

A.P. Statistics Final Project

Guidelines and Expectations

Due date: Tuesday, May 31

As a final project for the A.P. Statistics course, students will design their own statistical project involving testing hypotheses in a Power Point presentation. Students will present their projects in class on the following dates: May 31, June 1 and 2. The Project will be 15% of the final grade. **All students are required to attend all 3 presentation days and are responsible for completing peer evaluations on projects presented each day.** A penalty of 10 points per day off the student's final project will be applied if a student is absent and peer evaluations are not completed on the appropriate day.

A statistical project is the process of answering a research question using statistical technique and presenting the work in a final report.

Guidelines for developing a statistical project

- The research question may arise from any field of scientific endeavor such as athletics, advertising, aerodynamics, nutrition, politics, etc.
- The project should demonstrate the scientific method of solving a problem by using the following process:
 1. Pose a focused question. State the null hypothesis and the alternative hypothesis. The null hypothesis **MUST** represent some type of a published or documented population parameter of interest or relate to some type of theoretical probability.
 2. Collect appropriate data *and check the conditions* that are required for "meaningful" data. You must include documentation of data collection process in your project and also demonstrate that the conditions stated for appropriate hypothesis test are met.
 - Are you able to collect data to answer the proposed question? If yes, time should be spent deciding how to collect it, record it, and use it. Great care should be exercised at every stage of data collection. *Careless measurement or recording of data cannot be remedied in the analysis phase of the project.*
 - Has someone else already collected the data that could be used in the project? If published data are used, explain how the published data were obtained and record the source.

3. Analyze the data intelligently

- Intelligent analysis of the data may take many forms and should be guided by the question of how the data were collected. Usually it is best to begin by graphing the data. Appropriate statistical methods of analysis should be used such as summary statistics and description of the distribution, etc.
- State the parameters and draw a detailed sketch of the sampling distribution model.
- Compute Test Statistic and p-value.

4. Draw correct conclusions

- Once the analysis is complete the null hypothesis question should be answered correctly. The data may not be able to provide a conclusive answer. Be careful not to get ‘caught up’ in the analysis phase and obtain many answers, none of which addresses the research question.
- State your conclusion in the context of the hypothesis; that is your conclusion should link the P-value to a decision about the null hypothesis.
- Confidence intervals help us think about the results and help to summarize the population parameter. Include a confidence interval for the parameter of interest if appropriate for that test of significance.
- Consider the strengths and weaknesses of the project. What went well? What went wrong? What would you change if you could do this project was done again?

What to turn in on Tuesday, May 31:

1. An electronic copy of your powerpoint, prezzi, or google slides presentation sent via email or shared on google drive to Mr. Shevlin. Penalty of 10 points a day if late. It is the student's responsibility to make sure that this attachment can be opened on a school computer.

2. All data collection materials including surveys/questionnaires if used.

Project Grading Rubric
(100 total points)

The following guidelines will be used to assess each project:

1. Selection of Project & submit Project in a timely manner. Possible points lost:

- **There is a loss of 5 points per day on your final project if your Final Project Proposal – is not turned in on Monday May 23.**
- **There is a loss of 10 points per day on your final project for emailing an electronic copy of the project to me after the due date, Tuesday, 5/31/16.** (If the emailed project cannot be opened on a school computer, the penalty will be imposed until the student rectifies the problem. It is the student's responsibility to check and make sure that the project can be opened on a school computer.)
- **There is a loss of 10 points per day on your final project if a student is absent on any of the three days of Project Presentations.** If a student has an excused absence for a presentation day, it is the responsibility of the student to contact the teacher and make immediate arrangements to meet after school and view all the projects for that day on the computer and submit evaluations on all presentations in order to avoid the 10 point penalty for that day.

2. **Question of interest (10 points)**

Is the question of interest focused, clearly stated, and relevant?

3. **Research Design and Data Collection (20 points)**

Can the data, as collected, answer the question? Were the data collected in an appropriate manner? Were data collected directly by the students? The raw data must be included in your project.

4. **Analysis of data (25 points)**

Is the analysis appropriate for the design? Are all required tools of analysis used? Is the analysis done correctly?

5. **Conclusion (20 points)**

Are conclusions consistent with analysis? Has the question been answered?

6. **Reflection on the Process (9 points)**

What went right? What went wrong? What could be done differently? Are there any suggestions for further study?

7. **Final Presentation (16 points)**

Is the Power Point Presentation well organized and clearly presented? Does the project display creativity and/or originality? Are supporting graphs and charts carefully prepared? Is your delivery of the presentation rehearsed, planned, and well executed? (see Oral Presentation Rubric)

Name_____

Total Score_____

Oral Presentation Rubric

TRAIT	4	3	2	1
NONVERBAL SKILLS				
EYE CONTACT	Holds attention of entire audience with the use of direct eye contact, seldom looking at notes.	Consistent use of direct eye contact with audience, but still returns to notes.	Displayed minimal eye contact with audience, while reading mostly from the notes.	No eye contact with audience, as entire report is read from notes.
BODY LANGUAGE	Movements seem fluid and help the audience visualize.	Made movements or gestures that enhances articulation.	Very little movement or descriptive gestures.	No movement or descriptive gestures.
POISE	Student displays relaxed, self-confident nature about self, with no mistakes.	Makes minor mistakes, but quickly recovers from them; displays little or no tension.	Displays mild tension; has trouble recovering from mistakes.	Tension and nervousness is obvious; has trouble recovering from mistakes.

COMMENTS:

VERBAL SKILLS				
ENTHUSIASM	Demonstrates a strong, positive feeling about topic during entire presentation.	Occasionally shows positive feelings about topic.	Shows some negativity toward topic presented.	Shows absolutely no interest in topic presented.
ELOCUTION	Student uses a clear voice and correct, precise pronunciation of terms so that all audience members can hear presentation.	Student's voice is clear. Student pronounces most words correctly. Most audience members can hear presentation.	Student's voice is low. Student incorrectly pronounces terms. Audience members have difficulty hearing presentation.	Student mumbles, incorrectly pronounces terms, and speaks too quietly for a majority of students to hear.

COMMENTS:

CONTENT				
SUBJECT KNOWLEDGE	Student demonstrates full knowledge by answering all class questions with explanations and elaboration.	Student is at ease with expected answers to all questions, without elaboration.	Student is uncomfortable with information and is able to answer only rudimentary questions.	Student does not have grasp of information; student cannot answer questions about subject.
ORGANIZATION	Student presents information in logical, interesting sequence which audience can follow.	Student presents information in logical sequence which audience can follow.	Audience has difficulty following presentation because student jumps around.	Audience cannot understand presentation because there is no sequence of information.
MECHANICS	Presentation has no misspellings or grammatical errors.	Presentation has no more than two misspellings and/or grammatical errors.	Presentation has three misspellings and/or grammatical errors.	Student's presentation has four or more spelling and/or grammatical errors.

COMMENTS: