FALL 2018

TEXAS
The University of Texas at Austin

APPLIED ENGINEERING DATA ANALYSIS, OPTIMIZATION AND VISUALIZATION

Figures, graphs, visualizing your data

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So far this class has looked at dealing with and analyzing data (optimization next week!)

- Today we start looking at how to visualize data/results/etc.
- A picture is worth a thousand words?
  - Then what about a GIF?
  - A map?

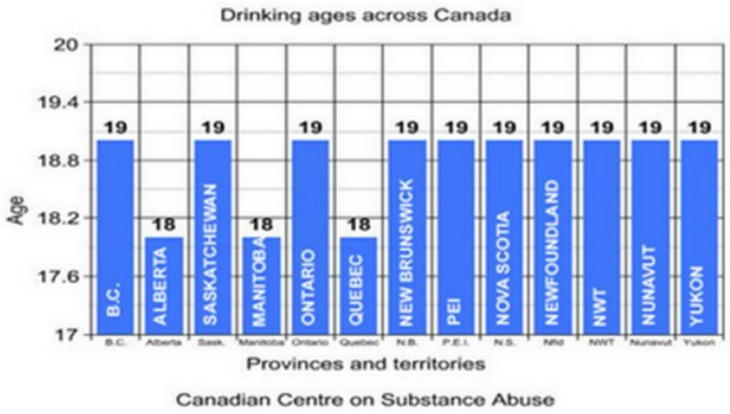
Visualization is often an afterthought, or sometimes a necessary evil…

- But what good is your work if you can't tell anyone else what you found or did?
- Those that can convey their results are seen as smarter
  - http://www.businessinsider.com/how-to-look-smart-2015-2#use-graphs-6

Bad charts: don’t do these

Drinking age will remain 19 in Saskatchewan

CBC News Posted: Mar 4, 2013 11:59 AM CST | Last Updated: Mar 4, 2013 11:55 AM CST 25



You have to be 19 in Saskatchewan to have a drink, while in Alberta and Manitoba, the drinking age 18. (CBC)

The Saskatchewan Party government has ruled out lowering the drinking age, four months after party members put the issue in the public eye.

