**Fall 24 R Lab 5 – In Class Exercise**

For all questions that require graphs, be sure to add appropriate labels and formatting. Please also explain the results you find or add descriptions of the plots and charts you create.

1. Load the required packages for the analysis: dplyr, ggplot, descriptr. Set your working directory or create a project. Either way, confirm that you are working from your working directory for this project.
2. Load the fastfood.csv and save it as a tibble object in R.
3. Explore the data. Tell me the structure of the data (# rows, columns), the variables, and anything else that you find to be interesting (i.e. some summary statistics). You can use the descriptr summary statistics too.
4. Build a subset of the data that includes only items from the menus of Burger King, Dairy Queen, Chick Fil-A, and Subway. Make a scatterplot using ggplot comparing total fat and total carbs. Use the facet\_wrap function to see the scatterplot by restaurant. Visually, what is the relationship between fat and carbs?
5. Use mutate and ifelse to create a new variable called high\_sodium that takes the value of one for all items in the sample whose sodium level is above the median of the full sample. Then use your code from the last question to do a scatterplot that shows on the x-axis total carbs and total fat on the y-axis. Each restaurant should receive their own color. Using facet\_wrap show two scatterplots, one for the sample with low sodium and the other for the sample with high sodium. Use ggplot preferably.
6. Using t.test command, falsify the null hypothesis that items from the menus from Chick Fil-A and McDonalds have the same average total fat. If possible, use the code from class to do a visual representation of the sample average of total fat for each menu. Interpret the result of the t.test.
7. Using t.test command, falsify the null hypothesis that items with low sodium have the same average cholesterol than items with high sodium. If possible, use the code from class to do a visual representation of the sample average of cholesterol for each menu. Interpret the result of the t.test.