

## Project 2

For this project you will be asked to design and carry out a study or an experiment that compares at least two different groups. In addition to a written report, you will also need to make a presentation to the class. You may work in threes or fours.

### Deadlines:

A Project Proposal must be submitted before work on the project begins. The written report will be due prior to the presentations. See the Due Dates file for specific deadlines. You must attend class (and be on time) on the presentation day to receive full credit for your project.

- **Introduction and Objective:** This usually describes the general problem the researcher is interested in. In addition, you should state the precise question that you hope to answer using the data from the experiment. You should also make a prediction here about what the outcome will be. Do this *before* conducting your study. Note: this is not necessarily (and usually isn't) the Null Hypothesis.
- **Study Design:** This should describe, in detail, the steps taken to collect the data. The amount of detail should be such that another researcher will be able to repeat the study if one wants to do so to verify the reported results. This section should include a description of the experimental materials used, the procedures followed, an explanation of precautions taken to avoid biases, and a description of how and when the data was collected. It should also include any other details that may be relevant at a later point in time if questions arise as to the influence of other factors besides the experimental factor.
- **Responses Measured:** If you have done an experiment, describe in detail the measurement procedure used to obtain a response from each experimental unit. If you have done a survey, include the exact questions used.
- **Data Summary:** Although "raw" data values are relegated to an appendix, it is quite important to include data summaries in the body of the report. For instance, one would report the means and standard deviations for appropriate groups of measurements. These are called descriptive statistics. You may want to bring the reader's attention to any patterns you observe in the summary statistics. Any peculiarities observed in the data should also be mentioned here with some explanations given for their occurrence. *Any number included in the written report must be accompanied by a meaningful interpretation in terms of your topic.*
- **Graphical Displays:** Appropriate graphical displays should be included as long as they are informative. Each graph or chart must tell a story. You must write at least one sentence about any graph or chart that you include in the report. If there is nothing to tell, then don't include the graph.
- **Statistical Analysis:** A description of the statistical analyses should be included. Typically you will be reporting estimates for the unknown population values of interest along with the appropriate margins of error. You will also report these in confidence interval format. Make sure you state the confidence level you use to compute the confidence intervals and margins of error. Also, you may want to conduct a hypothesis test or chi square test. Be sure to state your null and alternative hypotheses, your confidence interval, and your conclusions.
- **Interpretation of Results:** Using your descriptive statistics, graphical displays, and statistical analyses, you must now make a statement about whether or not the data support the presence of a relationship or pattern. If there is a relationship then state what it is. Of course, you can only state your interpretations or conclusions with some degree of confidence, but not 100% confidence.
- **Conclusions:** This gives you an opportunity to wrap everything up into one (or two) short paragraphs. Remind the reader what you set out to do, your assumptions and predictions, and what you found. Be careful not to overstate your conclusions by included unwarranted conjecture or guessing at causes. Stick to what you observed.
- **References:** Include a section of references if appropriate.
- **Raw Data:** Include all of your raw data in an appendix at the end of the report.



***Grading Rubric for Written Report:***

*INCLUDE THE FOLLOWING HEADINGS IN YOUR REPORT:*

(See assignment for description)

**Introduction and Objective: 10 pts**

**Study Design: 10 pts**

**Responses Measured: 5 pts**

**Data Summary: 10 pts**

**Graphical Displays: 5 pts**

**Statistical Analysis: 10 pts**

**Interpretation of Results: 5 pts**

**Conclusions: 5 pts**

**References & Raw Data: -5 pts if missing or inappropriate**

***Grading Rubric for Final Presentation:***

**Introduction and Objective: 15 pts**

--Students clearly state the question they are trying to answer.

--Students give a description of how the data was collected.

**Data Summary: 10 pts**

--Students describe the data and point out any peculiarities.

**Statistical Analysis: 10 pts**

--Students describe the type of analysis done and show appropriate graphs, equations, etc.

**Results: 10 pts**

--Students clearly state the results of the statistical analysis.

**Conclusions: 5 pts**

--Students interpret the results in terms of the problem.

**Overall: 10 pts**

--Students are prepared.

--Slides are readable and in order.

--Questions about the presentation are clearly answered.

**Attendance -10 pts if unexcused absence**