

**POLS2044—WEEK 1 2024**  
Australian National University  
School of Politics & International Relations  
Dr. Richard Frank

Each week I will try and collect all relevant lecture, reading, and workshop resources I create into one easy to read (and annotate) document. This is the first week's document. These documents should help reduce your stress, help you keep up with the material, help you focus on me instead of copying down verbatim notes during the lecture, and help you take as much as possible away from each week's material. Enjoy!

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**I. Reading notes and questions**

Please read these assigned readings before lecture and workshop. We will be referring to them repeatedly during the week. Please be sure to complete the assigned readings before Tuesday's lecture. By design, it will be hard to engage with the workshop activities without doing this reading.

For week 1, please read:

(1) Chapter 1 (pp. 1-24) of the assigned textbook (KW).

(2) Sandra Pellegrini and Tiziano Breda. 2024. [Five key takeaways from the 2024 elections in Mexico](#). ACLED Accessed 2 July 2024. PDF on Wattle.

The goals for Week 1's readings is to provide an initial framework that this class will develop over the course of the semester.

**(1) Kellstedt and Whitten (2018, Chapter 1)**

In the first few pages, KW outline their three stated goals when writing this book.

- What are they?
- Do these goals resonate with you?
- If so, why? If not, why not?
- Are these goals similar or different from those of other classes you have taken so far?

Figure 1.1 summarizes the elements on the road to scientific knowledge.

- What are?
- To what extent have you come across this process before?

I want to stress from the outset that this is an idealised process. Often research involves jumping between steps both forwards and backwards. You could also think of this process as a cycle where scientific knowledge in turn sparks new ideas that can be developed into causal theories.

One of the throughlines of this book (and this semester) is thinking about the world in terms of variables and causal explanations. Most students chose their areas of study because they were interested in a particular topic in the world.

- Can you come up with a causal statement by filling in the gaps of the sentences on page 8? For example: “Higher \_\_\_\_\_ causes lower \_\_\_\_.” or “Higher \_\_\_\_\_ causes higher \_\_\_\_\_”

The authors (p. 19) state that “we should avoid normative statements. Normative statements are statements about how the world ought to be.”

- Why do they make such a clear (and normatively weighty) statement?
- Can we so easily differentiate between how the world works and how we believe it ought to work?

Exercise #3 (p. 22) asks “Identify something in the world that you would like to see happen (normative). What scientific knowledge (empirical and causal) would help you to pursue this goal?”

- What sorts of normative outcomes motivate your study of politics?
- How might the systematic causally focused study of these outcomes help make the world a normatively better place?
- Finally, why should we pursue both generality and parsimony?

## **(2) Pellegrini and Breda (2024)**

One of my ongoing research projects is on the causes of election violence. An interesting factoid in this research area is that a relatively consistent percentage (~20%) of elections regularly lead to violence. A recent example of a contentious election that could lead to violence is Mexico’s 2024 presidential election. This article is a snapshot of the post-election security situation.

- Who are the relevant actors?
- What do you think motivates them?
- What other potential motivational factors are mentioned?
- What is the level of analysis implicit in this article?
- What potential connections do you see between national and international politics?

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## **II. Acknowledgement of Country**

I acknowledge and celebrate the First Australians on whose traditional lands we meet, and I pay respect to their elders past and present.

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## **III. Lecture**

## PART 1: INTRODUCTION

It often feels to me that we are studying politics in the end of times. To paraphrase Chinua Achebe, things are falling apart. Entropy appears to have taken over from order. The climate is changing. Inflation is still quite high. There is a land war in Europe. I could go on, but you catch my drift.

At the same time, we are in an unparalleled time of increasing lifespans and options for spending these lifespans. We are also living in a time of historically unparalleled information richness. It can often seem (at least to me) that we are increasingly time poor and technology rich. You can watch a live webcam of Antarctic krill, see a satellite-derived picture of wildfires around the world, and peer into almost the dawn of the universe.