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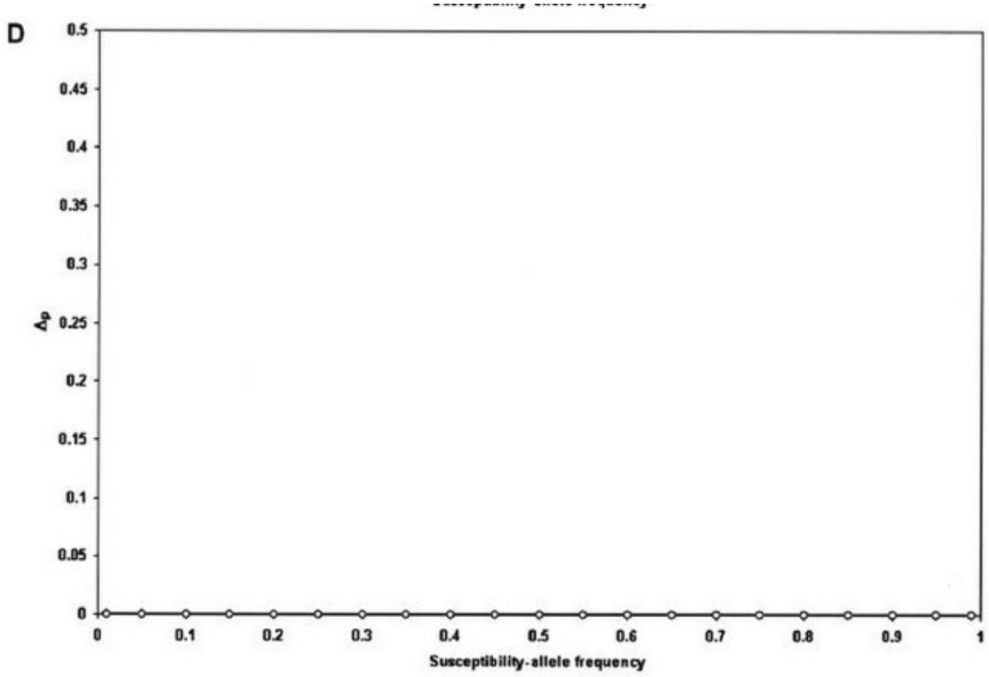
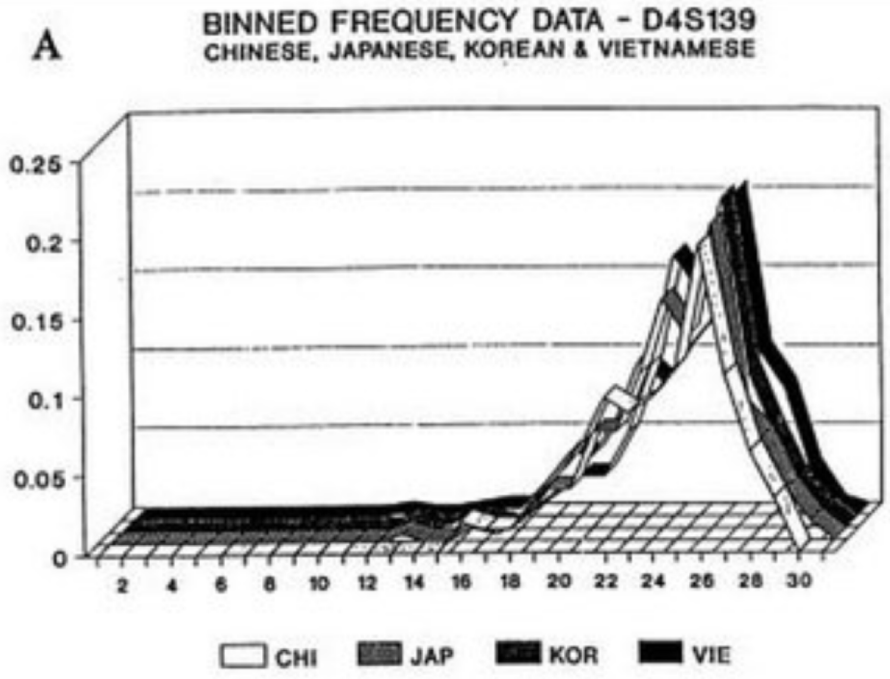
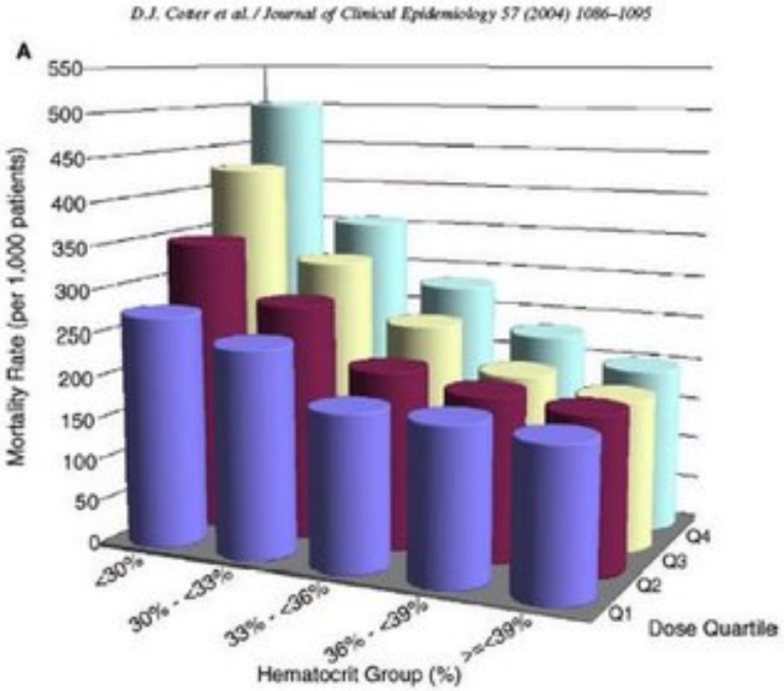
Sometimes you don’t need a chart for your data



