

# Statistics Project

Groups of four will design and conduct an observational study much like those conducted by large market research and polling companies. Warning: you may not use data collected by others but must collect your *own* data. There are two requirements for this project:

1. A one to three page paper due on Monday July 20 addressing all the questions detailed below, and
2. a 10 minute class presentation and defense of your most interesting results during the seventh week of class. Details concerning the presentation will be distributed after data collection has been completed.

You will primarily be making use of the material in Chapter 8 (but not Chapter 9) for the first requirement. The second requirement will rely on  $t$ -procedures that will be introduced in chapters 18 and 19. Additionally, material in chapter 20 and 21 on proportions can be used for the second requirement but will not be covered explicitly in this class.

Read the following steps and spend the rest of the day forming groups and brainstorming with each other. Given that you will be spending a great deal of time collecting and examining the data it is worth taking some time to choose a topic carefully.

1. Choose questions revolving around a topic that interests you. Some examples:
  - Dietary habits of people that go to a local fast food restaurant.
  - Health of trees in Amazon Park.

Note that the above are some suggestions and you are able and encouraged to come up with your own ideas. When choosing a topic be sure to choose something that you can ask a question about on a survey that will involve a quantitative variable. For example:

- What is the mean amount of money spent per person at the fast food restaurant?
  - What is the mean circumference of Pine trees in Amazon Park?
2. Specify exactly who you want your population to be keeping in mind you will need to be able to sample this population randomly. Is the population all the people who live in Eugene? people who use the internet? counties of Oregon? trees in a local forest?

Once you've specified in words what the population is, find the number for this population. A useful webpage if your individuals are people is:  
[http://factfinder.census.gov/home/saff/main.html?\\_lang=en](http://factfinder.census.gov/home/saff/main.html?_lang=en)

3. Determine how you will collect an SRS for the population you described above. Be aware Table B, the random generator on your calculator, or some other random generator device (that is not you) should be involved in this description.

For example, if I was investigating the health of trees in Amazon Park I would first label all the trees in the park with an appropriately sized label. Table B will then be used to randomly select a sample size of 60 trees. The 60 trees will be evenly divided among the group members who will then each approach their assigned 15 trees and collect information for the attached survey.

4. Design a survey that you will distribute to or collect from your samples. Keep in mind four things if your individuals are people:
  - (a) At least one of your questions must involve a quantitative variable question,
  - (b) recording categorical variables (like male/female) is still worth collecting,
  - (c) watch the phrasing of your questions to avoid bias, and
  - (d) your survey needs to be short enough that you can convince people to complete it.

Requirements for paper due Monday July 20.

Only one copy of the paper needs to be turned in per group. The paper must:

- be 1-3 pages typed, double spaced, in size 12 font,
- be free from spelling, grammatical, and logical errors,
- address steps 1 through 3 above, and
- have a copy of the survey you will use attached to it.

Data Collection.

Once your papers have been returned to you, the group can progress to data collection. Be sure to read the comments written on your paper and alter your sampling process or be able to defend your decisions. Most data collection should occur during week 6 of classes so be sure to pick a project with sampling that can fit into both that time frame and your schedule. Details concerning the presentation will be given out the end of week six.