Turn in your homework in lecture or in your TA’s mailbox by 4pm on Thursday Feb. 2. Make sure you write your name and your discussion section.


Describe

(a) the features you do not like in Figure 1 (default Excel graph) that are not already mentioned in the text,

(b) the features you do not like in Figure 2 (default R graph) that are not already mentioned in the text,

(c) features you do like in either figure 1, 2 or 3, not already mentioned in the text.

2. Search for an article published in an academic journal that (1) is on a biological topic, (2) you think is interesting, and (3) uses statistics. We are looking for a genuine research article (in an academic journal accessible electronically through the UW library), not an article in the popular press (such as a newspaper or news magazine or a personal or company web site). One approach is to search for an article using a search engine like Google, and then find the article through the library. Another approach is to browse a journal such as Science, Nature, Genetics, Evolution, The American Journal of Botany, or something similar. Before choosing your article, scan the questions below. You must choose an article that allows you to answer these questions (e.g. your article must have a graph in it). Once you have found an article that matches the criteria, please answer the following questions in a typed report.

(a) Provide a citation for the article.

(b) Describe the sample of individuals (units) for which data is collected. Describe how this sample was selected.

(c) Report one scientific question that your article addresses.

(d) What results does the article include regarding the scientific question?

(e) Select one graph from the article. What variables are graphed on each axis? What other variables are displayed using colors or point symbols? What does the graph illustrate?

(f) Identify two variables that are measured by the authors, one a response variable and one an explanatory variable, if applicable. What are the units of measurement? Are the variables summarized with statistics? If so, what are the values of the statistics? Classify each variable as either categorical or numerical, as either experimental or observational, and as either explanatory or response.

4. Problems 16, 17 and 26 from Chapter 2 (p. 54 & 57). Use R for your graphs and show the commands you used (successful commands only, i.e. what one should use to replicate your graph). See examples in the lecture notes and in the tutorial handout.

5. Problems 10 and 14 (p. 79-80) You may use R or your own calculator for calculations.

Reading: Chapters 1, 2 and 3 in The analysis of biological data.