



FINAL PROJECT

AP STATISTICS

AP Statistics has introduced you to the methods and procedures that allow us to explore four themes: Producing Data, Exploring Data, Anticipating Patterns, and Statistical Inference. This Final Project is designed to allow you to demonstrate your understanding of the connections between these themes as you carry out a statistical study. Your task is to identify a research question that interests you, design a study to collect data on that question, analyze the data, and answer the question using an appropriate form of inference.

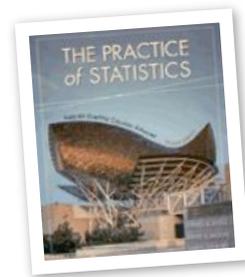
PROJECT OUTLINE:

- 🎧 Identify a Research Question
- 🎧 Collect Data - Observational Study or Experiment
- 🎧 Analyze Data - Graphically and Numerically
- 🎧 Perform Inference - Answer Research Question
- 🎧 Present Findings

AP STATISTICS: FINAL PROJECT

"IT'S WHAT YOU LEARN AFTER YOU KNOW IT ALL THAT COUNTS"

~HARRY S. TRUMAN



Project Calendar			
Date	Project Task	Assignment	Done
Tue 5/8	AP Statistics Exam		
Wed 5/9	Project Instructions	Determine Partner	
Thu 5/10	Sample Project(s)	Determine Research Question	
Fri 5/11	Sample Project(s)	Determine Research Question	
Mon 5/14	Begin Research	Research Question/Plan Due	
Tue 5/15	Experiment/Obs Study	Collect Data	
Wed 5/16	Experiment/Obs Study	Collect Data	
Thu 5/17	Experiment/Obs Study	Collect Data	
Fri 5/18	Experiment/Obs Study	Raw Data Due	
Mon 5/21	Analyze Data - Fathom Lab	Graphical/Numerical Analysis	
Tue 5/22	Analyze Data - Fathom Lab	Graphical/Numerical Analysis Due	
Wed 5/23	Answer Research Question	Inference Procedure Due	
Thu 5/24	Write Up Findings	Begin Final Report	
Fri 5/25	Write Final Report	Write Report/Presentation	
Mon 5/28	Memorial Day - No School		
Tue 5/29	Finish Report/Presentation	Final Report Due	
Wed 5/30	Presentations		
Thu 5/31	Presentations		
Fri 6/1	Presentations		

Note:

The purpose of this project is to allow you to communicate your understanding of the connections between the four themes of Statistics.

Your final report should clearly indicate your understanding of data collection, analysis, and inference. Printed reports are due 5/29.

Presentations should be 10-15 minutes and should incorporate visuals (Powerpoint, etc.).

Deadlines:

- 5/14: Partner and Research Question
- 5/18: Raw Data
- 5/22: Exploratory Data Analysis
- 5/23: Inference
- 5/29: Final Report

Project Objectives and Skills:

You and your partner should refer to this page for the project expectations. See the Project Calendar for due dates for each portion of the project.

Research Question

- Identify a question that is interesting, appropriate, and worthy of investigation.
- Your question must lend itself to data that can be analyzed using the methods learned in class.
- You are expected to get your question approved prior to collecting data
- Form appropriate hypotheses to guide your investigation.

Data Collection

- Data can come from three sources: A well-designed and carried out survey, observational study, or experiment. Your data collection procedure should accurately reflect the question being researched.
- A full, detailed description of the collection procedure should be included in your final report. Thoroughly describe the procedure in terms of the methodology learned this year.
- Organize raw data in a spreadsheet/Fathom document and include in an appendix in your final report.

