Final Project

STAT 011 with Prof Suzy

1 Overview

Your final project will consist of a poster presentation presented on the last day of class. The topic of your final project is open-ended so feel free to choose something that interests you and your group mates. Your project and poster presentation will be completed in groups of 2-3 people and should broadly fit into one of the three categories below:

1.1 Option A: Original survey or experiment

You might design a survey or experiment on some topic that interests you (e.g. twitter poll, on-campus experiment). Such a project might involve developing a survey or set of questions, selecting a strategically random sample, and gathering the data to analyze. You'll have to identify and define your variables of interest before collecting data. If you are going to ask your peers to participate, be considerate and make the activity as quick and easy to complete as possible. For this option, prioritize study design so that you have high quality data, rather than a large quantity of data.

1.2 Option B: Analysis of an existing data set

You might apply some exploratory or inferential technique we have learned in class to a data set that has already been collected and is publicly available. You can find data sets on the web using sites such as www.census.gov and www.city-data.com for demographic data, www.leesmovieinfo.net for movie earnings, etc., and use it to answer some question you're interested in. The difficult part of this option is in finding quality data that is easy to understand. There's no shortage of poor quality data on the internet!

1.3 Option C: Research report on a topic that interests you

This could be a topic we have touched on in class, or something you learned about in another class or through your own reading or experience. Such a project might involve reading articles in journals, newspapers, magazines, and books; summarizing and discussing the statistical issues involved; and drawing conclusions. Examples of possible topics include the use of DNA fingerprinting in court cases, the use of statistics in standardized testing, the use of election polls in the media, the role of statistics and data science in epidemiology. The difficult part of this option is that you will be teaching yourself something new.

2 Requirements/Rubric

You and your group mates will create a poster summarizing your project and will present your results to Prof Suzy on the last day of class. You should use large print on your poster and aim for an attractive and well-organized display. Your poster and presentation must reflect you and your group's own original work. Plagiarism may be checked with software and a strong indication of plagiarized content will result in a grade of zero for all group members. For projects (A) or (B), the type of data you use should involve at least one quantitative variable and one categorical variable. Typically people doing surveys will collect 5–8 variables on each subject.

Your final project proposal is due by **November 13**. The poster and presentation are due in class on **December 13**. Your final project will be graded on a scale of 0-20 points according to the rubric below. All group members will receive the same grade *unless* the majority of the group members bring a specific complaint to Prof Suzy about a member not participating. In this case, a student who is not participating may receive a lower grade than their group mates. I recommend choosing your groups based on common statistical interests rather than on existing friendships.

Rubric Component		Points Available	Description
Proposal	Subject	0-3	Is the project objective clearly defined and answerable within the time allotted?
	Group members	0-3	Does each group member understand their role and accept responsibility for the quality and completion of the project?

Rubric Component		Points Available	Description
Poster	Title	0-1	Is the title short, catchy, and relevant to the topic?
	Technical specifications	0-3	Is the poster neatly organized and clearly legible? Was the topic approved on time? Was the poster printed on time? Does the poster contain sections for Background, Methodology, Results, and Discussion? Does the poster include at least one relevant graphic?
	Main content	0-5	How clear is the statement of question or purpose? Can a reader understand what data (or information) was analyzed? Are the methods adequate to address the main statement of question or purpose? Are the conclusions over- or under- stated?
	References	0-2	Are references cited properly at the bottom of the poster? Are they referenced throughout the poster, where appropriate?

Rubric Component		Points Available	Description
Presentation	Duration	0-1	Is the presentation finished within a 3-5 minute window?
	Participation	0-1	Did all group members contribute to the presentation and/or poster?
	Use of poster	0-1	Is the poster referenced during the presentation? Are presenter(s)' comments consistent with the information on the poster?

3 Example Topics

3.1 Option A: Design and analyze an experiment

You can be as creative as our practical constraints allow in designing your own experiment. The minimal requirements will be to ensure there is a treatment with at least two levels and at least one numerical variable and to strategically incorporate randomness in subject selection and/or treatment assignment. A few examples could be things like:

- How much of a beverage is lost to the packaging? (E.g. Compare the left over amounts of liquid in cans, bottles, squeeze pouches, etc amounts after the product is consumed.)

- Does mood and/or energy improve with daily exercise or daily social time?

3.2 Option A: Conduct and analyze a sample survey

You can be as creative as our practical constraints allow in designing your own survey. The minimal requirements will be to ensure responses to your survey provide information on at least one categorical variable and one numeric variables and to strategically incorporate randomness in subject selection. A few examples could be things like:

- Referencing the college's website regarding student demographics, determine if there is evidence that introductory statistics courses (e.g. Stat 11) are representative of the student body.

- Is screen time correlated to the amount and quality of sleep time?

3.3 Option C: Relate Statistics to Another Class

Have you heard any mention of important statistical studies in your other courses? Would you like to dig into a particular application of statistics to, say, a humanities course? Can you find a reliable source and can you explain some of the statistical components? For example, you could

- Show how time-series models are used in economics and compare them to simple linear regression models.

- Investigate the historical use of statistics in the human sciences and report on major developments and controversies.