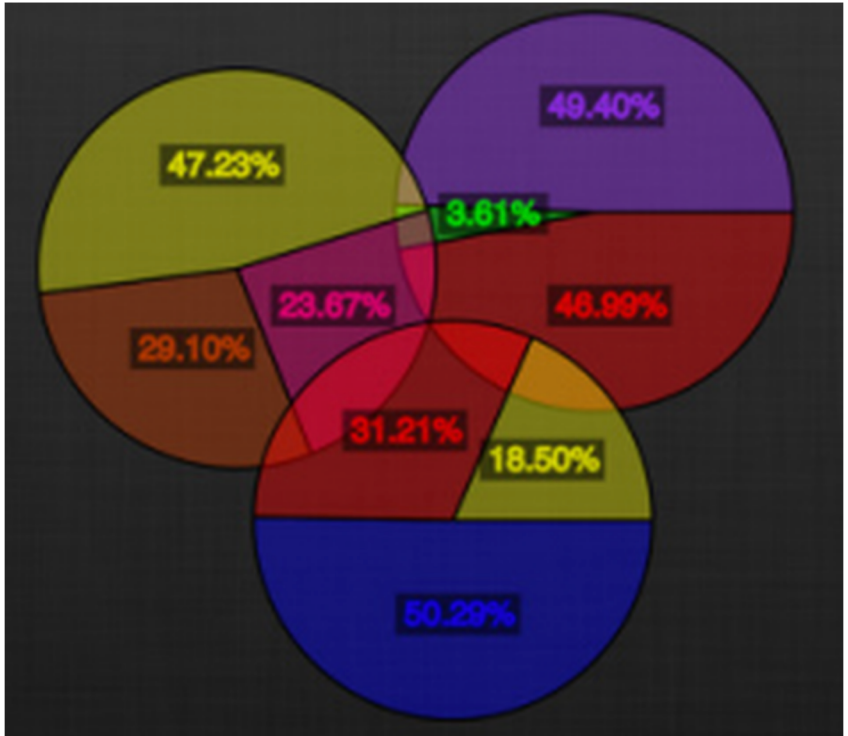
How to make a line graph worse



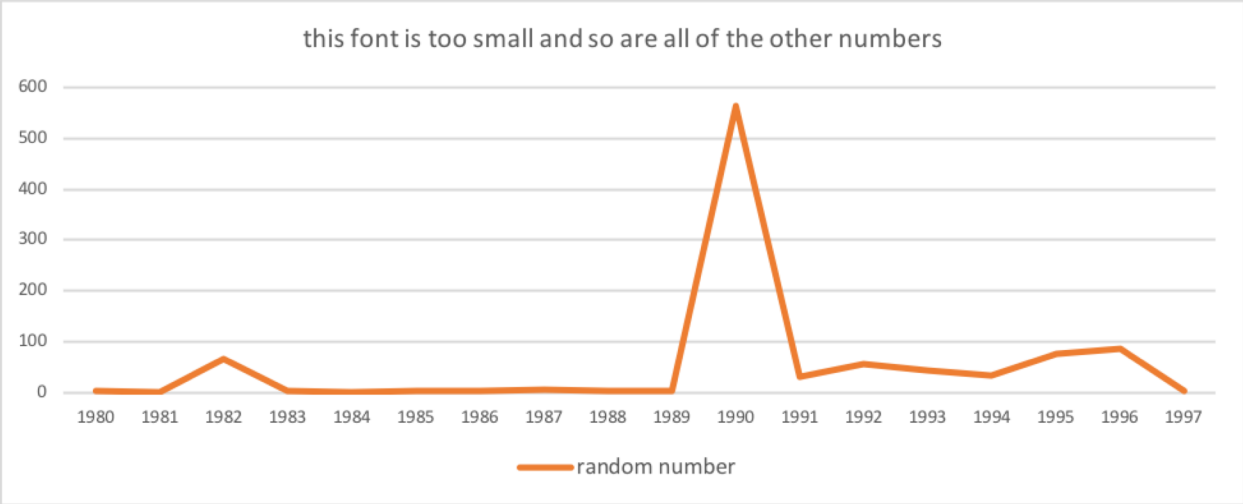
Just don’t ever



This says less than nothing



Everyone is tired of seeing this



Graphics in R

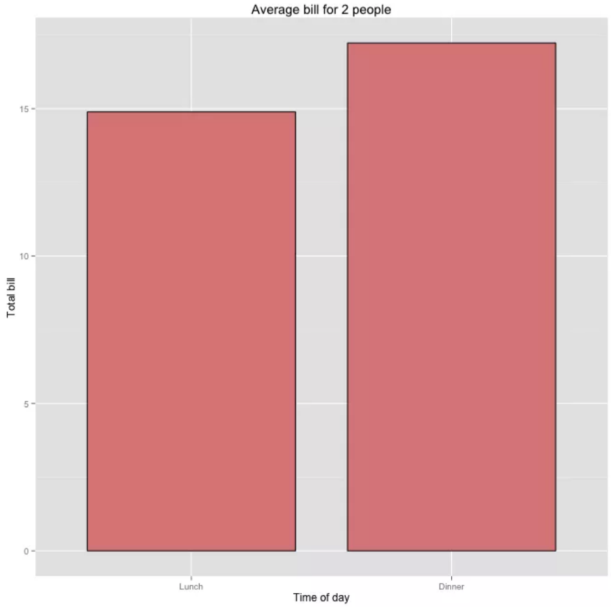
- They are better than elsewhere
- This is why I got into R
  - Stayed for the party
