UDACITY

PROJECT SPECIFICATION

Explore and Summarize Data

Code Functionality

CRITERIA	MEETS SPECIFICATIONS
Does the code work?	All code is functional (e.g. No Error is produced and RMD document is not prevented from being knit.)
Does project utilize good coding practices?	The project almost never uses repetitive code where a function would be more appropriate. The code references variables by name instead of using constants or column numbers.

Project Readability

CRITERIA	MEETS SPECIFICATIONS
Is the R code in the submitted RMD file commented in a way that is useful and not superfluous?	All complex code is adequately explained with comments. It is always clear what the code is doing and how and why any unusual coding decisions were made.

Does the project code use formatting techniques (indents, spaces, line breaks, etc...) to improve readability? (Refer to Hadley Wickham's R Style Guide)	The code uses formatting techniques in a consistent and effective manner to improve code readability. All lines are shorter than 80 characters.
Is Markdown used to improve the presentation of the knitted HTML file? (e.g. section headers, text and paragraph spacing, document styles. Refer to Hadley Wickham's R Style Guide)	Markdown syntax is used in the RMD file to improve readability of the knitted file.

Quality of Analysis

CRITERIA	MEETS SPECIFICATIONS
Is the data set explored in many ways?	The project appropriately uses univariate, bivariate, and multivariate plots to explore most of the expected relationships in the data set.

Are questions and observations included as text throughout the analysis? (i.e. Every plot or set of related plots is followed by text interpreting the plot(s).)	Questions and findings are placed between blocks of R code regularly so it is clear what the student was thinking throughout the analysis.
Is the flow of the analysis easy to follow?	Reasoning is provided for the plots made throughout the analysis. Plots made follow a logical flow. Comments following plots accurately reflect the plots' contents.
Are there a variety of relevant visualizations and statistical summaries?	The project contains at least 20 visualizations. The visualizations are varied and show multiple comparisons and trends. Relevant statistics (e.g. mean, median, confidence intervals, correlations) are computed throughout the analysis when an inference is made about the data.
Is the data visualized using appropriate plots and parameter choices?	Visualizations made in the project depict the data in an appropriate manner that allows plots to be readily interpreted. Choice of plot type, variables, and aesthetic parameters (e.g. bin width, color, axis breaks) is appropriate.

Final Plots and Summary

CRITERIA	MEETS SPECIFICATIONS
Has a Final Plots and Summary section been included in the project?	The project includes a Final Plots and Summary section containing three plots and commentary. All plots in this section reflect what has been explored in the main body of the analysis.
Are the final three plots varied and do they meet some of the following criteria?: • Draw comparisons. • Identify trends. • Engage a wide audience. • Explain a complicated finding. • Clarify a gap between perception and reality. • Enable the reader to digest large amounts of information.	The plots are well chosen and the plots fulfill at least 2 of the criteria. The plots are varied and reveal interesting trends and relationships.

Are the plots appropriate?	All plots have appropriately selected variables and are plotted in a way that accurately conveys the data/information (i.e findings in Final Plot 1 do not depend on the findings of Final Plot 2).
Are the plots polished? • are axes labeled? • are units labeled on each axis? • are plots titled? • are all labels, titles, and units readable?	All plots are labeled appropriately (axis labels, plot titles, axis units) and can be read and interpreted easily. Plots are scaled appropriately.
Are the plots explained?	The reasoning and findings from each plot are explained and the text about each plot is descriptive enough to stand alone. Comments reflect the contents of the plots that they are associated with.

Reflection

CRITERIA	MEETS SPECIFICATIONS
Has a Reflection section been included in the project?	The project includes a Reflection section discussing the analysis performed.

Does the section provide a written reflection of the analysis? Consider the following in your reflections: • Where did I run into difficulties in the analysis? • Where did I find successes? • How could the analysis be enriched in future work (e.g. additional data and analyses)?	The section reflects on how the analysis was conducted and reports on the struggles and successes throughout the analysis. The section provides at least one idea or question for future work. The section explains any important decisions in the analysis and how those decisions affected the analysis.

Suggestions to Make Your Project Stand Out!

- In addition to using Markdown syntax, the project uses knitr chunk or pandoc options to improve the presentation of the knitted file.
- The project uses many plot types to explore expected and unexpected relationships in the data. A variety of leading questions, dead-ends, and alternate approaches are presented.
- Each of the final plots reveals an important and different comparison or trend in the data. The plots incorporate many of the variables from the data set in a way that allows the plots to convey a lot of information while still being interpreted easily. The plots fulfill 4 or more of the criteria specified above.

- The reasoning and findings from each of the final plots are explained concisely with appropriate variable transformations, other plot decisions, and/or statistics. The text about each figure is descriptive and adds information that the graphic itself would not easily explain.

Student FAQ