

STATISTICS-LEVEL 1 FINAL PROJECT 2006

100 points

Mrs. Walczewski

Due date: Friday, May 26, 2006

(10 point a day penalty if late)

As a final project for the Statistics level 1 course, students will design their own statistical **project** involving **Testing Hypotheses About Proportions** in a **Power Point Demonstration**. Students will present their projects in class on the following dates: **May 26 and May 30. The Project will be 20% of the final grade.**

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.

2. Collect appropriate data and check the conditions

Include documentation of data collection process in your project

- 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.
- Independence assumption?
- Randomization?
- 10% condition?
- Success/failure condition?

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.
- **State the parameters and draw a detailed sketch of the sampling distribution model using the Central Limit Theorem.**

Calculate the standard deviation and the sample proportion.

Compute the test statistic and find the p-value. State an acceptable alpha level for your level of significance. (refer to chart in textbook on page 450)

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 size of the effect. **Include a confidence interval for the parameter of interest.**
- 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?

PROJECT GRADING RUBRIC
(REFER TO ABOVE GUIDELINES FOR OPTIMUM GRADE)

The following guidelines will be used to assess each project:

1. Selection of Project & submit Project in a timely manner.

(-5 points per day penalty for not selecting a project)

(-10 points per day penalty for not submitting the project – up to 3 days late)

2. Question of Interest (5 points)

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

3. Research Design and Data Collection (25 points)

Can the data, as collected, answer the question? Were the data collected in an appropriate manner? Were data collected directly by the students? Share the data with the teacher.

4. Analysis of data (25 points)

Is the analysis appropriate for the design?

5. Conclusion (10 points)

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

6. Reflection on the Process (5 points)

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

7. Final Presentation (25 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?

8. . Degree of Difficulty (5 points)