- One of the strongest reasons to use R
  - Some only use R for graphics and other stuff for analysis

There are two main graphics pathways in R

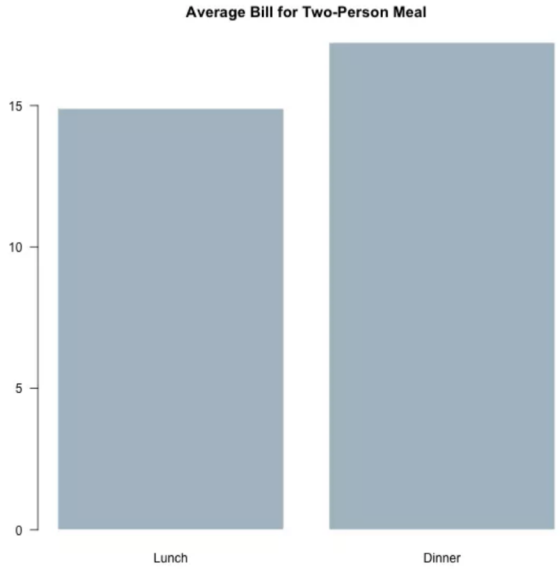
- Base graphics
  - Comes with the R installation
- ggplot graphics
  - Needs ggplot2 library
- Most people use 1 or the other, I use base graphics, feel free to use whichever you want

