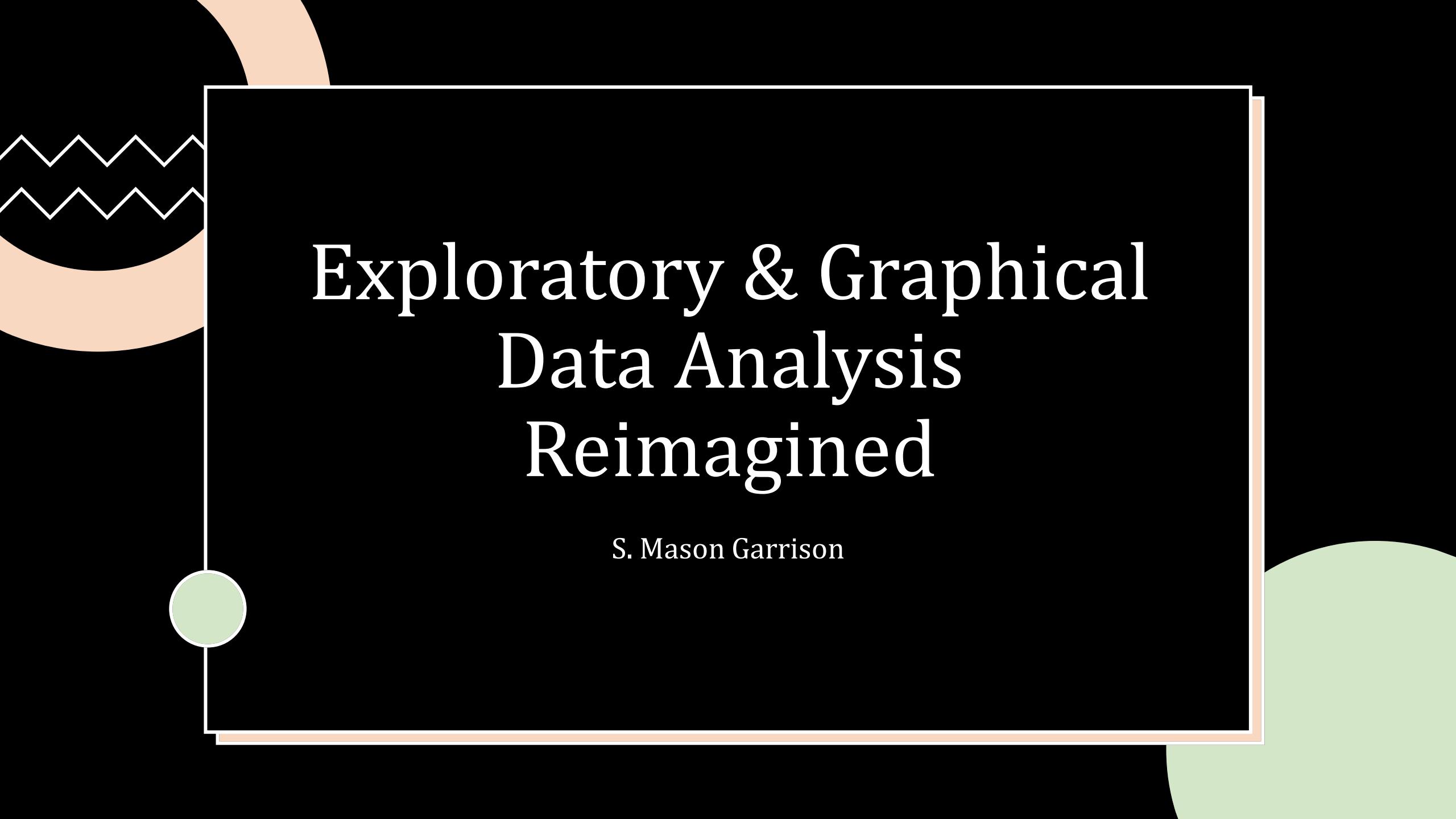


Data Science for Psychologists

S. Mason Garrison



Exploratory & Graphical Data Analysis Reimagined

S. Mason Garrison



Logistics

Course

- PSY 703:
Data Science for Psychologists
- Blended Asynchronous

Professor

- Mason Garrison
- Greene 438/Zoom
- Office Hours by appointment:
<https://calendly.com/smasongarrison/>

Assistant

- Tukey
- Caturday: Whenever

Blended Structure

- Weekly Face-to-Face Tutorials
 - Solidarity Sessions
 - With your cohort
 - Bring your laptop!
- Asynchronous Coursework
 - Pre-recorded Lectures
 - Uploaded by the week's start
 - Engagement Activities
 - With entire class
 - Lecture Notes + Textbook

Big Ideas

- Reproducibility;
- Replication;
- Robust Methods;
- Really Nice Visualization; and
- R.





