

Political Science 15  
Introduction to Research in Political Science  
Lecture 1a: Introduction

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Special thanks to Chad Hazlett, Paasha Mahdavi, Matto Mildenerger, and Leah Stokes for select slides, used with permission.

# Expectations

Think about the following questions:

- What are your expectations about this class?
- Have you ever felt that you've struggled with math?
- Have you ever felt that you're comfortable with math?
  
- Math is a *symbolic* language. It's just a way of writing down logic with symbols.
- If you learn the symbols, you can understand the ideas. That's your goal.
- Programming is a symbolic language too. You will be amazed at how fast you learn R.

# Science says: Believe in your ability to learn the material

- **Neuroplasticity**, or brain plasticity, is the ability of the brain to undergo physiological and structural changes. Once thought to not exist beyond teen years, research has shown that the brain remains plastic throughout adulthood.
- What does this mean? You can **learn** this material! Being good at math is not innate.
- Adopt a growth mindset rather than a fixed abilities mindset.
- **Self-efficacy** is key to success in this class. It refers to a person's belief that he or she can execute behaviors necessary to produce specific performance achievements (Bandura, 1977).
- Lower the self-perceived barriers to learning the material.

# Individuals vs. distributions

A Political Science Example: Voting and Age

- Did you vote in the November 2018 midterm elections?

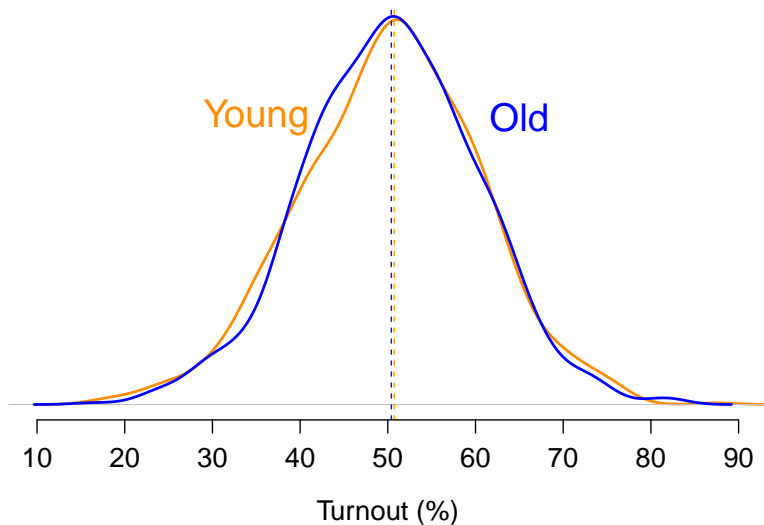


# Correlation

## A Political Science Example: Voting

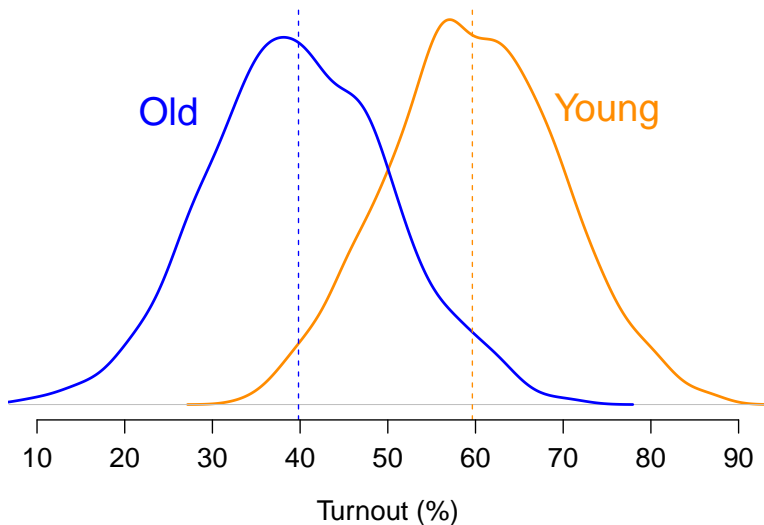
- **Age** is one of the strongest determinants of turning out to vote: as you grow older, you become more likely to engage in politics.
- So, there is a *positive correlation* between age and turnout.
- How can we state these *hypotheses* formally?

