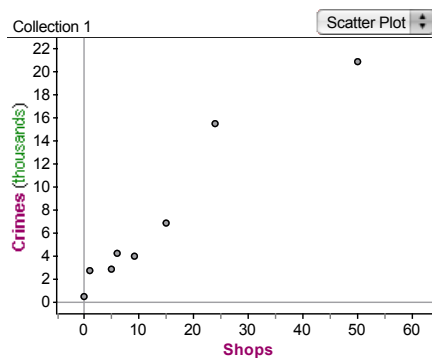
Many counties in the United States are governed by a county council. At public county council meetings, county residents are usually allowed to bring up issues of concern. At a recent public County Council meeting, one resident expressed concern that 3 new coffee shops from a popular coffee shop chain were planning to open in the county, and the resident believed that this would create an increase in property crimes in the county. (Property crimes include burglary, larceny-theft, motor vehicle theft, and arson -- from <http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2010/crime-in-the-u.s.-2010/property-crime> accessed on December 5, 2012.)

To support this claim, the resident presented the following data:

County Shops Crimes

A	9	4000
B	1	2700
C	0	500
D	6	4200
E	15	6800
F	50	20800
G	5	2800
H	24	15400

In order to have a better visual depiction of the data, here is a scatterplot:



1.
 - a) While referring to the scatterplot, write why there is scatter in the plot in the given context.

 - b) Describe trends in the plot, such as clustering, a positive or negative relationship, or a linear relationship that you can visually observe. Identify any unusual points.

2. Using your pencil and a straightedge, draw a line on the plot that you believe best models the data. Write a) how you choose where to place the line and b) whether your reasoning could be applied to all possible scatterplots.

3.
 - a) Interpret the slope of your line in the context of the problem.

 - b) Describe how well the linear model fits the data.

4.
 - a) Use the line you drew to predict the number of crimes that would be expected if there were 10 coffee shops in a county. Explain your answer.

 - b) Use the line you drew to predict the number of crimes that would be expected if there were 100 coffee shops in a county. How confident do you feel about the accuracy of your prediction? In other words, are there any issues with using your line to predict a crime level when the number of coffee shops is not within the range of coffee shops given in your data?