Lecture 2.6 – Grammar of Graphics

Learning Objectives:

3.3 Learn the basics of `ggplot2`.

Check Your Understanding

Use the `Orange` data set to create a scatterplot with `ggplot2` of `circumference` versus tree `age`.

Check Your Understanding

1. **Reshape the `fish_encounters` data set (in the `tidyr` package) into a wide format.**

2. **Reshape the `relig_income` data set (in the `tidyr` package) into a long format.**

Check Your Understanding

Add to the plot in your last check your understanding by:

1. **Adding axis labels and a title.**
2. **Changing the color, shape, and size of the points.**
3. **Rotating the x-axis labels by 45 degrees.**

Check Your Understanding

Add to the plot in your last check your understanding by:

1. **Coloring the plot points by Tree**
2. **Adding lines in the link data from the individual trees together**

Geometric objects

Scatter plot – `geom_point()`

Line plot – `geom_line()`

Box plot – `geom_boxplot()`

Violin plot – `geom_violin()`

Bar plot – `geom_bar()`

Contour plot – `geom_contour()`

Density plot – `geom_density()`

Plot a map – `geom_map()`

Rectangles – `geom_raster()`
`geom_tile()`

Quantile-quantile plot – `geom_qq_line()`

Stacked dot plot – `geom_dotplot()`

Histogram – `geom_histogram()`

Choose the correct plot for your data!

Skill Check 2.1 – Present Graph Types

Group 1: Continuous x and y data
`geom_point()`, `geom_line()`, `geom_qq_line()`

Group 2: Continuous y and Categorical x data
`geom_bar()`, `geom_boxplot()`, `geom_violin()`

Group 3: Data that form distributions
`geom_histogram()`, `geom_density()`, `geom_dotplot()`

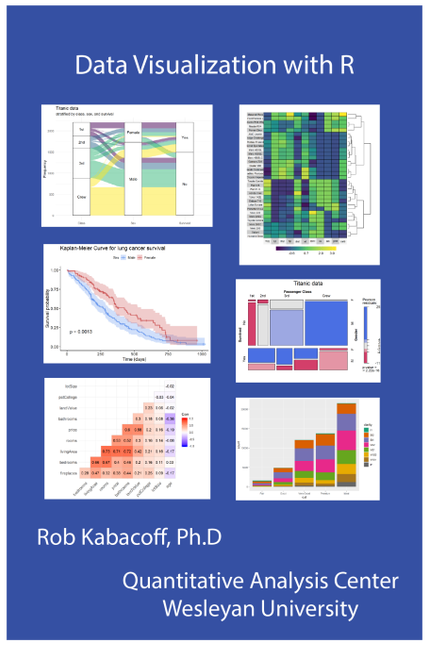
Group 4: Data on maps
`geom_map()`

Group 5: Data in matrices
`geom_raster()`, `geom_tile()`, `geom_contour()`

Group 6: “Other”
Pick one from https://exts.ggplot2.tidyverse.org/gallery/

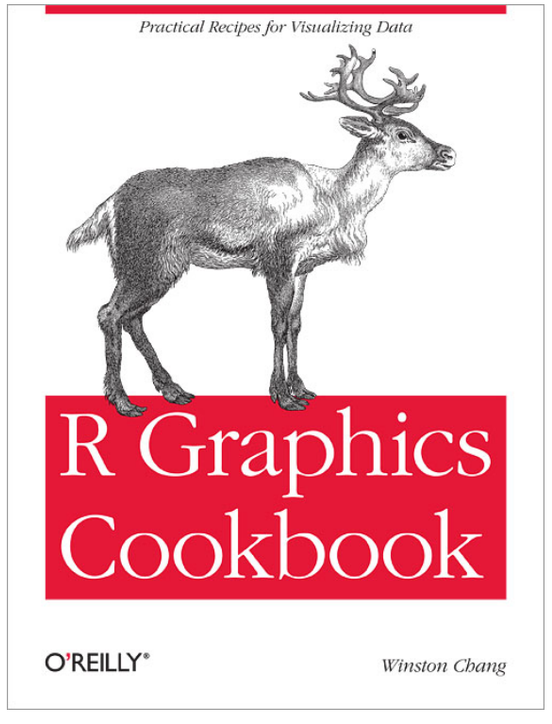
Excellent Resources for ggplot2

Tidyverse Reference Guide – https://ggplot2.tidyverse.org/reference/



Data Visualization with R – https://rkabacoff.github.io/datavis/

The R Graphics Cookbook – https://r-graphics.org/



Additional Resources

https://www.stat.auckland.ac.nz/~ihaka/787/lectures-trellis.pdf –
The Trellis system in lattice (PDF lecture slides)

http://www.cookbook-r.com/Manipulating_data/Converting_data_between_wide_and_long_format/ –
Converting between long and wide format with reshape2, tidyr, and base R

Action Items

1. **Read Assigned Chang Chapter for next time**

2. **Prepare SK 2.1 in your group**