# Null Hypothesis



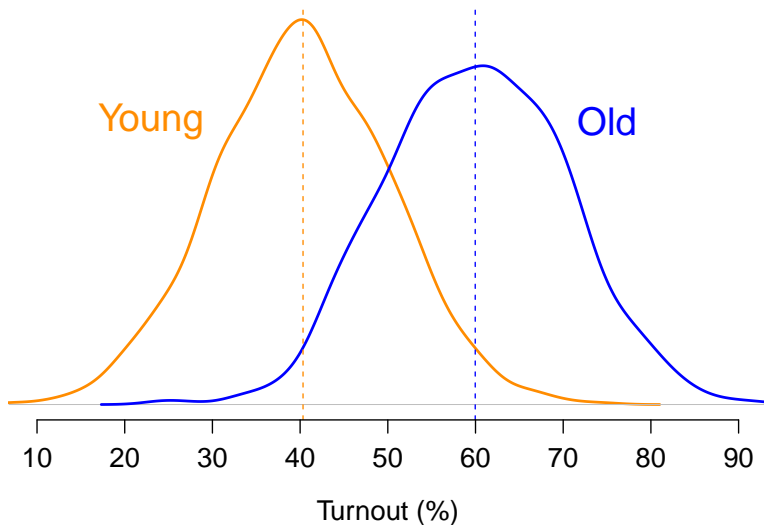
Null hypothesis: Young and old people have the same turnout.

# Alternative Hypothesis 1



Alternative hypothesis: Young people vote more than old people.

## Alternative Hypothesis 2



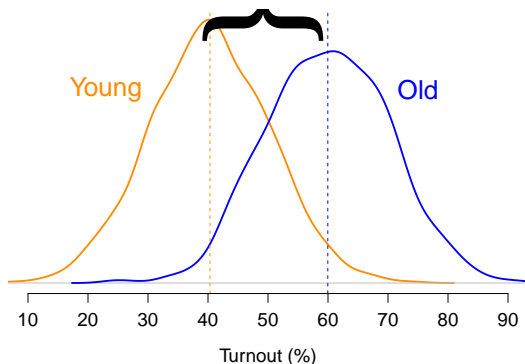
Alternative hypothesis: Young people vote less than old people.



# Testing our Hypotheses

How could we test whether young and old people are systematically different on turnout?

- Gather data: Get groups of young and old people and ask them about their voting history.
- Compute statistic: Use a 't-statistic' to see whether the distribution of young and old people are significantly different.



# Correlation vs. Causation

What *explains* this pattern?

How can we test if this *correlation* is *causal*?

- Causal hypothesis 1: You are exposed to different national political climates based on when you are born, so that 'period effects' explain turnout better than aging itself.
- Causal hypothesis 2: Sense of civic duty increases with age, so you are more likely to vote as you grow older.
- Causal hypothesis 3: Young people feel alienated from the political process, and are less likely to engage in political activities such as voting.

How could we gather data to test these *causal* hypotheses?

# Causal Research on Age and Turnout

Research helps us see that correlation does not always equal causation

- Cross-sectional regression: once you account for period effects, there is little difference in turnout between young and old (Beck and Jennings 1979).
- Experiment: if you remind people to vote and the civic duty it entails, young people are just as likely to vote as older people (Dale and Strauss 2009).
- Qualitative: interviews reveal that many youth feel they don't have the opportunity to become involved in public life and feel alienated from politics (Miller and Shanks 1996, Putnam 2000).

# Correlation $\neq$ Causation

- These are the tools we will learn in this course to see whether a correlation points to causation.
- Often, as is the case with age and voting, correlation  $\neq$  causation.
- Research shows us: being young doesn't *cause* you not to vote; there are other factors that are related to youth that explain disengagement.
- Research shows us: if you control for these factors – sense of belonging, civic duty, exposure to political environment – young people can be just as engaged (if not more) in the political process.