Neither of the defaults are good enough

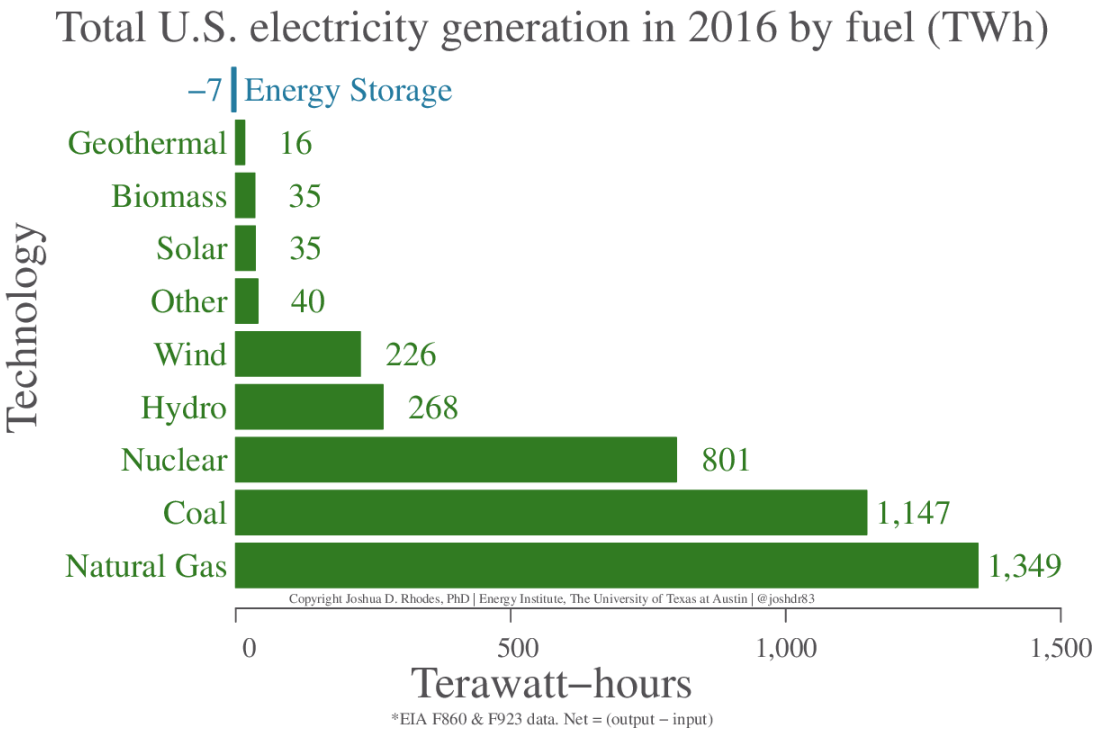
ggplot2

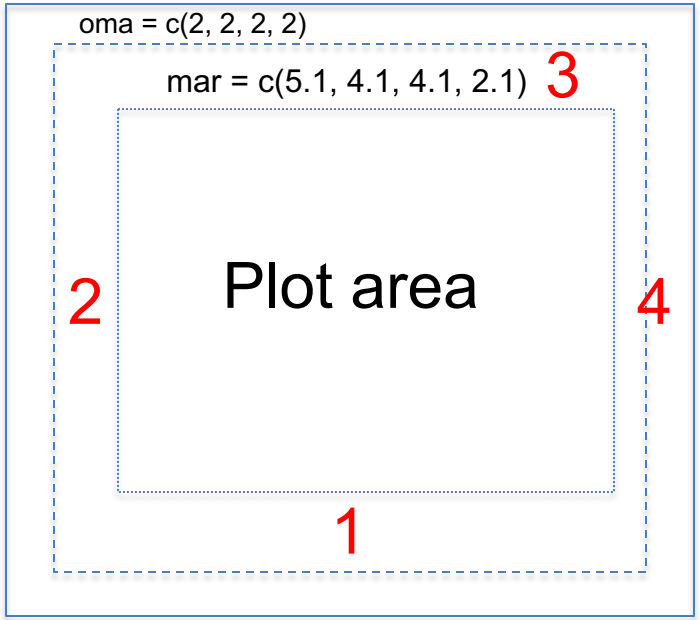


Base Graphics



But try doing this in Excel, I dare you



First some basics

- There are multiple levels of a plot
- Remember the side numbers