

# Study Session Week of 10/22

## Objectives:

- I will enter bivariate data into the calculator successfully.
- I will analyze bivariate data both visually and numerically using the calculator successfully.
- I will describe the analysis of bivariate data correctly and completely.

## Agenda:

- Together enter, analyze, and describe associations.
- Individually enter, analyze, and describe associations.
- Grade/discuss successes and challenges.

# Beginning Steps of Analysis

10/22

- Enter the following data
  - Make sure to label the columns

- Graphing tools

- Scatterplot
- Analyze
- Residual plot

- Linear Regression in Spreadsheet

- Components given
- Write as an equation

Country	Sugar Consumption	Depression Rate
Korea	150	2.3
United States	300	3.0
France	350	4.4
Germany	375	5.0
Canada	390	5.2
New Zealand	480	5.7

# Descriptions

Context

- Strength = strong, moderate, weak
- Direction → ⊕ or -
- Unusual Features → none or outliers or clusters
- Form = linear or non-linear

- Describe the association.

The association between sugar consumption and depression is strong, positive, linear with no unusual features.

- Interpret the value of the correlation coefficient.

$$r = 0.94$$

Strong & positive

$$\text{depression} = 0.37 + 0.01 \text{ sugar}$$

$$\frac{\Delta y}{\Delta x}$$

Sugar

- Describe the slope in context.

For every 1 unit increase in sugar consumption, I predict a 0.01 unit increase in depression.

$$X=0$$

- Describe the y-intercept in context.

When sugar consumption is at zero, I predict a depression of 0.37.



- Interpret  $R^2$  in context.

89.2% of the variation in depression can be explained by the linear model.

# Practice

- Analyze the data pairs from various Chicago zip codes. The “fires” represent fires per 1000 housing units. The “thefts” represent thefts per 1000 population. (in your calculator under  $1020$ )  $1022$ 
  - Is it reasonable to perform linear regression? Explain.
  - Describe the association.
  - Which is the explanatory variable? Why?
  - Write equation
  - Interpret the value of the correlation coefficient.
  - Describe the slope in context.
  - Describe the y-intercept in context.
  - Interpret  $R^2$  in context.

# Questions