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Lecture 1b: Course Policies

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# Learning goals for the course

*The mind, once stretched by a new idea, never regains its original dimensions. - Oliver Wendell Holmes*

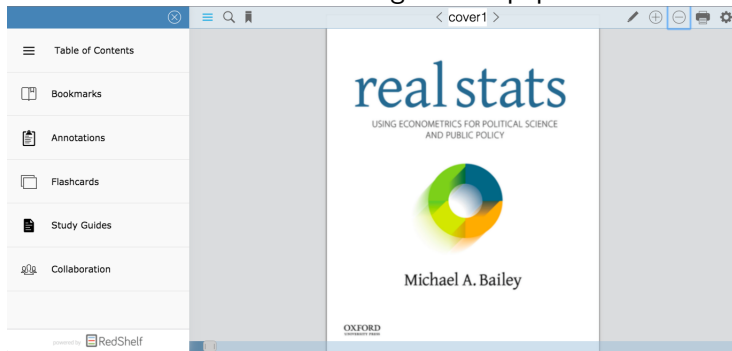
- Understand how research is designed to describe and explain the world.
- Understand basic statistics, including linear regression.
- Understand the assumptions behind basic statistics, and when they do not hold.
- Learn to critique research.
- Learn to code in R.

# Course requirements and grading

- Willingness to work hard!
- Required readings: listed on syllabus for each topic. Take notes on readings, read slow. Don't skip equations.
- Problem sets (50%)
  - Posted at 6pm, due the week after at 11:55pm. No late assignments.
  - Working in groups is encouraged, so long as you write up your work on your own and list co-workers. Try a solo effort first.
  - Upload RMarkdown script and HTML file.
  - Graded on 0-10 numeric scale (including half-points).
- Midterm exam (15%): July 15th, 3pm. 18-hour window to complete.
- Final exam (23%): July 31st, 9am. 24-hour window to complete.
- Participation (12%)
  - Attend section online
  - Watch video modules for the week in a timely fashion
- Extra credit: post on the discussion forum and answer bonus questions in problem sets.

# Readings

Textbook: *Real Stats* - both digital and paper are available.



- Read in advance of lecture. Watch lecture modules and come to sections prepared to contribute with questions and answers.
- Read actively: take notes while reading!
- Textbook material is covered in assignments and exams.



## Course policies: emailing

- We prefer you speak to us using the online forum and office hours.
- Office hours every day of the week, so you have an opportunity to interface with us live Monday-Friday.
- No emailing questions about problem sets or exams. Post on discussion forum or go to TA virtual office hours. Why? Everyone has same access to information.
- Only email important time-sensitive, personal matters.
- Format for email subject line: [POLS 15] Some informative subject line.

## Course policies: discussion forum

- Make liberal use of it! Thinking about how to formulate a question and answering your colleagues' questions will solidify your understanding.
- Consistent and helpful use of the forum will result in extra credit.
- Post questions and ideas about how to answer questions (i.e. "look at slide X, page X in book"). Do not post answers to questions.

## Course policies: collaboration

- Collaboration is encouraged!
- But to make the most of collaborative work, make sure you try the problem by yourself first. There is value in struggling through a problem on your own.
- Note the name of your collaborators at the top of your problem set.
- If you collaborate, the write-up **must be in your own words**.

## Course policies: access and legal disclaimers

- Ensure weekly access to a computer or smartphone. If you need a computer, rent a free Chromebook from Food Security & Basic Needs Advising (<http://food.ucsb.edu/>).
- Lectures and course materials are copyrighted by University policy. You may not share any of the video modules or learning materials outside the course.
- Recording of Zoom sections is **not** allowed.
- I will hold a live Zoom lecture on Thursdays, which will be recorded and posted afterwards. If you do not want to be recorded, please turn off your video and microphone (default setting).

