STAT 201: Notes for the EWA Lab 4

Print or Save all graphs to be included in report before leaving lab. Save your original data in case you need to reproduce your graphs in StatCrunch.

Below is a rough outline of the sections to include along with guidelines for the main sections of the paper specific to Lab 4. You will need to add details showing your understanding of the concepts based the lab and class notes on scatterplots and regression.

**Title**

• Give an appropriate title – not the same title as the one in the lab manual.

**Abstract**  - include your conclusions, no detail description needed.

• Give the purpose of the experiment.  
• Briefly describe how the data was collected.  
• What kind of guesser were you?  
• Was your statistical model helpful in predicting the real distance for the 11th landmark?

**Materials and Methods:**  
• Give the purpose of the experiment.  
• What materials were used? What software was used?  
• Discuss how the data was collected. How were the landmarks selected?  
• Explain the experiment including making individual guesses and measuring the distances. How were the “real” distances of the 10 landmarks obtained? Why is the median used as the “real” distance as opposed to the mean?  
• Why do we collect both the ‘perceived/guessed’ distance **and** the ‘real/true’ distance for 10 landmarks?  
• Did we measure real distance of the 11th landmark with the other landmarks at the beginning of the lab? Why or why not?  
• How is the scatterplot with the y =x line used to determine bias?  
• How will we choose the regression model, linear or quadratic? (Hint: look at the data pattern and prediction error).  
• How you will use the equation to predict the distance to the mystery 11th landmark?  
• DO NOT include actual results obtained in this section – present them in the **Results** section and explain them in **Discussion** section.

**Results:**  
• Roadmap paragraph telling the reader where to find statistics and graphs.  
• Figures should be labeled with **titles and units**. Figures to be included:  
 o Scatterplot with y=x line.  
 o Scatterplot with best fit line for linear model (with equation included).  
 o Scatterplot with regression curve for quadratic model (with equation included).  
 o Table with chosen regression equation and predicted distance to mystery 11th landmark.(This is a very small table that only includes headers and one row.)

**Discussion:**  
• Were you a positively biased, negatively biased, or unbiased guesser? Explain how you know.  
• What pattern best fit your data – line or curve? Support your decision (Hint: data pattern and prediction error).  
• Give your **original guess for the 11th landmark**, your **prediction for the 11th landmark from the formula**, and the **real distance to the mystery 11th landmark**. Which is closer to the real distance (your original guess or the predicted distance using the equation)? Based on this answer, **was the regression model useful**? Explain.  
• Give ideas for further experiments related to what you learned in this experiment.