In this Dickensian world we live in, it is both the best of times and the worst of times. Sitting in a methods class on a Monday afternoon may seem like the worst of times. But speaking on the downward slide on the rollercoaster ride of life, this truly is the best of times. As ANU undergraduates, the world holds more opportunities for you than almost anyone at any time in history. The Australian government, private industry, and international organizations are starved for people who can think critically and have solid transferrable research skills.

Nevertheless, developing these research skills (especially at 20-24 years old) is less likely to provide immediate gratification as social media or going for a walk. So, our task this term is to lower our *discount rates* to maximize our future benefits and live our best future lives.

cally. The formula for determining the present value of a sum to be conferred in some future year is:

$$\frac{B_t}{(1 + r)^t}$$

where  $B_t$  represents the amount that the beneficiary will receive in future year  $t$ ,  $r$  stands for the discount rate, and  $t$  represents the number

Source: Farber, Daniel A., and Paul A. Hemmersbaugh. 1993. The Shadow of the Future: Discount Rates, Later Generations, and the Environment." *Vanderbilt Law Review* 46(2): 277.

Aggh! Formulas already! I know from the introductory survey (and a shelf-full of methods research) that many students are quite apprehensive about this class because of its inclusion of statistics, formulae, and other quantitative methods. If you are feeling this, I too was once in your shoes. At UCLA I started as an Economics major but switched to English Literature because the conclusions I used in my analysis of Shelley and Dickens were more subjective than the answers on Intro to Macro final exam questions. This gave me more time to earn a living (and pay for tuition) and climb rocks on the weekend.

However, as my life progressed, I was driven back to both math and higher education because I was more and more curious about how the world worked and asking "why" questions. I still have many why questions about the world:

Why is democracy backsliding around the world generally and in some countries specifically?  
 Why are some elections violent?  
 Why did Russia invade Ukraine?

These questions (and questions like them) are at the core of what political scientists here at the ANU and around the world are trying to answer in their research.

I know that many students here are BPS or BIR students, and you would have some initial engagement with how political science research is conducted. I also know that some students are from outside SPIR, and for those students (and for us to reengage our brains after the winter break) I think it is useful here at the start of the term to start with some first principles.

**The focus of this class**—The scientific study of politics

**My goals for this class**

- Help you *consume political science research* in this and other classes. Like other fields political science has its own technical language that can be hard to penetrate from the outside. I want to help you decode and demystify this language.

$$\bar{y}_{gjt}^* = \sum_{i=1}^{n_{gjt}} \frac{w_{i[gt]} y_{i[g]jt}}{r_{i[gt]}} / \sum_{i=1}^{n_{gjt}} \frac{w_{i[gt]}}{r_{i[gt]}}.$$

Source: Caughey, Devin, and Christopher Warshaw. 2015. Dynamic Estimation of Latent Opinion Using a Hierarchical Group-Level IRT Model.” *Political Analysis* 23(2): 203.

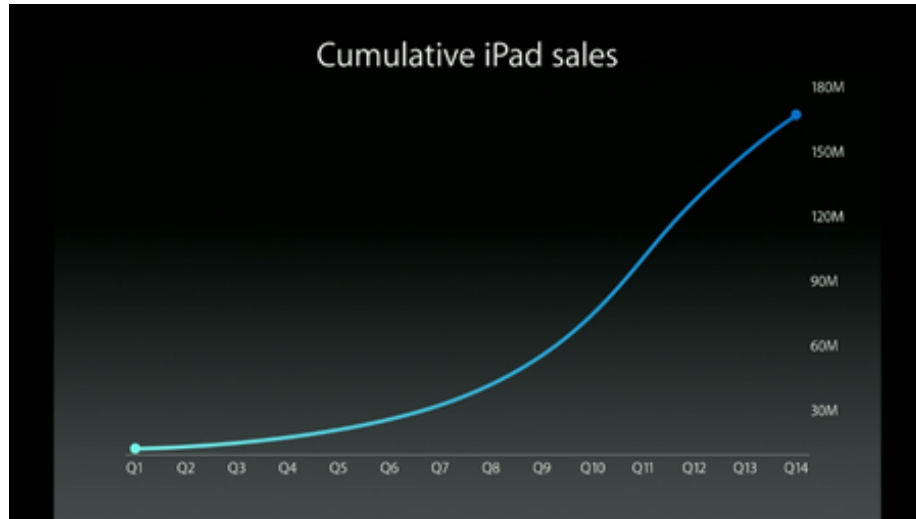
- Help you *consume information* more generally. In an age of “fake news” being able to be a sceptical and critical reader of research and information is all the more





important. Part of this is the citizenship imperative to be comfortable with data and how it is used to make and evaluate claims.

