**Geog 250 Lab 3: Data & Graphing!**

1. **Data**

Remember that tick data from Blandy Field Experimental Farm. Well, now we have all of the tick data captured in Virginia between 2014 and 2018. The field sites in this data set are Blandy Field (BLAN); the Smithsonian Conservation Biology Institute (SCBI) in Northern Virginia, and the Mountain Lake Biological Station (MLBS) north of Blacksburg in Southwest, Virginia. See:

<https://www.neonscience.org/field-sites/field-sites-map>

Open a Word document where you can write your answers and paste your graphs.

The CSV containing all of the data is on Blackboard>Assignments>Lab3.

(Note: if you have the skills to do these analyses in R, Python, or Matlab, feel free!)

1. Open the CSV in Excel. There are a few ways to do this.
   1. If you have a PC, you can just double click on the file, and it should open in Excel.
   2. If you have a Mac, go to Data>From Text and select the CSV file
      1. This will open the ‘Text import wizard’
      2. Choose “Delimited” on that first page – we are telling excel that the data in this text file is delimited, that means, there are specific characters (in our case, commas), used to separate between columns
      3. Then, CSV stands for “Comma Separated Values”, so make sure the ‘Comma’ delimiter is checked
      4. Then I generally click General. And Click Finish and Okay! You will have successfully imported your data. (If not, get Prof Spera to help.)

*Q1. How many variables does this datasheet contain? Which are categorical, which are quantitative? Do any fall into neither category?*

1. In Excel, rename this worksheet “tck\_fielddata\_original” and make a copy of the worksheet, and name it “tck\_fielddata\_derived.” We’re doing this because we’re following the tidy data rule of never messing with the original spreadsheet. Also, might as well hit save, and save this as an ‘xlsx’ files somewhere you can easily find now.

To complete this lab, you’ll need to come up with three graphs and perform two statistical tests as described below and answer a question about each. Also on Blackboard in the Lab folder are two PDFs with some potentially helpful tips on how to do some maneuvering in Excel.

**Tick Seasonality**

You need to create a time series of the average adult ticks, nymph ticks, and tick larvae over the course of the year by month over the whole 2014-2018 timer period. This means you should determine the average number of each type of ticks in each month across all years. You may have some months with no data.

*Q2. Do ticks exhibit any seasonality; that is, are there times of the year where there are more/less adult ticks, more nymph ticks, or more tick larvae? Include the graph in your word doc.*

**Pasture vs Hay**

Is there a statistically significant difference between the numbers of total ticks found in pasture vs those found in the forest?

*Q3. Describe the statistical test you performed and include the results and explanation of the results.*

**Ticks and Elevation**

Create a graph showing the relationship between the total number of ticks and elevation. Are these two variables related? If so, how strong is their relationship?

*Q4. Is tick-prevalence correlated elevation? Add the graph you created and describe the statistical test you performed and how that lead you to your conclusion.*

**Choose Your Own Adventure**

Come up with one more hypothesis you can test with these data and test it.

*Q5. Put the hypothesis, graph, and any explanation of your choice of statistical test and results in your word doc.*