

Culminating Statistics Project

E1

Due Date:

- Your Statistics Project will consist of researching one and two variable data to answer a topic question, which you will create.

Written Report Format

Your written report will be done in 12 point font, double spaced. Your work should be straight forward and concise. Your report should have the following headings and each bullet should be contained under that heading:

Title Page (1 page)

- Include title of your project, your name, my name, course code and due date.

Table of Contents (Approx. 0.5-1 page)

- Listing of each section in your project.
- Using main categories with sub-categories could be useful.

Introduction (Approx. 0.5-1 page)

- A paragraph describing the purpose and focus of your statistics project as well as why you chose this topic.
- Introduce your main topic question. Be general to allow for as many possible sub-questions as possible. For example:
 - Why do teenagers pay so much for car insurance?"
- Introduce some sub-questions that you will use to help you research your main topic question. The problems may evolve slightly throughout the life of your project. For example:
 - What is the relationship of death rates for various age groups?
 - What is the relationship between collisions and various age groups?
 - What is the relationship between insurance rates and age?
- Make a hypothesis as to what the outcome of your research will be. This is just an educated guess, so it is acceptable if you end up proving yourself wrong by the end of the report.

Analysis (Approx. 5-10 pages)

- Measures of Central Tendency
 - Mean, median and mode must be calculated at least once each in your excel file.
 - At least two measures of central tendency must be used for a purpose and explained in report.
- Measures of Spread
 - At least four measures of spread (standard deviation, variance, IQR, z-score, percentiles) must be calculated in your excel file and used for a purpose with an explanation.
- Correlation Coefficient, r
 - At least one line of best fit must be used on a scatter plot and visually classified.
 - Correlation coefficient, r , is used at least once to analytically classify a linear correlation (positive/negative and weak/moderate/strong).
- Linear Regression and Interpolation/Extrapolation
 - Find a linear regression equation.
 - At least one interpolation or extrapolation must be made and explained.
- Variables
 - As variables are used/manipulated throughout your report, you must describe them as discrete, continuous or categorical (both ordinal and nominal) and identify which variables are independent or dependent or as controls.
 - Variables should also be labeled on each graph correctly.
- Cause and Effect
 - The relationship/factor (cause and effect, common cause factor, reverse cause-and-effect relationship, etc.) between at least one pair of variables must be identified and explained fully.
- Graphs
 - Multiple scatter plots as well as at least one other type of graph (minimum) must be used throughout the report.
 - Be sure to only include graphs which you discuss in the report & serve a purpose.

As you work through your analysis, it might be a good plan to make mini conclusion on various aspects of your analysis to help the overall flow of the project.

Conclusion (Approx. 0.5-1 page)

- Draw conclusions by summarizing your findings and mini conclusions and directly relate them to your main topic question and sub-topic questions.
- State whether your hypothesis was correct or incorrect with justification.
- Note at least one bias which could have arisen through your study and identify with justification (sampling, non-response, measurement, response, etc.).

Appendices Data File (number of pages depends on amount of data collected)

- Your separate Data file used to collect all of your data, calculate, graph and analyze will be submitted at the same time as your written report.

Works Cited (1 page)

- Cite all of your information using the APA format. A summary of the APA format can be found at:
https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/general_format.html
- Be sure to correctly cite all of your data throughout your report to avoid plagiarism issues.

Student Critique and Feedback

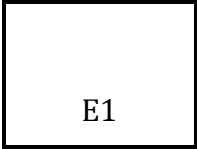
Each person will also be required to read another students project and provide constructive criticism for improvement.

Rubrics

Please see the rubrics to get an idea of how you will be evaluated.

Name: _____

Statistics Project Rubric



Introduction

	Level 4	Level 3	Level 2	Level 1	Level R
Introduction	Clear, concise. Worthwhile. Intent of report is clearly presented.	Fairly clear intention. Tone appropriate to subject. Relatively engaging.	Not engaging, but present. Limited presentation of intent.	Too short. Limited presentation of intent.	Absent.
Topic Question and Hypothesis	An outstanding and unique main topic question with many sub-questions posed that relate well to the topic. A hypothesis is stated with much thought in regards to main topic question.	A good/suitable topic question is developed. Some sub-questions are posed. A hypothesis is stated with some thought in regards to main topic question.	A topic question is developed. Few sub-questions that need to be answered. Little thought put into hypothesis.	A weak topic question is developed. Poor or too few sub-questions that need to be answered. Little thought put into hypothesis.	No topic question developed. No sub-questions developed. No hypothesis is stated.

