

Lecture 2.5 – 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

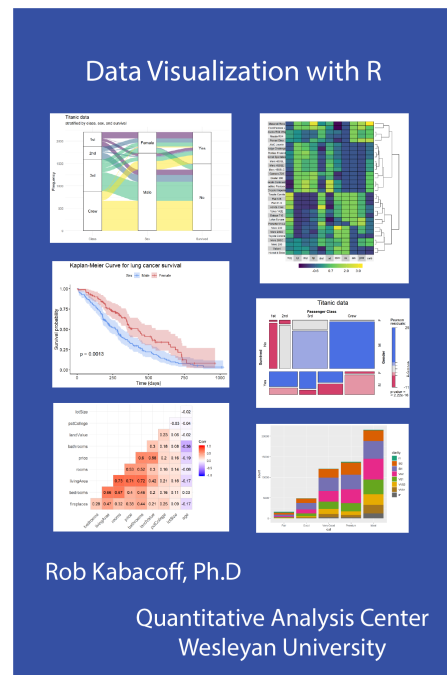
`geom_raster()`, `geom_tile()`, `geom_contour()`

Group 6: “Other”

Pick one from <https://exts.ggplot2.tidyverse.org/gallery/>

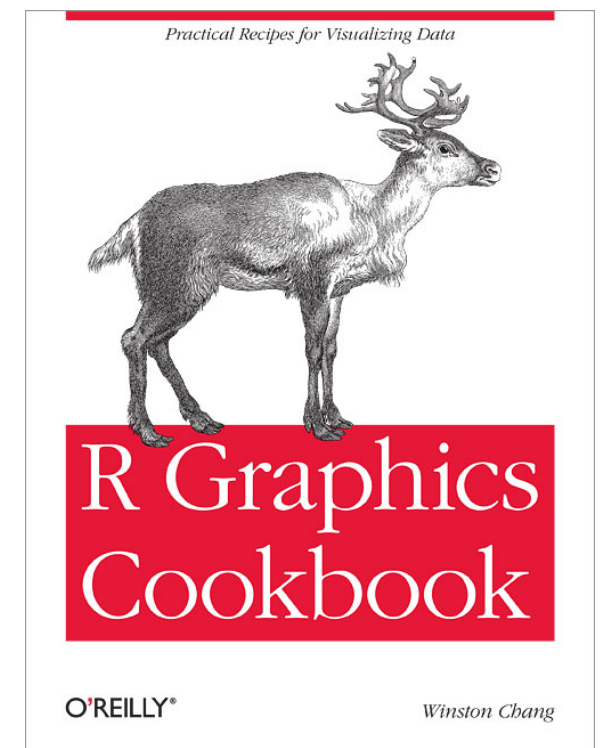
Excellent Resources for ggplot2

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**