

Introduction to R

Day 1

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Welcome!

- ▶ Very shortly about me
- ▶ About you, anything you want to tell about yourself:
 - ▶ Your major and minor fields
 - ▶ Your research interests
 - ▶ Statistical software experience
 - ▶ Any dataset you want to explore while you are learning R
 - ▶ Planned quantitative methods courses

About the Workshop

- ▶ Each day of the workshop will be divided into two sessions.
 - ▶ Morning session and the 1st half of the afternoon session: cover new topics and R commands followed by some short practice exercises
 - ▶ The 2nd half of the afternoon session: dedicated to practice exercises
- ▶ **Slack:** We will use Slack to communicate about everything
- ▶ **Daily Problem Sets:** Aim is to maximize the practice.
 - ▶ Optional, ungraded, and deadlines are flexible
- ▶ **Office Hours:** 7:00 — 9:00 pm throughout the workshop. We can also arrange by email.

Daily Outline

- ▶ **Before the workshop:** I will share a handout from Slack.
 - ▶ Include all the topics and R commands we will learn
 - ▶ Also include practice exercises without solutions
- ▶ **During the workshop:** Share my RStudio screen with you and everything we do will be consistent with the handout
 - ▶ You can either follow the handout and type the commands in RStudio with me at the same time.
 - ▶ Or, you can only try out the codes.
- ▶ **End of the workshop:** Post a handout with solutions to practice exercises from Slack

Why R?

- ▶ It's free
- ▶ It's open source
- ▶ It's flexible
- ▶ It's extremely popular
 - ▶ Academics, industries, NYT, Facebook, Google, Twitter, **FiveThirtyEight**, nonprofits, governments all use R.
- ▶ Powerful and has great graphical capabilities
- ▶ Great for scientific workflow

What can you do with R?

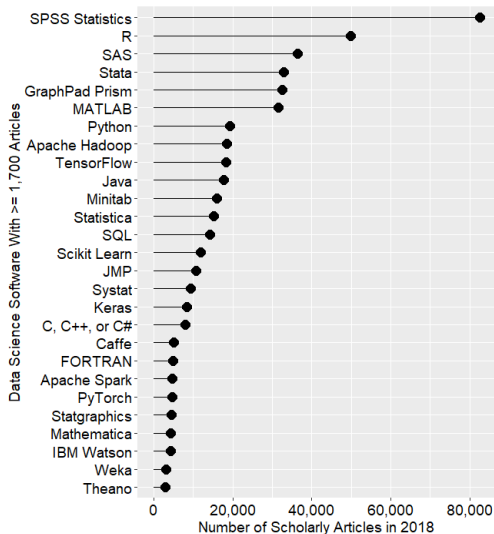
- ▶ Everything!

Seriously...

- ▶ Almost everything:
 - ▶ Statistical analysis
 - ▶ Text analysis
 - ▶ Geospatial analysis
 - ▶ Network Analysis
 - ▶ Machine learning
 - ▶ High-level visualization

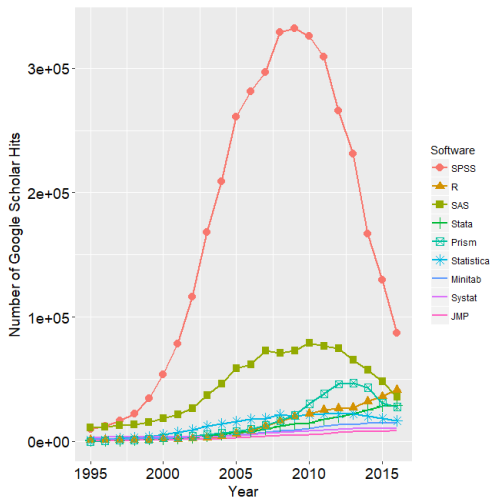
Adapted from Thomas Leeper's introduction to R tutorial

R and Scholarship: Citations



Source: <http://r4stats.com/>

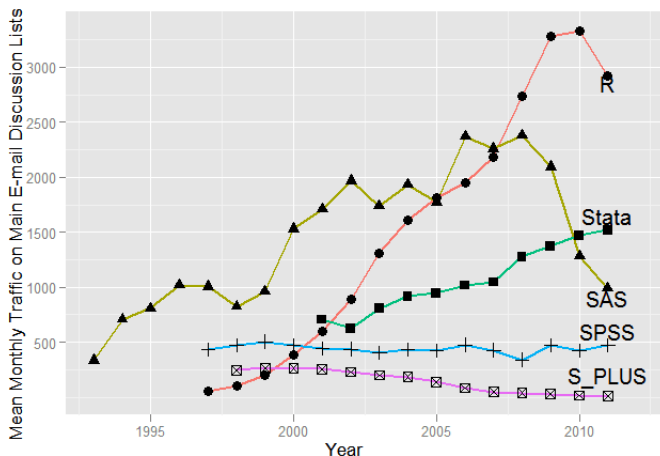
R and Scholarship: Trends Over Time



Source: <http://r4stats.com/>

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The Popularity of Data Analysis Software: R vs. SAS vs. SPSS

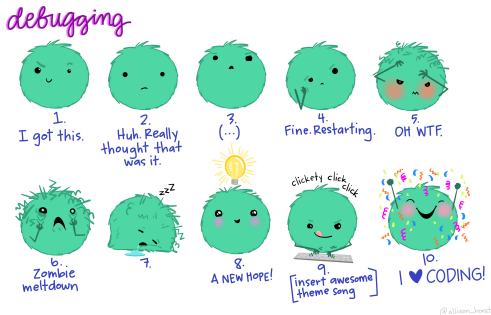


Source: <http://r4stats.com/>

Some Challenges you might have with R

- ▶ Learning a programming language needs practice
- ▶ Lots of add-on packages (lightweight base software)
- ▶ Mistype or misspell commands → Cryptic error messages.

Debugging will be a big part of the learning process



Source: Allison Horst

Endless Sources and a Huge Community

- ▶ Good news, you can find tons of good resources for R on the internet.
- ▶ Throughout the workshop, we will discuss these R resources