Calculations & Analysis

	Level 4	Level 3	Level 2	Level 1	Level R
Measures of Central Tendency	Mean, median and mode are all calculated in Excel file. At least two measures of central tendency are discussed with an excellent explanation & purpose in written report.	Mean, median and mode are all calculated in Excel file. At least two measures of central tendency are discussed with some purpose in written report.	At least one measure of central tendency is calculated, but not really connected to main topic question.	Very poor use of central tendency or incorrectly calculated.	Missing.
Measures of Spread	At least four measures of spread (deviation, standard deviation, variance, IQR, percentile, z-score) are calculated and used for a purpose at least once each and are interpreted well.	At least two measures of spread (deviation, standard deviation, variance, IQR, percentile, z-score) are used for a purpose at least once each and are interpreted.	A measure of spread (deviation, standard deviation, variance, IQR, percentile, z-score) is used, but not interpreted very well.	Very poor use of measures of spread or incorrectly calculated.	Missing.
Correlation Coefficient, r	At least one line of best fit is used and visually classified and explained well. Correlation coefficient is calculated at least once and used to analytically classify the line of best fit.	At least one line of best fit is used and visually classified. Correlation coefficient is used at least once and is analytically classified.	Line of best fit and/or correlation are used, but not explained well.	Major problems or incorrectly calculated or scatter plots.	Missing.
Regression, Interpolation & Extrapolation	At least one interpolation and/or extrapolation is used with least-squares regression equation for a purpose. Numbers explained well and justified.	An interpolation or extrapolation is used with least-squares regression equation.	An interpolation and/or extrapolation is used with least-squares regression equation, but is lacking purpose.	Incomplete or calculated incorrectly.	Missing.
Variables	Variables are very well described as discrete, continuous or categorical; independent or dependent. Any extraneous variables are identified and explained well.	Variables are described as discrete, continuous or categorical; independent or dependent with little justification. Any extraneous variables are identified.	Variables are described as discrete, continuous or categorical; independent or dependent.	Variables are described incorrectly.	Missing.
Cause and Effect	At least one variable relationship factor is identified and explained well.	At least one variable relationship factor is identified and explained.	At least one variable relationship factor is identified.	Cause and Effect are discussed, but incorrectly.	Missing.
Graphs	Multiple scatter plots and at least one other graph used. Well labeled. Appropriate choices.	Multiple scatter plots and at least one other graph used.	Few graphs included. Some graphs that would be helpful are omitted.	Many more needed.	Missing.

Overall Analysis

	Level 4	Level 3	Level 2	Level 1	Level R
Report Structure	Title page and table of contents. Titles and subtitles on pages. Pages in order, numbered. Very neat and professional. Excellent formatting.	Title page and table of contents. Pages in order and neatly presented. Titles on pages. Some basic formatting.	Elements such as title page, table of contents, or subtitles missing.	Little thought appears to have gone into organization and presentation. Appears hastily completed.	Missing many structure elements.
Works Cited & References	APA format works cited present at the end of report. All graphs, pictures, and/or quotes are correctly cited throughout report.	APA format works cited present at the end of report, with some details missing. Some graphs, pictures, and/or quotes are correctly cited in report.	APA format works cited present at the end of report, with some details missing.	Many errors.	Completely missing.
Mathematical Writing	Always or almost always uses correct terminology and notation. Uses technology extremely well.	Generally uses correct terminology and notation. Uses technology well.	Sometimes uses correct terminology and notation.	Rarely uses correct terminology and notation.	Unreadable,
Editing, Spelling & Grammar	Extremely well edited. Vivid vocabulary. Near perfect spelling and grammar.	Student has edited the report, ensuring that sentences are forceful and clear. Accurate word choice. Few spelling or grammar mistakes.	Incomplete editing is evident. Ordinary word choices. Many spelling and grammar mistakes.	Faulty editing shows in flawed sequence of ideas. Limited vocabulary.	Very inaccurate spelling or grammar.
Command of Topic	Report demonstrates both familiarity with relevant issues and independent thought.	Subject fairly well researched with some independent thought.	Report misses some element of assigned topic and/or is too general.	Poorly researched. Critical issues associated with topic not presented.	No command of topic.
Understanding	Comprehensive understanding of concepts and key ideas.	Firm understanding of some concepts and key ideas.	Basic understanding of concepts and key ideas with restricted depth.	Little understanding of basic concepts and key ideas.	No understanding of statistics.

Conclusion

	Level 4	Level 3	Level 2	Level 1	Level R
Conclusion Structure	Concise. Conclusions were well developed throughout the body of the report.	Conclusions were developed throughout the body of the report.	More conclusions necessary. Some conclusions not supported by report.	Few conclusions. Those present are weak and do not follow from the report.	Missing.
Drawing of Conclusions	Selected and applied relevant criteria to justify and substantiate conclusions.	Selected and applied criteria to justify conclusions.	Provided some justification for conclusions.	Provided little, if any, justification for conclusions.	No conclusions made.
Biases	At least one type of bias is discussed and justified.	At least one type of bias is discussed.	A type of bias is included, but incorrectly explained.	A type of bias is included, but not discussed or explained.	Missing.

Statistics Project Critique Rubric

E2

Constructive Feedback on another Student’s Project

	Level 4	Level 3	Level 2	Level 1	Level R
Feedback	Feedback is well thought out throughout the report.	Feedback is given throughout the report.	Feedback is given in the report. Not all feedback is supported or justified.	Limited feedback is given in the report. Feedback is not supported or justified or useful.	Feedback missing throughout the report.