Exploratory Data Analysis

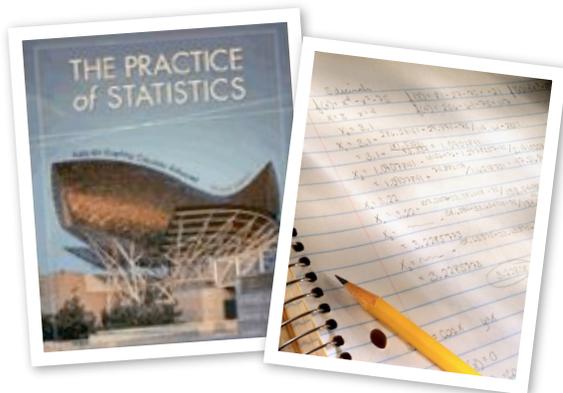
- Analyze raw data using appropriate graphical and numerical procedures.
- Describe Shape, Outliers, Center, and Spread of datasets in the context of your research question.
- Include appropriate graphical displays and numeric summaries/descriptions in your final report.
- Interpret the EDA in the context of your research question.

Inference

- Form appropriate hypotheses to answer your research question.
- Check appropriate conditions for your test of significance.
- Show all applicable work: Sampling Distribution, Test Statistic Calculation, p-value, etc.
- Answer your research question based on your inferential calculations.

Final Paper/Presentation

- You are expected to write up your findings in a final report. This report should follow a standard academic format and should include a section for each task noted above.
- You and your partner will present your findings to the class in a 10-15 minute presentation. You are expected to incorporate visuals-Powerpoint, etc.



Project Proposal - Research Question

Name(s): _____

Period: _____ {Note individual Periods if working with a partner in a different hour}

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.**

Project Requirements

Requirements of the Paper/Presentation:

Your paper/video/PowerPoint should consist of a summary of your research and experiment/survey as well as your personal conclusions. The goal is to enlighten the reader with words, numeric summaries, and appropriate graphs. Use the following format:

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

Introduction (state topic, project goals and direction)

Describe the project by discussing your question of interest, why you chose it, how you collected your data, and how you planned on analyzing it.

Summary of Experiment (methods, analysis, charts, graphs of results)

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. Be sure to include a discussion of the potential problems with your data collection and any improvements you would make in future studies.

Summary of Research (data, statistics, charts, graphs, sources)

Perform a 1-variable analysis on your data. Describe your findings using numeric summaries along with the appropriate graphs: histograms, bar graphs, scatterplots, etc.

Perform an inference test on your data. Thoroughly describe the inference test, showing detail in all conditions, calculations, etc. Write a complete conclusion in the context of your problem.

Final Summary of Project

Conclude with an overall summary of your findings. Be sure to answer your original question of interest! Also, include a reflection that describe how you could improve your study. What were the limitations of your project? How could you address those to better answer the question of interest.

You should perform both exploratory data analysis and inference with your data. Data should be supported by appropriate graphs. Also, emphasize the processes used to collect and analyze your data. There is no set page requirement. Just write a thorough paper and explore your topic as best you can within the given timeframe.

Your ultimate goal is to demonstrate an understanding of the connections between collecting, analyzing, and using statistics to answer a question of interest. Use this paper/presentation to illustrate these connections with respect to the context of your question.

Project Grading

This project counts as your **FINAL EXAM GRADE - 100 points**

Name(s): _____, _____

Per: _____, _____

_____ **Introduction (state topic, project goals and direction)**

10 points: Full explanation of research question, methods, etc.

5 points: Partial/Incomplete explanation

0 points: No explanation

_____ **Data Production (methods, analysis)**

30 points: Complete description of data collection methods, etc

20 points: Partial/Incomplete description

0 points: No description

_____ **Exploratory Data Analysis (data, statistics, charts, graphs)**

20 points: Complete data analysis (graphs, explanations in context)

10 points: Partial/ Incomplete analysis, not in context

5 points: No analysis, incorrect analysis, no test

_____ **Inference (define parameter, appropriate test)**

20 points: Appropriate Test (parameter, hypotheses, conditions, test, interpretation)

10 points: Partial/Incomplete test

5 points: Incorrect/No test

_____ **Final Summary of Project (conclusion and reflection)**

15 points: Contextual conclusion, Limitations of study/recommendations

5 points: Incomplete conclusion

_____ **Presentation**

5 points: 10-15 Presentation of Results, complete with visuals

_____/100 **Total Project Score**