Categories of Topics



What

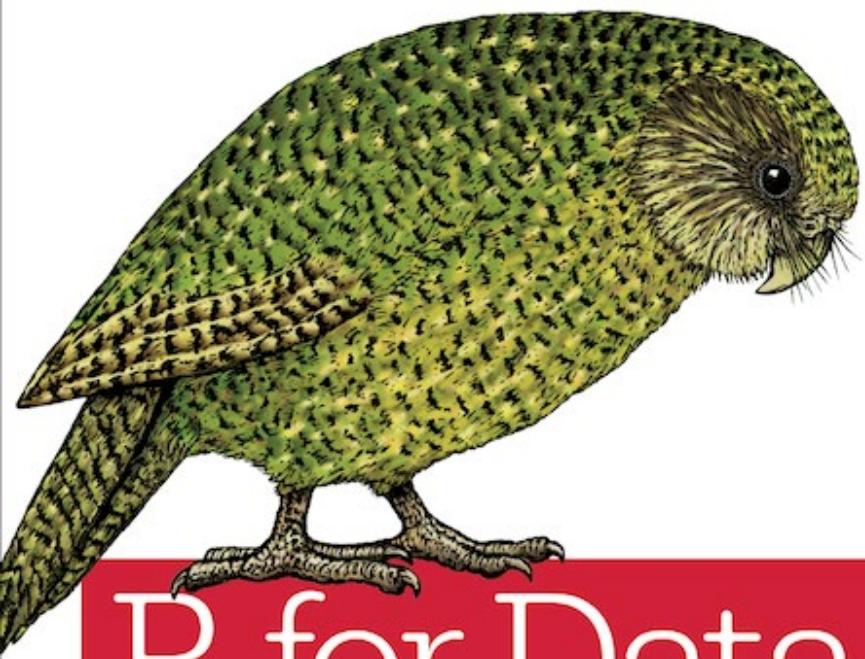


How

Learning Outcomes

- Using R to visualize and model many kinds of data.
- Given a dataset,
 - able to visualize
 - generate hypotheses
 - investigate those hypotheses, &
 - communicate your results.





