

## Modern Graphics Course: Some guidelines for preparing homework & reporting data analyses

Homework will generally be assigned each Thursday in class, or shortly after on our wiki; and it will be due the following Wednesday pm. This work will usually entail data analyses (typically using R), and it will often be necessary for you to compute numerical summaries and construct graphics.

I will give you as many specifics as I can as for what I want from you, but I also will seek creativeness whenever possible, more so as the course proceeds. The following points are meant to provide guidance for you in preparing what it is that you hand in. As I've said before, don't hesitate to ask questions (wiki, email, in class) If you need help w/ R, you have many sources including [epym08learnR.pbwiki.com](http://epym08learnR.pbwiki.com). But the manuals (and books) seen on the website for R, [r-project.org](http://r-project.org), especially Introduction to R by Venables and Ripley, and the Scott counterpart, will also be especially valuable to you. But our class wiki provides many other sources, especially (but not only) URLs.

The main points follow:

1. Make your purposes clear. *What do you aim to accomplish in what you hand it? State your purposes clearly, in English, even if brief, but be sure to say enough. Test your statement(s) with others to see that they understand you. Sometimes you can just copy my questions, but this may not be enough. (Experience suggests that stating purposes is one of the hardest parts of doing homework; again, ask for help!)*
2. Note whether your data are simulated, or, if real, observational or experimental. You may get to part of this w/ your purpose, but explain more about the nature of the data, especially as to the observational/experimental part; and if data are from some library, or from the web or a book, *be sure to cite the source if you used one.*
3. Prepare your results using a w-processor so you can edit details, as needed. Try to make a good impression in the organization, headings, formatting, etc. In the case of graphic results, place titles in good form in appropriate places (title and mtext funcs); and size these carefully on the page. I will provide more guidance on this point in class; but in the meantime, look up `par ( )$mfrow`.
4. For numerical results, give thought to *how many decimal digits are needed*. Do NOT use more than this number! (Note that you can set `R>options(digits=2)` or `(digits=3)` say, to control this for your entire session. Or you can use function `round` for individual results, using either the `round` or perhaps `sapply` function (look it up, for individual or multiple results of a function.) ***If any data set is quite large do NOT include the whole set unless that seems essential.*** It will generally be better instead to use `>head(dataset)`, and sometimes also `>tail(dataset)` to give a sense of data's form.
5. Use ink thoughtfully on each page, so you don't have too much white space, nor too dark. Organize your results carefully so they are readable, and convey the information you want to convey. Modify and edit as you learn more about R; same for document processing. See web postings of Edward Tufte, on this topic: e.g. [http://en.wikipedia.org/wiki/Edward\\_Tufte](http://en.wikipedia.org/wiki/Edward_Tufte) or <http://staff.washington.edu/larryg/Classes/R560/zz-tufte.html>
6. Be sure to add comments as needed and end with a statement (in English) that explains what your results (numerical and graphic) mean. Naturally, you will get a better sense of such matters after you have completed homework assignments. If English is not your first language, you should still do your

best work. My editing, when I return your work, may help you improve your English. Remember, *reporting of data analysis involves communication with an audience*, and you should have that audience (often just me, in this class) clearly in mind when you explain what your results mean.

7. If you have questions about what you did, or want to ask questions that you would like to have answered privately (rather than publically, on the wiki), you may include them in your hard copy that you turn in to me (without including them in your wiki post). Always consider this possibility!

8. Finally, be sure to post your work on this wiki (pdf or wp file, *and* print hard copy. The reason for the hard copy is that it facilitates my feedback. *Post using naming convention: 887.surname.date.id.type*  
*For example:* 887Smith.02.03.hw1.pdf