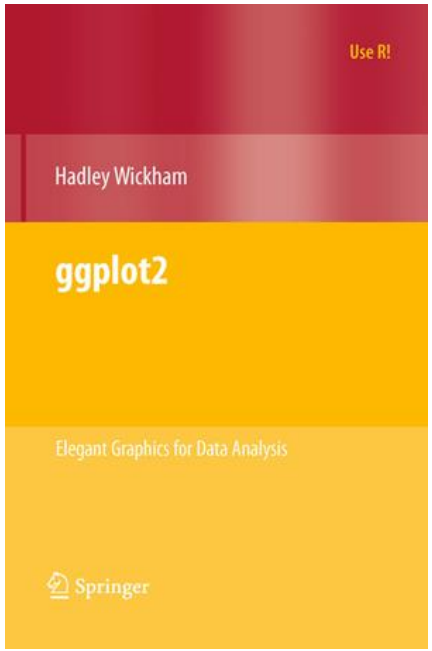
# Introduction to `ggplot2`

Daren Card
University of Texas, Arlington

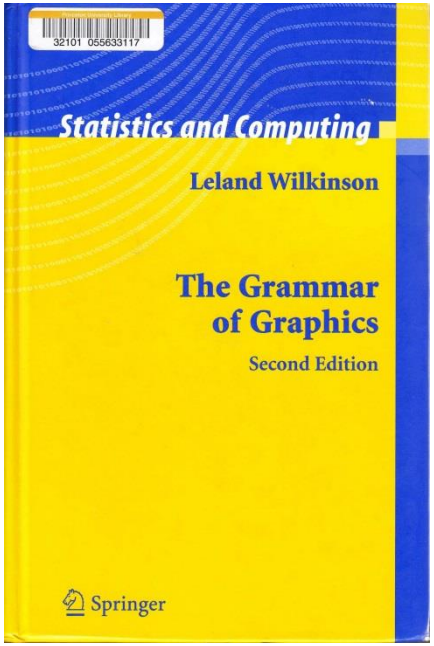
# R Package: ggplot2




**Used to produce statistical graphics**, author = Hadley Wickham

"attempt to take the good things about base and lattice graphics and improve on them with a **strong, underlying model** "

based on *The Grammar of Graphics* by Leland Wilkinson, 2005




"... describes *the meaning* of what we do when we construct statistical graphics ... More than a taxonomy ... Computational system based on the underlying mathematics of representing statistical functions of data."

- does not limit developer to a set of pre-specified graphics

adds some concepts to grammar which allow it to work well with R

# Grammar Defines Components of Graphics

**data**: in ggplot2, data must be stored as an R data frame

**coordinate system**: describes 2-D space that data is projected onto
- for example, Cartesian coordinates, polar coordinates, map projections, ...

**geoms**: describe type of geometric objects that represent data
- for example, points, lines, polygons, ...

**aesthetics**: describe visual characteristics that represent data
- for example, position, size, color, shape, transparency, fill

**scales**: for each aesthetic, describe how visual characteristic is converted to display values
- for example, log scales, color scales, size scales, shape scales, ...

**stats** : describe statistical transformations that typically summarize data
- for example, counts, means, medians, regression lines, ...

**facets**: describe how data is split into subsets and displayed as multiple small graphs