R for Data Science

VISUALIZE, MODEL, TRANSFORM, TIDY, AND IMPORT DATA

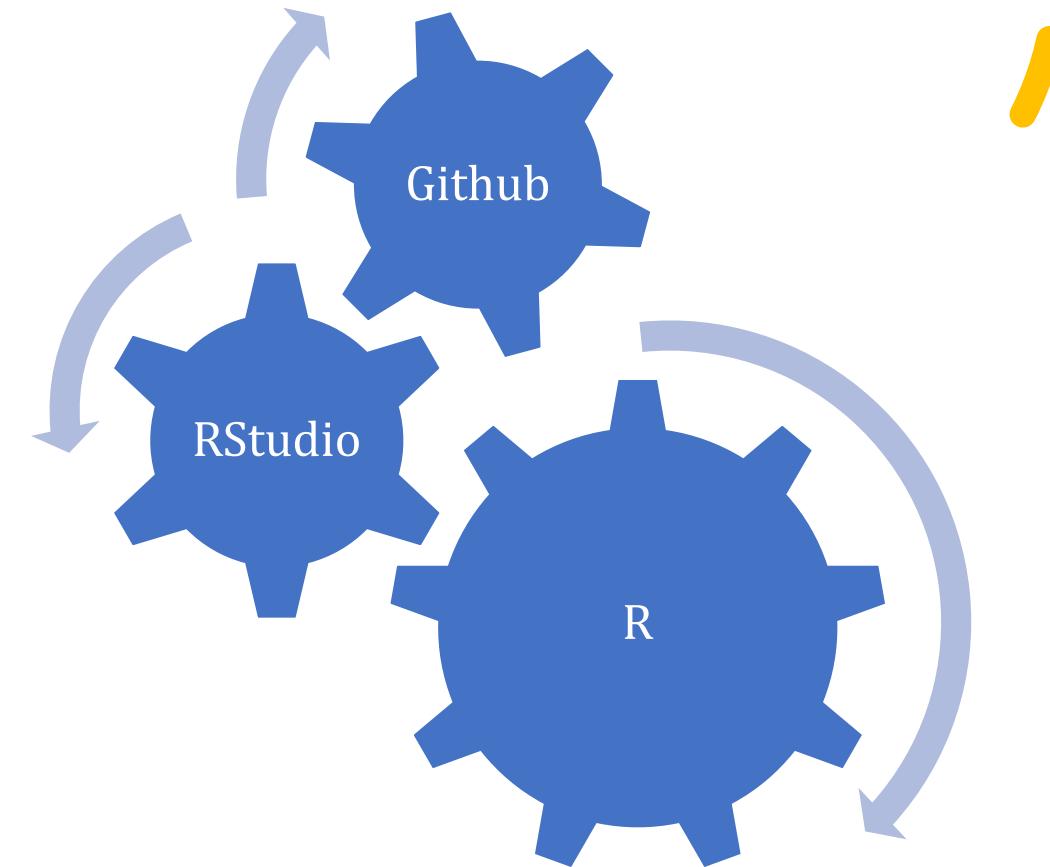
Hadley Wickham &
Garrett Grolemund

Textbook

- R for Data Science: Import, Tidy, Transform, Visualize, and Model Data
 - Hadley Wickham & Garrett Grolemund
 - Online Edition
 - r4ds.had.co.nz



Software



Course Milestones



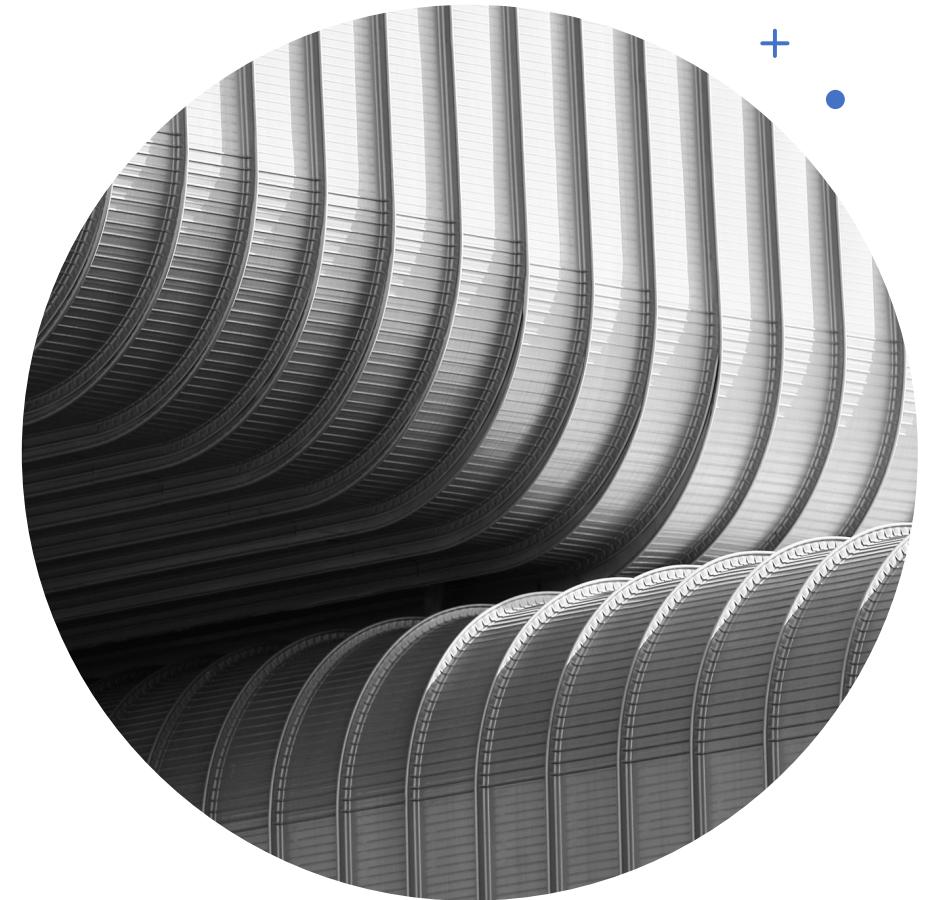
Individual
Portfolio



Group Project



Class
Presentation



Contract Grading

What is contract
grading?



