

**Instructions:** This exam is in two parts: Part I is to be completed partly at home using the materials posted on Blackboard for Part I and you will answer questions about that work in class below; Part II is to be completed entirely in class. You may not use cell phones, and you may only access internet resources you are specifically directed to use.

**Part I:** At home, open the data file entitled **310exam2part1data.xlsx** posted in Blackboard. Complete the calculations noted below. You will be asked for additional analysis and interpretation of this data in the in-class portion of the test. Bring the file with you on a flash drive, or upload to Exam #2, Part I in Blackboard (this submission will not be graded: the file will need to be reuploaded to Blackboard as part of the complete exam; it's just for you to have access to your calculations during the test).

The attached file includes data on catalog purchases

1. On a new sheet, sort the data by History. Create a comparative box plot of the salary data. Conduct an ANOVA test to determine if the value of salary is impacted by purchase history.
2. Perform a multi-step regression analysis on Amount Spent ( $y$ ) and the variables Catalogs, Children, Salary and Age (in that order) using multiple linear regression.
3. Create scatterplots of each variable in #2 vs. Amount Spent. Does any of the data appear to be nonlinear?
4. Create a residual graph for each of the models in #2.
5. Conduct a hypothesis test on the relationship between History and Region by conducting a  $\chi^2$ -test of independence. Be prepared to interpret the results
6. A previous analysis of customer data found that customers spent an average of \$1,165. Conduct a one-sample test of means to determine if customers are now spending more money than before.
7. Compare the amount of money spent by customers who own their own homes and those that do not. Conduct a two-sample test of the difference of means. Be prepared to discuss the results of your tests.