MIDTERM REVIEW GR5702 Spring 2017

About the midterm

The midterm is closed book and will test concepts that transcend any particular language or visualization tool. In other words, no coding required. The types of questions that will appear are:

- multiple choice questions
- questions with short (one sentence) answers
- questions with longer answers, such as evaluating graphs provided, or describing how to display a data set given information about the variables
- questions that require you to roughly sketch the answer (no artistic skills required)

What to study

- *Graphical Data Analysis with R*, Chapters 3-8, with a strong bias toward material that was also covered in class
- Data visualization for exploratory data analysis (EDA) vs. presentation
- Visualizing individual observations vs. summary statistics (such as range, quantiles, median, mean, interquartile range)
- Grammar of graphics: layer, scale, coord, facet, theme
    - layers contain: aesthetic mapping, geom, stat, position
- Tidy data (long form)
- Data formats (data frames of cases / data frames of counts / contingency tables)
- Color (sequential / diverging / cyclical / categorical color schemes, perceptually uniform color, color vision deficiency friendly color schemes)
- Chart types -- for each of the chart types listed below, be familiar with
    - what type(s) of data it displays
    - important options and variations, such as number of bins for histograms, count / relative frequency / density / cumulative density histograms
    - in what situations it is a good visualization choice (many factors affect this decision besides the type of data, such as the number of variables or observations, audience, special features of the dataset, and perhaps most significantly the question that the graph is designed to answer)
    - what it does well
    - what it doesn't do well
    - and, relatedly, how it compares to similar chart types

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Bar chart

Boxplot

Histogram

Stripchart

Dot plot

Rug plot

Pie chart

Cleveland dot plot

Stem and leaf plot

Violin plot

Tufte midgap plot

Density plot

Scatterplot

Density estimate contours

Scatterplot matrix

Diverging stacked bar chart

Alluvial diagram

Parallel coordinate plot

Slope graph

Fluctuation diagram

Mosaic plot

Marimekko plot

Chernoff faces

Glyphs

Heatmap

Study the types in bold in more depth.