Assessment based
on effort



More representative
of the scientific
process



Specifics are in the
syllabus and
handout



Topic Roadmap

- 
- Graphical Data Analysis
 - Exploratory Data Analysis
 - Modern Data Science



Wrapping up... Course Logistics

This Time... Successful Asynchronous Learning



What is Asynchronous Learning?



Student-centered teaching method

- widely used in online learning.



Basic premise is that learning

- can occur in
 - different times and spaces
 - particular to each learner,



as opposed to synchronous learning

- at a same time and place



In asynchronous learning,

- instructors usually set up a learning path,
- which students engage with at their own pace.

Why Asynchronous Learning?



Fluctuating Internet Connectivity



Troubleshooting and Time



Stars don't always align



Lecture -> Video



Zoom Fatigue

How to be a Successful Asynchronous Student

Treat an online course like a
“real” course

Hold yourself accountable

Practice time management

Create a regular study space
and stay organized



Be Proactive



Eliminate
distractions



Figure out how
you Learn Best



Actively
participate



Leverage your
network



Ask for Help

Classmates

Professors

Teaching Assistants

Friends



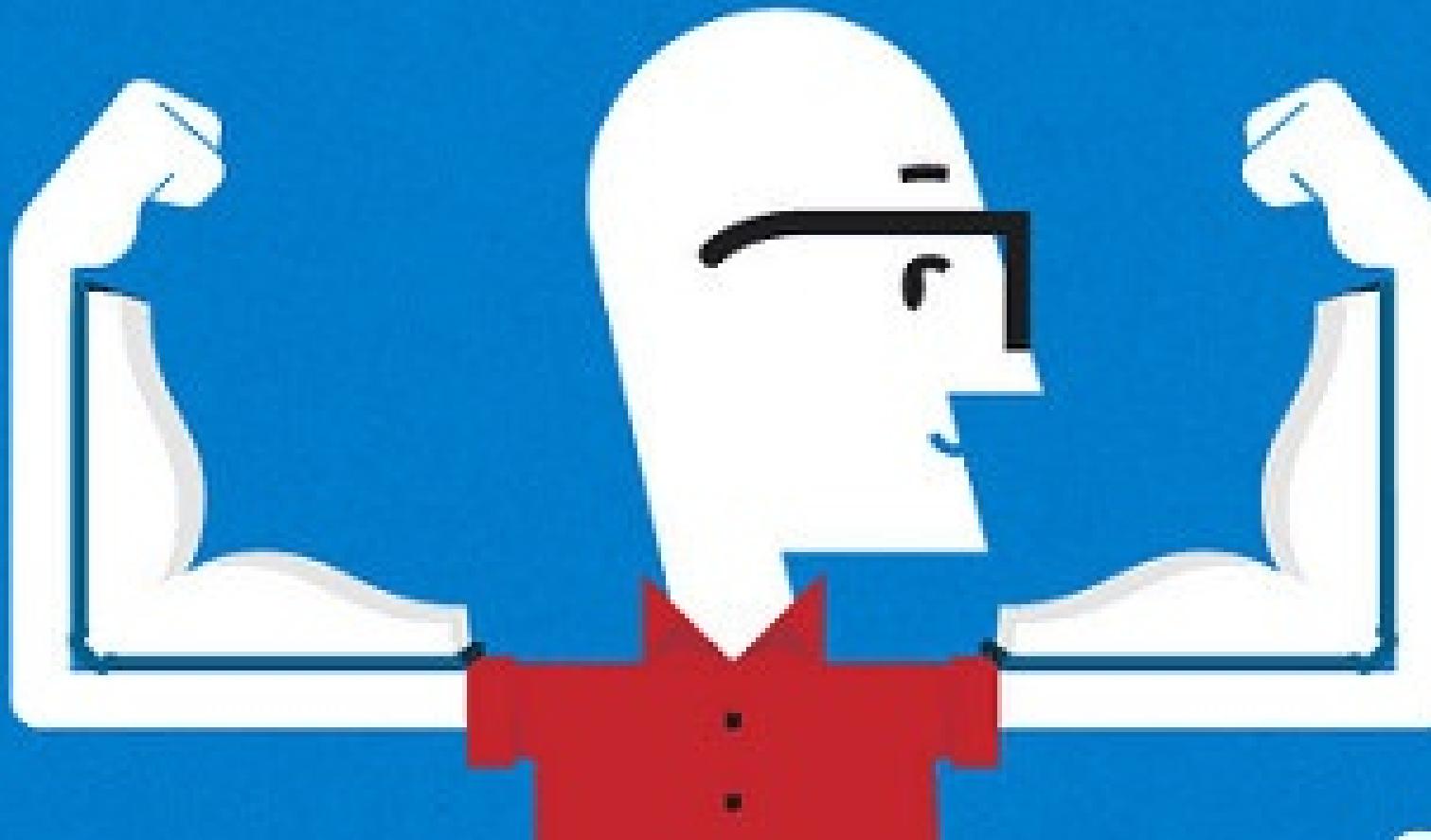
Wrapping Up... Successful Asynchronous Learning





