Lecture 21 – Preparing Figures for Publication

Learning Objectives:

6. **Learn how to document your work and prepare scientific publications.**

   6.3 Learn how to plot with ggplot2.

Final Project

- **Final project will be a write-up of your midterm project.** This should include any table, analysis, data, and figures.

- **Should be as reproducible as possible.** Ideally, anyone would be able to reproduce the entire project running a single markdown document. (This probably won't happen, but it's a good ideal to strive towards.)

- **The report should be separate from the markdown/code you've used in the revision.** Treat it more like a scientific paper than a coding project, this is about the results of the code (rather than the code itself).

- **There should be some improvement in the code from the midterm revisions.** Some type of refactoring, optimization, additional analyses, and/or visualizations.

- **Due Monday December 13th by 4:15 pm PT (our final exam time).**

- We will meet to evaluate final reports.

Reproducibility and transparency starts with figures

- **If there is a problem with your data, it will be most apparent in your figures.** Patterns and problems will stand out in the figures, so use them to double check your own ideas. Make them transparent so that others can find problems as well.

- **Reproducibility and transparency starts with your figures.** Visualizations make a strong case for your interpretation of your data, you have a responsibility to make them both reproducible and transparent.

- **Wherever possible, complete figures should be reproducible from raw data.** Ethical and legal concerns can limit release full data sets. Large raw files can also limit accessibility, but making raw data openly available is a best practice.

Figures should be saved when created

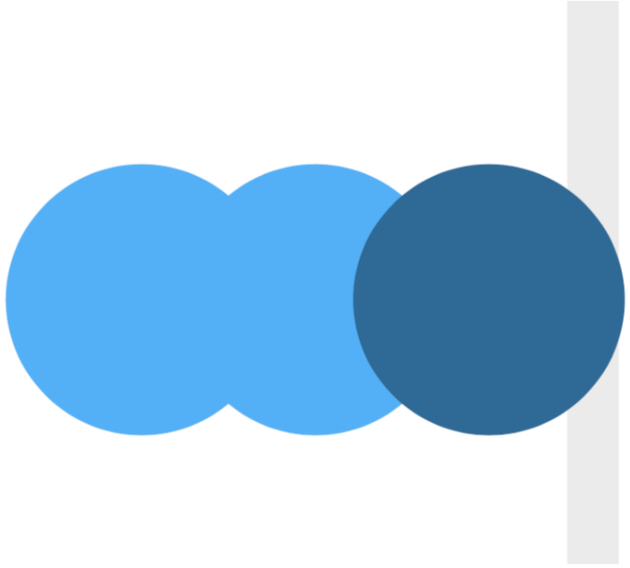
Options in R:

- Vector graphics: PDF, EPS, SVG, AI

- **pdf()**
- **setEPS() and postscript()**
- **Don’t worry about resolution!**
- **Worry about color maps!**

- Raster graphics: JPEG, PNG, GIF, TIFF, BMP

- **png package: png(), bmp(), jpeg(), tiff()**
- **jpeg package: readJPEG(), writeJPEG()**
- **Worry about resolution!**
- **Don’t worry about color maps!**



- ggsave() has many device options

For additional figure changes

Use an image editor such as GiMP, Adobe Photoshop, or Adobe Illustrator.

Gnu Image Manipulation Program (GIMP)

https://www.gimp.org/

Additional Resources

http://www.christoph-scherber.de/content/PDF%20Files/Scherber%202012%20Using%20R%20in%20combination%20with%20Adobe%20Illustrator%20CS6.pdf – Using R in combination with Adobe Illustrator for professional graphics

https://ggplot2.tidyverse.org/reference/ggsave.html – ggsave() reference guide