**AP Statistics Final Project Guidelines**

**Purpose:** The purpose of this project is for you to actually do statistics. You are to form a hypothesis, design a study, conduct the study, collect the data, describe the data, and make conclusions using the data. You are going to do it all!!

**Topics:** You may do your study on any topic. Make it interesting and note that degree of difficulty is part of the grade. Although acceptable with teacher permission, human surveys and experiments are discouraged. Refer the list of ideas to get you started.

**Group Size:** You may work alone or with a partner for this project.

**Proposal (25 points):**

To get your project approved, you must be able to demonstrate how your study will meet the requirements of the project. In other words, you need to clearly and completely communicate your hypotheses, your explanatory and response variables, the test/interval you will use to analyze the results, and how you will collect the data so the conditions for inference will be satisfied. If you use human subjects, you must also make sure that your study will be safe and ethical (anonymous, able to quit at any time, informed consent). The proposal should be typed. If your proposal isn’t approved, you must resubmit the proposal for partial credit until it is approved.

**Paper (100 points):**

The key to a good statistical paper is communication and organization. Make sure all components of the paper are focused on answering the question of interest and that statistical vocabulary is used correctly.

The paper must include:

 **Title Page (title of paper, your name, class, my name, year)**

1. **Introduction (state topic, project goals and direction)**

Describe the project by discussing your question of interest, the hypotheses being tested, why you chose it, and how you will analyze your data.

1. **Summary of Research (methods)**

Describe, in detail, how you collected your data. If you performed an experiment, include a diagram along with your discussion. If you sampled students, describe your sampling procedure and the population to which the results can be applied. Be sure to include a discussion of the potential problems with your data collection and any improvements you would make in future studies.

1. **Data Analysis (data, statistics, charts, graphs, tests)**

Perform a 1-variable analysis on your data. Describe your findings using numeric summaries along with the appropriate graphs: histograms, bar graphs, scatterplots, etc.. Make sure the graphs are well labeled, easy to compare, and help answer the question of interest.You should include a brief discussion of the graphs and interpretations of the summary statistics. *Use the graphs and summary statistics to come up with a preliminary answer to the question of interest.* Perform an inference test on your data. Thoroughly describe the inference test, showing detail in all conditions, calculations, etc.

1. **Conclusions**

Conclude with an overall summary of your findings. Be sure to answer your original question of

Interest! State your conclusion (with the name of the procedure, test statistic and *P-*value and/or confidence interval). You should also discuss any possible errors (e.g. Type I or Type II), limitations to your conclusions, what you could do to improve the study next time, and any other critical reflections.

**Due Dates:**

* The proposal is due on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The paper is due on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Late work will lose 20% per class period.

**\*Please refer to the class website for a listing of project ideas.\***

**Project Proposal**

**Name(s):**

**Period:**

(Note individual Periods if working with a partner in a different class)

**Research Question:**

(What do you intend to answer through this project?)

**Inference Procedure:**

(What is your parameter of interest? What test will you use? Define parameter and appropriate hypotheses.)

**Proposed Data Collection:**

(How will you go about collecting your data? Be specific. Experiment? Survey? Observational Study?

How will you select your sample? What supplies will you need?)

**Teacher Approval:**

**\_\_\_\_\_\_\_\_: OK - Begin your data collection**

**\_\_\_\_\_\_\_\_: Not OK - See below for suggestions. Resubmit for approval.**