This Time...
Knowledge
Is Power

KNOWLEDGE IS POWER



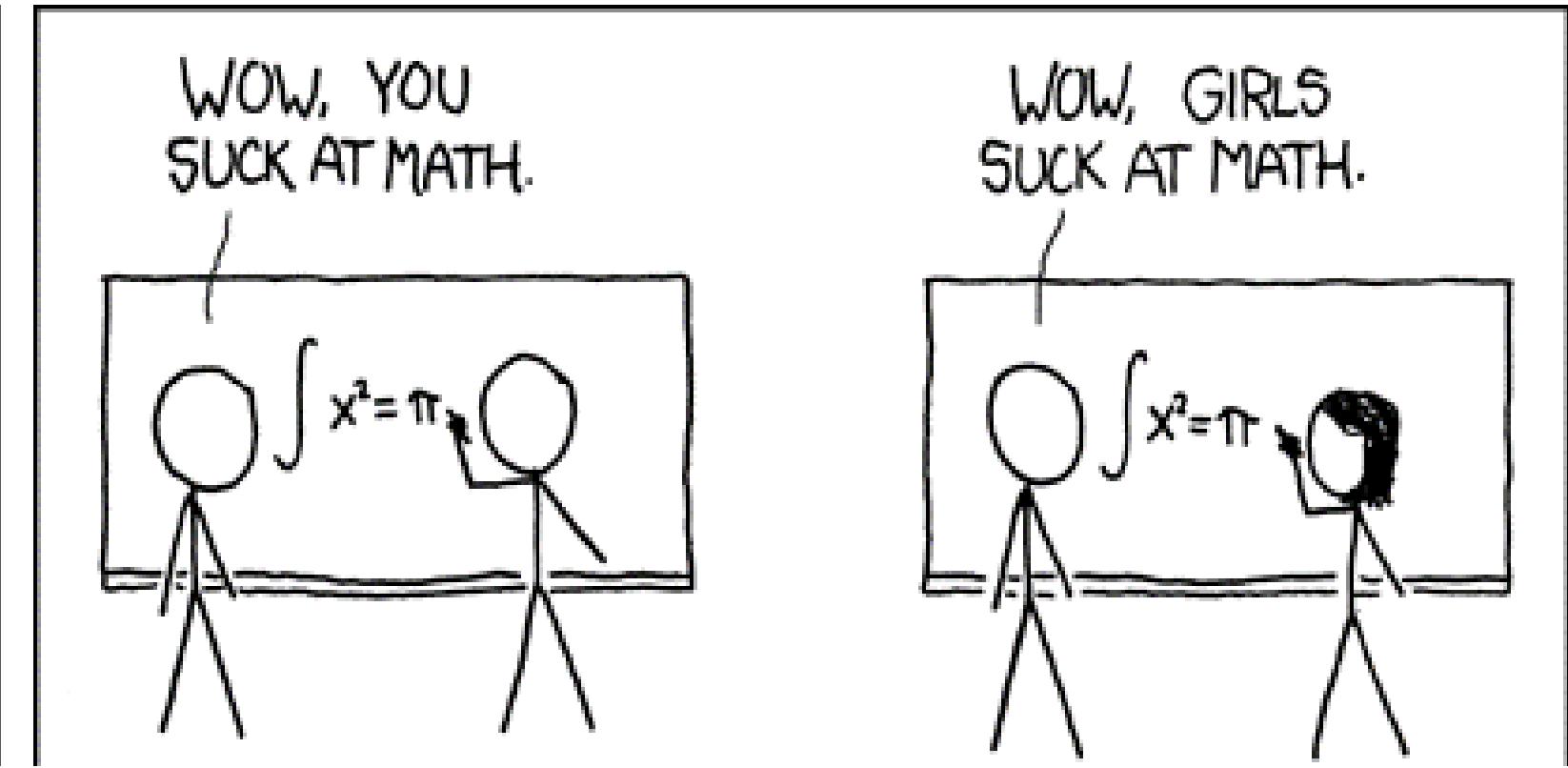
Knowledge
is Power

Knowledge is Power

- Stereotypes exist about how good certain people are at
 - Science,
 - Math, and
 - School.
- Or how some people are naturally smart.

