

## Excel Tutorial

This activity is designed to introduce the class to Microsoft Excel and that we start off with the right skill set to maximize our time during data analysis labs. The activity should be completed by the end of class and you must have your TA look over your work before leaving.

This dataset is from a study on *Odocoileus virginianus*, Virginia white-tailed deer, harvested from two different counties in Florida -- County A and B. During the study, deer were tagged and monitored throughout their lives to collect information on their life cycle. Deceased individuals were weighed in the field, and brains were weighed in the lab after surgical removal, both using 'wet' weight methods. Four variables are recorded: body weight (kg); brain weight (g); age at death (yrs); and gestation length (days).

*NOTE: Cells in which you are asked to enter formulas **must contain formulas**, not number answers typed in by hand, for you to be dismissed.*

### Exercise (all underlined blue hyperlinks are for Excel 2010)

Open the Excel file titled "Excel Dataset" and save it to your local or removable drive. (Remember to Save (CTRL + S) often! If you make a mistake or accidentally delete something, use the Undo (CTRL + Z) feature.) The following guidelines will serve as a template for what your tables figures will look like for this class, though some variation is to be expected.

#### 1. Formatting the Data Table

- There are 30 rows of data in the original file, but we only want to work with 15 individuals from each county.
  - Delete Individuals #16-30 (ROWS 18-32) so that there are only 15 individuals (#1-15, ROWS 3-17) left in both counties.
    - Left click and drag on the actual row number to highlight desired rows
    - Right click on highlighted area for deletion options.
- The first two rows in this particular table are called "Header" rows, because they label the data shown below them. Format the header titles to improve readability
  - "Wrap" text (Alignment option under the Home tab) within each Header cell to correct overlapping adjacent cells
  - Autofit Column Width to further correct overlapping
    - Left click and drag Columns B-L to select these columns
    - Go to "Cells" option (top right under the Home Tab) and select "Format"
    - Select "Autofit Column Width"
    - If desired, you can center the content of the table in the "Alignment" option
  - Capitalize the first letter of every word, excluding units of measurement, in the Header cells manually by double-clicking in each cell
  - Format the Header cell text to **BOLD** (select the "**B**" option in "Font" option or use CTRL+B)
  - Save your work! (CTRL S or click on the disc in the upper left corner)

#### 2. Formatting the Dataset

- Convert Brain Weight data from kilograms (kg) to grams (g)
  - Insert a new column to the right of Column D
    - Select Column E and right click for options
    - Click on "Insert" and the new column should appear
    - Select and Copy (CTRL+C) Column D Header and Paste (CTRL+V) into Header for the new Column E
    - Change the "(kg)" to "(g)" in the new Column E
    - Reformat Column Width if necessary

- Perform calculation by writing a formula to convert kg to g
  - In Cell E3 type =D3\*1000
    - This formula tells Excel to multiply the data in Cell D3 by 1000, thus converting kg to g.
  - Copy and paste the formula in E3 down the rest of Column E for each individual
- Insert a new column to the right of Column E following steps described above.
- Highlight and copy cells E2 – E17
- Paste copied cells into new Column F using “Paste Special”
  - Right click into cell F3 and select “Paste Special”
  - Select “Values”
  - Delete Columns “D” and “E”
- Repeat the same steps for County B
- Setting the data to specific significant figures
  - Select all data points in Columns C-F
    - Press and hold CTRL and select the data in Columns I-L
  - Select “Format” in the “Cells” option and click on “Format Cells”
  - Select the “Number” tab, then “Number” under “Categories” and click “OK”
    - Leave the default setting of two decimal places
  - Save your work!

### 3. Performing Descriptive Statistics for the dataset:

- Calculate the SUM of data in each column
  - Type “=SUM(C3:C17)” in cell C19.
    - The cell range is designated within the “( )”
  - Copy and paste the formula to the adjacent cells
  - Repeat the same steps for each column to calculate the following:
    - Mean =AVERAGE()
    - Standard deviation =STDEV()
    - Variance =VAR()
    - Minimum =MIN()
    - Maximum =MAX()
    - Count = COUNT()
  - Calculate the Standard Error of the Mean (SE) for each column
    - SE = STDEV(C3:C17)/SQRT(COUNT((C3:C17))
    - OR
    - SE = (C21)/SQRT(COUNT(C25))
  - Save your work!