Source: <https://theconversation.com/russian-embassy-in-canada-weaponizes-social-media-to-fuel-support-for-ukraine-invasion-180109>.



Source: <https://qz.com/138458/apple-is-either-terrible-at-designing-charts-or-thinks-you-wont-notice-the-difference/>

- Help start your path towards *producing scientific research* on political outcomes (if that is what you want. Some students come in dreading particular approaches or topics and then turn around and pursue an honours or HDR degree.



What I ask from you is that you have a **growth mindset**. Recent research suggests that **intelligence is malleable and not fixed** (Ramsden et al. 2011)<sup>1</sup>, so you can understand and do everything we discuss in this class. I am proof of that. One of the hardest part of this and a lot of upper-level classes is getting comfortable with **ambiguity and**

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<sup>1</sup> See also Blackwell, Lisa S., Kali H. Trezniewski, and Carol Sorich Dweck. 2007. "Implicit Theories of Intelligence Predict Achievement Across an Adolescent Transition: A Longitudinal Study and an Intervention." *Child Development* 78(1): 246-263.

**uncertainty.** Political science is the study of probabilistic rather than fixed outcomes. Most Politics and IR students more interested in the substance and not the methodology. However, one of the most important things I can teach you is the importance of moving beyond “just the facts” to the theories that help explain the facts.

LETTER

doi:10.1038/nature15914

Verbal and non-verbal intelligence changes in the teenage brain

Suz Ramdani<sup>1</sup>, Peter M. Richardson<sup>1</sup>, Graham Jones<sup>1</sup>, Michael S. C. Thomas<sup>1</sup>, Caroline Ellis<sup>1</sup>, Clare Shakhshabi<sup>1</sup>, Mohamed L. Jegou<sup>1</sup> & Cathy A. Price<sup>1</sup>

Intelligence quotient (IQ) is a standardized measure of human intellectual capacity that takes into account a wide range of cognitive ability. IQ is generally considered to be stable across the lifespan, with scores at one time point used to predict educational achievement and employment prospects in later years<sup>1</sup>. Neuroimaging allows us to test whether unexpected longitudinal fluctuations in measured IQ are related to brain development. Here we show that verbal and non-verbal IQ can rise or fall in the teenage years, with these changes in performance validated by their close correlation with changes in brain structure. A combination of structural and functional imaging showed that verbal IQ changed with grey matter in a region that was activated by speech, whereas non-verbal IQ changed with grey matter in a region that was activated by finger movements. By using longitudinal assessments of the same individuals, we obtained the most sensitive measures of variation in brain structure that confound cross-sectional studies. This allowed us to dissociate neural markers for the two types of IQ and to show that general verbal and non-verbal abilities are closely linked to the executive skills involved in learning. More generally, our results emphasize the possibility that an individual's intellectual capacity relative to their peers can decrease or increase in the teenage years. This would be encouraging to those whose intellectual potential may improve, and would be a warning that early achievers may not maintain their potential.