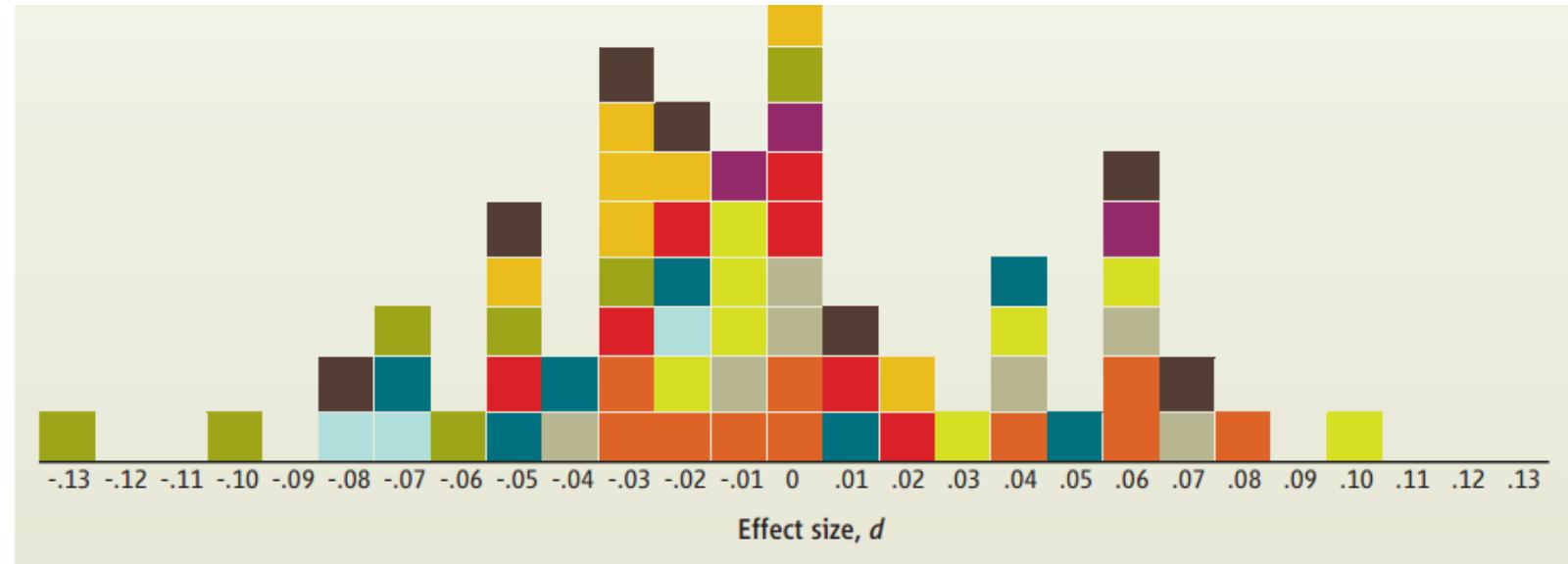


Knowledge is Power



- These stereotypes form at an early age
 - (Cvencek, Meltzoff, and Greenwald 2011).
- For example, some people think that girls are worse at math than boys.

Boys and girls perform the same on math achievement tests (Hyde, et al, 2008).