### 4. Formatting the Table for an Assignment

- Insert a Row by right clicking on the “1” and select “Insert”
- Select cells B1-L1 and Merge them
  - Merge is found in the Alignment option
  - Align the text to the Left margin
  - The merged cells will provide space for the Table# and Caption
    - Add the Table # and appropriate caption that identifies the content.
    - Include the sample size (N = \_\_\_) per county!
- Add a simple line border

- Above and below each of the two header rows (cells A1 through L1 and A2 through L2)
  - Under the last row of data (cells B17 through L17)
  - *Do not add borders to any other cells.*
- Save your work!

## 5. Creating a Graph

- Create a new sheet
  - Click on the “+” sign at the bottom left of the workbook
  - “Sheet 1” will be added to the right of the “Dataset” sheet
  - Name the new sheet “Graph” by double-clicking on “Sheet 1”
- Create a Table
  - Label A1 with “Body Weight (kg)”
  - Label B1 “County A” and C1 “County B”
  - Add Row Headers to A2-A3 and enter the following:
    - A2 = “Mean”
    - A3 = “Std. Err.”
  - Add data to table by linking the “Graph” sheet to the “Dataset” sheet
    - Type “=” into B2 then immediately click on the “Dataset” sheet
      - Find the Mean Body Weight for County A and click on that cell (should be C21), then press enter
      - The data should automatically transfer over to the “Graph” sheet
      - The formula “=Dataset!C21” should now appear in B2 when the cell is selected.
      - Repeat these steps for the mean and standard error for both County A and B.
      - Save your work!
- Create a Graph
  - Select Cells A1-C2
  - Click on the Insert Tab
    - In the Charts option, select “Insert Column Chart”
    - Select the “Clustered Column” in the “2D Column” menu
- Formatting the Graph
  - Click on the graph area
    - Small icons (“+”, a paintbrush, and a funnel) appear on the right side of the graph
    - Click on the “+”
      - Deselect Chart Title (Graphs should NEVER have titles)
      - Deselect Gridlines
      - Select Axes
      - Select Axes Titles
      - Select Error Bars
        - Click on the > that appears in the menu
        - Select “More Options” for a formatting menu
        - Select the Graph icon
          - Direction, select Plus
          - Style, select Cap
          - Error Amount, select Custom
            - Select Cells B3-C3

- Press Tab
    - Select Cells B3-C3
  - All of these steps can be accomplished via the Chart Tools Menu and Design and Format Tabs
- Format Y-Axis
  - Click on the Y-Axis; Format Axis Menu appears on the right
  - Select the Graph icon for Axis Options
    - Change the Minimum Bound to “0.0”
    - Click on “Number” at the bottom of menu list
      - Change the number of decimal places to “0”
- Change Axes Titles
  - Double click on the Y-Axis Title and rename it as “Mean Body Weight (kg) ± SE”
    - Note: Units (kg) and the SE are always included
      - The “±” is found in “Symbols” under the “Insert” Tab
  - Double click on the X-Axis Title and rename “Sampling Location”
  - Save your work!

## 6. Adding Table and Graph to a Word Doc.

- Create a new Word document
- Go back to the Excel file, Dataset sheet
  - Select all of Table 1, including the first row with your title
  - Copy the table once highlighted
  - Return to the Word doc and paste the table
  - Save your work!
  - There are a variety of options to reformat the table or page to accommodate the full table
    - Auto-adjust the table in Word
    - Make two separate tables
      - Easier to do in Excel
      - Remember to fix the Titles
    - Change the Word doc page layout
- Repeat the above step to add the Graph to the Word doc.
  - Save your work!
  - Write a Figure caption below the graph using Times New Roman 10pt font and include the following information
    - Label and number the figure: “Figure 1” in this example
    - The study subject
    - Study location(s)
    - Parameters being displayed
    - Units of measurement
    - Sample size
    - Additional pertinent information for the study:
      - Age range of individuals studied
      - Body weight collected pre- or post-mortem
      - Wet or dry weight
  - Save your work
  - Upload both Excel and Word files to Canvas