

Integrated 11/12
Mathematical Modeling Project

Think of a pair of quantitative variables whose relationship you might be interested in studying. Remember that a quantitative variable is any characteristic of a person or object that can assume a range of numerical values. Be very specific in describing these variables; identify the observational units as well as the variables.

This project will involve creating and performing your own experiment. It must involve measurable quantitative bi-variate data with some EXPECTED relationship. You should have at least 30 data pairs (only with permission may you have less). You must MEASURE THE DATA YOURSELF. In other words, you may not get it from a book, the Internet, a printed list, or by asking someone else, etc. Try NOT to pick a “perfect” scientific relationship.

In the past students have done such crazy things as:

- How long it takes x numbers of chocolate chips to melt. [link](#).
- Number of pieces of dog food vs how long it takes my dog to eat them. [link](#)
- How long it takes x sticks of gum to lose their flavor. [link](#)
- How heavy an object is vs how far I can throw it. [link](#)

Please do something you are interested in. Of course, since you only have two quantitative variables in this experiment, it will be limited.

Part 1: Due by the end of the day Wednesday 10/20 (20 Points)

Who you are working with (Three people max). It is OK to work by yourself

1. What is the **research question**? Be very specific about exactly what you are going to measure and how. What are the two related variables you are going to measure? We are looking for a cause and effect relationship.
2. **State what type of association Positive or Negative you expect between the variables and why.**

This needs to be neatly hand written or word processed. You will eventually have to post this on your Biometrika Project web page so word processing and saving the file would be a smart thing to do. *This mini-proposal is due by Wednesday 10/20.*

Part 2: Collecting the data. Your 30 pairs of measured data are due by 10/29. They are to be posted in a labeled table on your Biometrika Project web page. (50 points)

Part 3: Make a well labeled scatterplot of your data. Write a summary of your findings. You must include the correlation coefficient (r) and relate it to your findings. Due by November 4th @ 2:30PM. You will have two days in class that week to access the computers. (50 points)

Part 4: Leave a constructive comment on two different people(s) project. Due by November 10th.