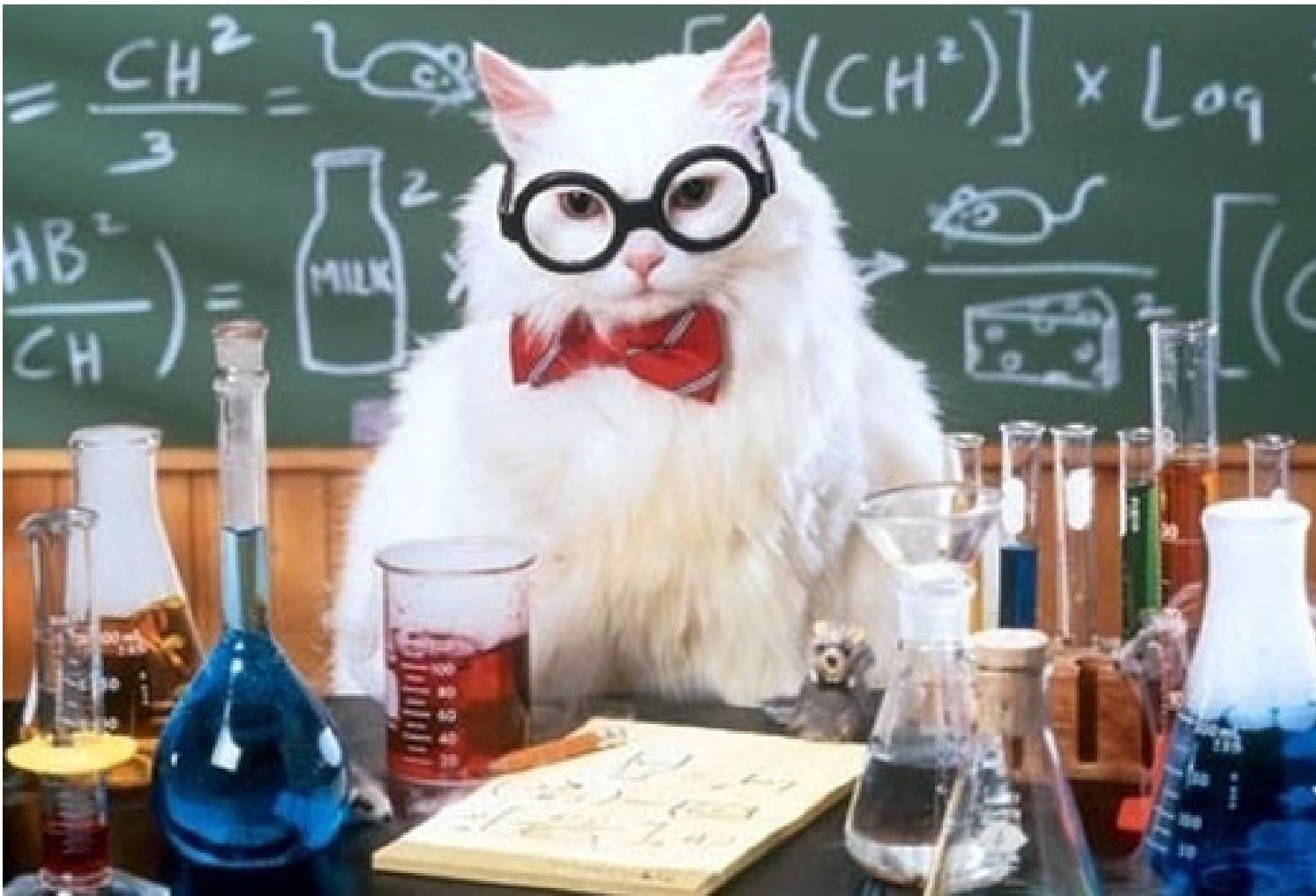
Effect sizes across grades and U.S. states. The weighted mean is 0.0065, consistent with no gender difference. Each square represents the effect size for one grade within one state. New Mexico (pea green), Kentucky (pink), Wyoming (dark brown), Minnesota (teal), Missouri (red), West Virginia (gold), Connecticut (tan), California (orange), Indiana (yellow), New Jersey (purple).

- Hyde, Lindberg, Linn, Ellis, & Williams (2008). Gender similarities characterize math performance. *Science*, 321(5888), 494-495.



Knowledge is Power

- However, stereotypes about math performance can undermine how well you do on a test, by
 - Increasing test anxiety,
 - Discouraging you from seeking out math activities, and
 - Giving up sooner.
- One of the best ways to protect yourself from “stereotype threat” is to be aware of it. (Johns, Schmader, & Martens, 2005)
- Johns, M., Schmader, T., & Martens, A. (2005). Knowing is half the battle, teaching stereotype threat as a means of improving women's math performance. *Psychological Science*, 16(3), 175-179.



Knowledge
is Power:
Activity!



Wrapping
Up...
Knowledge
Is Power