## Section and TA policies

- We are lucky to have two fantastic Teaching Assistants: Rui Wang and Iliia Nikiforov.
- No switching sections.
  - You must attend your assigned section online. These will be done via Zoom, and you can call in if you don't have access to a computer or smartphone during your assigned time.
  - If your section does not work for you, you'll need to drop the course. Apologies but this is the rule.
- Crashers:
  - You must complete the lecture modules and participate in online activities. We will also assign you to a section at that point given where there is an opening.
  - If that section does not work you will have to take the course a different quarter.

# Section and TA policies

- Communication with your TA:
  - To communicate with your TA, use the discussion forum, attend section, and online office hours.
  - Discussion forum posts will be responded to Monday-Friday 9am-6pm. Not on weekends. (But you and your peers are welcome to use the forum then.)
  - Do not use email to communicate with TAs unless it is highly time sensitive. For most of you, this should not arise. Email the TA first rather than the Prof. If they need to raise the issue with the Prof, they will. But again, try to talk to your TA in their online office hours first.

# Schedule

Weekday	Date	Topic	Readings
Monday	June 22	Introduction	
Tuesday	June 23	Causality	Chapter 1
Wednesday	June 24	Formalizing the regression model	
Thursday	June 25	Experimental design	
Friday	June 26	<b>Problem set 1 due</b>	
Monday	June 29	Introduction to probability theory	Chapter 2
Tuesday	June 30	Random variables, distributions, and laws	Appendix
Wednesday	July 1	Bivariate OLS	Chapter 3
Thursday	July 2	Regression in practice	
Friday	July 3	<b>Problem set 2 due</b>	
Monday	July 6	Properties of OLS	
Tuesday	July 7	Limits to regression	Wand et al. 2001
Wednesday	July 8	Hypothesis testing	Chapter 4
Thursday	July 9	Statistical inference	
Friday	July 10	<b>Problem set 3 due</b>	
Monday	July 13	Statistical inference, continued	KB 2016
Tuesday	July 14	Midterm review	
Wednesday	July 15	<b>Midterm examination</b>	
Thursday	July 16	Multivariate OLS	Chapter 5
Monday	July 20	<b>Problem set 4 due</b> Mechanics of multivariate OLS	
Tuesday	July 21	Multivariate OLS in practice	Bateson 2012
Wednesday	July 22	Types of variables and data-sets	Chapter 6.1-6.3
Thursday	July 23	Experiments in political science	Chapter 10 GGL 2008
Monday	July 27	<b>Problem set 5 due</b> Natural experiments	
Tuesday	July 28		
Wednesday	July 29	Data science for political scientists	
Thursday	July 30	Course review	
Friday	July 31	<b>Final examination</b>	

## How to succeed in PS 15 (page 7 of the syllabus)

- 1 Believe in your abilities to learn the material.
- 2 Seek help early and often.
- 3 Hand in all the assignments.
- 4 Take advantage of opportunities for extra credit. No after-the-fact grade bumps.
- 5 Study hard for the midterm and the final exam.
- 6 Take active notes during lecture.
- 7 Take care of your health and wellness.
- 8 Don't plagiarize or cheat. Instead, collaboratively work with others without using the same language.



# Effective strategies for remote learning

- 1 **Establish a designated work space and make it comfortable.** Use headphones and quiet background music to help you focus.
- 2 **Take handwritten notes while watching modules.** Just because you can rewatch a video or look at slides online doesn't mean you shouldn't take notes! See more on remote note-taking strategies [here](#).
- 3 **Create structure for your day.** Set a daily routine for watching modules, reading, reviewing your notes, and completing assignments.

More at <https://keeplearning.id.ucsb.edu/2020/03/22/effective-strategies-for-remote-learning/>.

## Next time

- Lecture 2: Causality
- Start reading Chapter 1 of *Real Stats* now! It will be helpful for the problem set.
- Problem set 1 due Friday June 26 at 11:55pm.
- Attend your section on Zoom.

### Do this by Friday

Make sure you fill out the remote teaching survey on GauchoSpace by the end of the week or you could be dropped from the class!