Instructions: Use the Excel file entitled *Socioeconomic and tree cover\_Dallas\_05133021* to create your graphs and answer the questions below***.***

Download the Excel file to your desktop. ***Save the file with your name in the file name. You will submit the file that you modify as part of your work***.

1. **Is tree cover equitably distributed within the city of Dallas?** The first question that we are addressing is whether tree cover is equitably distributed across census tracts within the city of Dallas. Based on the assigned Pre-Lab videos, readings and our discussion, what do you expect the relationship between tree cover and mean household income to be? State your hypothesis, the null hypothesis and identify the independent and dependent variables that you will use to address this question in the spaces provided below: (8 pts)
   1. Hypothesis:
   2. Null Hypothesis
   3. Independent Variable
   4. Dependent Variable:
2. In the space provided below, draw a hypothesis graph that shows what you expect the relationship between your dependent and independent variables to look like. (Label the axes and draw a trendline) (2 pts)
3. **Linear Regression Results:** Once you have graphed your variables as a scatterplot in Excel, report the rate of change in your dependent variable as a function of your independent variable (i.e., the slope of the trendline) and the R2 for the trendline in the spaces below: (10 pts)
4. Slope: \_\_\_\_\_\_\_ (Remember to include the units for your slope!)
5. R2:
6. **Do the data support your hypothesis?** Did you find the relationship between household income and tree cover that you predicted in Question#1? What did the R2 tell you about the strength of the relationship between income and tree cover? Explain. (10 pts)
7. Based on these analyses what is the answer to our question, “Is tree cover equitably distributed within our communities?” Support your conclusions using information from your analyses. (10 pts)
8. What actions could community members and governments take to ensure equal access to tree cover and the ecosystem services that trees provide across our cities? (10 pts)
9. **Do people in areas with higher tree cover live longer?** The second question that will examine is whether tree cover is correlated with life expectancy (our proxy for overall human health) across census tracts within the city of Dallas. State your hypothesis, the null hypothesis and identify the independent and dependent variables for this question in the spaces provided below: (8 pts)
   1. Hypothesis:
   2. Null Hypothesis
   3. Independent Variable
   4. Dependent Variable:
10. In the space provided below, draw a hypothesis graph that shows what you expect the relationship between tree cover and life expectancy to look like. (Label the axes and draw a trendline) (2 pts)
11. **Linear Regression Results:** Once you have graphed life expectancy as a function of tree cover as a scatterplot in Excel, report the rate of change in years lived/ % tree cover (i.e., the slope of the trendline) and the R2 for the trendline in the spaces below: (10 pts)
12. Slope: \_\_\_\_\_\_\_ years lived/ % tree cover
13. R2:
14. **Do the data support your hypothesis?** Did you find the relationship between household income and tree cover that you predicted in Question#5? What did the R2 tell you about the strength of the relationship between tree cover and life expectancy? Explain. (10 pts)
15. **Developing Alternative Hypotheses:** What are some other factors besides tree cover that might be driving the positive correlation that we observed between mean annual income and life expectancy during our class discussion?
16. **Choose your own analysis to conduct.** What question are you asking? What do you expect to find (hypothesis)? Which two variables from our data set will you analyze? Answer these questions in the spaces provided below: (10 pts)
    1. Question:
    2. Hypothesis:
    3. Null Hypothesis
    4. Independent Variable
    5. Dependent Variable:
17. Draw a hypothesis graph below. (Label the axes and draw a line showing what you expect the trendline to look like) (2 pts)
18. Once you have completed your graphic analysis for Dallas, enter the slope of the trendline and the R2 for the trendline in the spaces below: (10 pts)
    1. Dallas slope: R2:
19. Was your hypothesis correct? Did you find the relationship between your independent and dependent variables that you predicted in Question#? Explain. (10 pts)
20. Submit your Excel File with the regression graphs and analyses that you conducted (20 pts)

* Graph contains the correct data as described in the instructions:10/20 points
* Graph Axes labeled correctly including units: 5/20 pts
* Descriptive graph title: 5/20 pts