

Statistics 221H Project Description

September 15, 2003

The purpose of this project is to develop a deeper understanding of statistical problem solving and the use of the scientific method. I hope you will try to consider a problem of interest to you personally or related to your discipline, but that is completely up to you. Below are the elements of what I would call a “good” project (i.e., the quality of each of these components will determine your grade). Note that I will not grade on the “weight” scale. That is, I will not weigh the document and base your grade on the density. I anticipate that it will be difficult to be complete with fewer than 7 pages, but don’t just make it 7 pages just to reach 7 pages!! Remember that in statistics a picture (graph) really is worth a thousand words!!!

Introduction

In this section you should define the problem of interest. Contents should include motivation for the problem (why), a description of the problem and some literature review (what), and a precise (and concise) statement of the research question (hypothesis).

Data Description

In this section you should describe:

- what data is relevant for your problem,
- why that data supports an answer for your hypothesis,
- how the data was collected (this should be a detailed description),
- summary (descriptive) statistics including, but not limited to
 1. means
 2. variances
 3. proportions
 4. $r \times c$ tables
 5. appropriate graphs

Analysis and Results

This section should include a description of the statistical methods that will be used in the data analysis. You should include a description of

- the analysis method in general,
- why it is appropriate for the data you collected,
- the *assumptions* your analysis is based on.

The next part is to present the results of the analysis. Include a brief description of the results (which items are “statistically significant”?)

Discussion

This is where the real statistical inference is done. This section should discuss how the results generalize to the population you have considered. Make sure that the population has been clearly defined and that you are careful to only generalize to the population that has been sampled. You should tell me what impact the results of your study may have. I hope this is the real meat of your project. The other parts are only there to support this section.