Math 327 - Data Analysis Project 1 First Draft Checklist

Title

___ Does the title give an accurate preview of what the report is about? (i.e. Is it informative, specific and precise?) 4 *pts*

Abstract

___ One paragraph stating the data, problem, and/or questions that are being addressed. Are the main points of the paper/poster described clearly and succinctly? If a friend asked you about your project and you had just a couple of minutes to tell them between classes, what would you say? What are the high points of the data and your results? 4 *pts*

Introduction

The introduction should be a more detailed description of the data (compared to the abstract) and will not have any results.

___ Does the Introduction have a logical organization? *Does it move from the general to the specific? 4 pts*

___ Has sufficient background been provided to understand the topic? 4 *pts*

___ Is the final paragraph a brief description of the hypothesis, questions, and/or goals of the report? 4 *pts*

Data Collection (as needed) and Data Characteristics

___ Data characteristics adequately described: names of variables, units, categories (as applicable), etc. 4 *pts*

___ Sufficient assessment of data distributions and the need, or not, to transform certain variables *5 pts*

1. Check the distribution of each variable
    a. If obviously right-skewed, try log transformation – add a small offset if some original values are zero
    b. Or try a square root transformation
    c. The goal is to make the distribution more symmetric, though not necessarily exactly symmetric
    d. If still obviously skewed in the same direction after transformation consider making 3-4 categories
2. Scatterplot matrix and correlations
    a. Check for simple linear associations between each pair of variables
3. Which of your predictor variables are, or should be, categorical?

Results

___ Describe the results of your initial/exploratory analysis, e.g, simple regression, correlation, plots, etc. *10 pts*

1. Pick one quantitative predictor variable that appears to be most correlated with the response
    a. Do a simple linear regression analysis
    b. Include confidence interval for the slope, residual SE, R-squared, residual plots

2. Fit a first-order model with all quantitative predictor variables
    a. If you don't have more than two quantitative predictor variables, check with Dr. Phil for instructions
    b. Which predictors are significant?
    c. Which predictors are highly correlated with each other?
    d. Any evidence of curvature in the residuals?
    e. Check for constant residual variance
    f. Do a Box-Cox analysis to see if the response variable should be transformed. If so, apply that transformation and re-run the first-order model with residual analysis
    g. Try removing some predictors that are not significant, one at a time, and observe how the results change
    h. Provide some initial interpretation of the parameter estimates

___ Overall assessment of Graphs and Figures *5 pts*

- Are the figures appropriate for the data being discussed?
- Are the figure legends and titles clear and concise?
- Are axis labels legible (e.g., large enough to read)?

Conclusion

___ Summarize the conclusions of your first draft analysis *10 pts*

___ Describe your next steps and key questions that are still to be answered in the final report? *5 pts*

Writing Quality

___ Is the paper well organized? (Paragraphs are organized in a logical manner) 5 *pts*

___ Is each paragraph well written? (Clear topic sentence, single major point) *5 pts*

___ Is the paper generally well written? (Good use of language, sentence structure) *5 pts*