Introduction

Let's start visualizing data!

Software.

The more visualization tools you know how to use and take advantage of, the less likely you'll get stuck not knowing what to do with a dataset and the more likely you can make a graphic that matches your vision.

Out-of-the-Box Visualization

- Point-and-Click Software
- MS Excel, Google Docs, Many Eyes, Tableau, SPSS, BlueskyStatistics, SAS

Programming

- processing, processing.js, processing.py
- python, matplotlib
- R, trellis, ggplot2
- SAS

Illustration

- Adobe Illustrator
- Inkscape

Mapping

- Google maps, Google earth, Google docs
- yahoo maps and Microsoft maps
- ARCGIS
- Modest Maps, Ploymaps
- tableau, R
Goal

To have an excellent example of a bubble plot, wordcloud, and a map posted online. Try a software package to modify a graph using that software. Graduate students make an animation using shiny.

Point-and-Click

We start by looking at various point-and-click packages.

MS Excel

Check out MS Excel 2016. Very nice updates to the Chart Wizard. Can make maps.

Google Docs and Sheets


Minitab and Minitab Express

Lots of standard graphs. Can make a bubble plot.

IBM Many Eyes

Was a nice collaborative website. Could make a wordcloud. Sorry Many Eyes has been closed.

Tableau and Tableau Public

What do you think about tableau?

VisualizeFree

Check out there website.
Interesting blog post

30 Simple Tools For Data Visualization

IBM SPSS

Very nice chart builder.

SPSS Visualization Designer

WatsonAnalytics

Aside: Check out the Automatic Statistician

SAS

Visual Analytics

Analytics 2013 - Keynote - Jim Goodnight, SAS

Jim Goodnight Talks About SAS Visual Analytics: Overview

Programming

Next we will discuss programming Tools.

Python

Python is a very flexible programming language that can be used to interact with data on the internet easily.

- python
- matplotlib
- plotly

Check out

- DataJoy
- Wakari

Processing

This is a programming language used for creating animated and interactive graphics.

- Processing
- Processing.js
- Processing.py
Protovis

A graphical approach to visualization. Protovis development has ended. The developers are now working on D3.js.
The misoproject looks to be a next step.

R

R is an excellent programming environment for developing visualizations. The basic graphics are very configurable. There are many libraries that add additional graphics.

- Trellis
- Stat 787
- Lattice
- Getting Started with Lattice
- ggplot2
- R Graphics this is an excellent book.
- plotly

RStudio and shiny

- RStuido has added a lot to making R more useful.
- shiny is an add-on to R, produced by the developers of RStuido, that is useful for making visual animations with data.

Alternatively, check out

- DataJoy

Mapping

Traditional mapping software now on the cloud.

- ARCGIS
- ARCGIS Gallery

Check out

- mapzen

Data

- Quandl

There is an R library Quandl Quandl R App
Get an account to access the data from within R.
From the Quick-R website.

Advanced Graphs
Axes and Text

# Example of labeling points
attach(mtcars)
plot(wt, mpg, main="Milage vs. Car Weight",
     xlab="Weight", ylab="Mileage", pch=18,
     col="blue")
text(wt, mpg, row.names(mtcars), cex=0.6,
     pos=4, col="red")
Combining Plots

# 4 figures arranged in 2 rows and 2 columns
attach(mtcars)
par(mfrow=c(2,2))
plot(wt, mpg, main="Scatterplot of wt vs. mpg")
plot(wt, disp, main="Scatterplot of wt vs disp")
hist(wt, main="Histogram of wt")
boxplot(wt, main="Boxplot of wt")
Try all of the code on this webpage from Quick R.

Lattice