***STA 251***

***Mini-Project #5***

***Chi-Square Analysis***

Guidelines: All parts of this mini-project are due by . This can either be submitted within a folder with all parts neatly organized or in one file via email. All work should be shown. Organization and presentation will factor into the grade. Students will get one draft submission for me to review if you choose. Draft submissions should be sent in well before the deadline to make sure there is time for review and correction before the deadline. I will do my best to review in a timely manner, but there are no guarantees. You are still responsible for getting your best effort turned in on time.

Directions

Part #1: Chi-Square

You need to select a value to do a Chi-square study on. You will need to find a set of pre-determined population percentages for a topic. You will need at least 5 categories.

It will need to be approved by me before you begin. Part of the grade will be coming up with the idea. When you give me your idea, I will let you know if it is an A, B, C, D, or E idea. An A idea could receive 35 points, a B idea can only receive a max of 30, 25 points max for a C idea, and 20 points max for a D idea. Deductions for errors will be made from the max grade.

You will need to collect a sample to compare against your population percentages. Write up a summary of your data collection approach. Collect your data. (15 points)

Use the Ex-cel program to make a Histogram which includes both the sample data and population data side by side. (5 points)

Perform the Chi-square test to determine if your sample is similar to the population. Test it at the 95% level of significance. Show all work. (15 points)

Part #2: Benford’s Law

Find a list of data (at least 75 pieces) that could be tested against Benford’s Law. Break up your data according to the starting digit for the observed values. Use Benford’s Law for the expected values and perform the Chi-square test to see if your data follows Benford’s Law. Comment on your results. (15 points)