An individual's abilities and capacity to learn can be largely captured by the use of verbal and non-verbal (henceforth performance) intelligence tests. IQ provides a standardized method for measuring intellectual abilities and is widely used within education, employment and clinical practice. In the absence of neurological insult or degenerative conditions, IQ is usually expected to be stable across life-span, as evidenced by the fact that IQ measurements made at different points in an individual's life tend to correlate well<sup>2</sup>. Nevertheless, strong correlations over time disguise considerable individual variation; for example, a correlation coefficient of 0.7 (which is not unusual with verbal IQ) still leaves over 50% of the variation unexplained. The study that we report here tested whether variation in a teenager's IQ over time correlated with changes in brain structure. If it did, this would provide context validity for the increase or decrease of IQ in the teenage years, because if IQ changes correspond to structural brain changes then they are unlikely to represent measurement error in the IQ tests. In addition, if verbal and performance skills change at different rates in different individuals, the neural markers for verbal and performance IQ changes could in principle be dissociated. This would overcome two of the challenges faced by previous studies of between-subject variability in IQ measures at a given time point: verbal and performance IQ are tightly correlated in individuals, so it has been hard to identify neural structures corresponding to each<sup>3,4</sup>; and there are many sources of between-subject variation in brain structure (for example gender, age, size and handedness) that hide the relevant differences.

Our participants were 33 healthy and neurologically normal adolescents with a deliberately wide and heterogeneous mix of abilities (see Supplementary Information for details and the implications of our sampling for the generalizability of our conclusions). They were first tested in 2004 (Time 1) when they were 12–16 yr old (mean, 14.1 yr). Testing was repeated in 2007/2008 (Time 2) when the same individuals were 15–20 yr old (mean, 17.7 yr). See Table 1 for further details of the participants. During the intervening years, there were no testing sessions, and participants and their parents had no knowledge that they would be tested again for further testing. On both test occasions, each participant had a structural brain scan using magnetic resonance imaging (MRI) and had their IQ measured using the Wechsler Intelligence Scale for Children (WISC-III) at time 1 and the Wechsler Adult Intelligence Scale (WAIS-III) at time 2 (see Supplementary Information for details). These two widely used, age-appropriate assessments produce strongly correlated results at a given time point, consistent with them measuring 'highly similar constructs'. Scores on individual subtests are standardized against age-specific norms and then grouped to produce separate measures of verbal IQ (VIQ) and performance IQ (PIQ), with VIQ encompassing those tests most related to verbal skills and PIQ being more independent of verbal skills. Nevertheless, VIQ and PIQ scores are very significantly correlated with each other across participants in our sample; the correlation between VIQ and PIQ was  $r = 0.51$  at time 1 and  $r = 0.50$  at time 2 (in both cases,  $n = 33$ ;  $P < 0.01$ ). Full-scale IQ (FSIQ) is the composite of VIQ and PIQ and is regarded as the best measure of general intellectual capacity (the factor that has previously been shown to correlate with brain size and cortical thickness in a wide variety of frontal, parietal and temporal brain regions<sup>5,6</sup>).

The wide range of abilities in our sample was confirmed as follows: FSIQ ranged from 79 to 137 at time 1 and from 79 to 137 at time 2, with averages of 112 and 115 at times 1 and 2, respectively, and a tight correlation across testing points ( $r = 0.79$ ;  $P < 0.001$ ). Our interest was in the considerable variation observed between testing points at the individual level, which ranged from  $-20$  to  $+23$  for VIQ,  $-18$  to  $+17$  for PIQ and  $-18$  to  $+21$  for FSIQ. Even if the extreme values of the published 90% confidence intervals are used on both occasions, 39% of the sample showed a clear change in VIQ, 21% in PIQ and 33% in FSIQ. In terms of the overall distribution, 11% of our sample showed

So, let us do that right now. It will give me a chance to catch my breath and get you a chance to tell me (and the rest of the class) a bit more about your interests.

Please go to <https://pollev.com/pols> and complete the following question:

I am most interested in why \_\_\_\_\_ causes \_\_\_\_\_.

I will give you a few minutes to think about your answer and post it. If it comes close to what others have written, you can up-vote an existing submission.

## PART 2: HOW DO WE KNOW WHAT WE KNOW?

On 1 January 1901, Australian Federation occurred. On 11 September 2001, four planes were hijacked in the US. All four planes did not reach their intended destinations. On 19 May 2022, the Labour Party received more votes than the Coalition. These are all facts. What makes these facts relevant to our (and previous times) were their underlying causes and effects. Theorizing about these causes and effects are arguable (for me and most political scientists) more interesting and less dry than reciting endless facts.

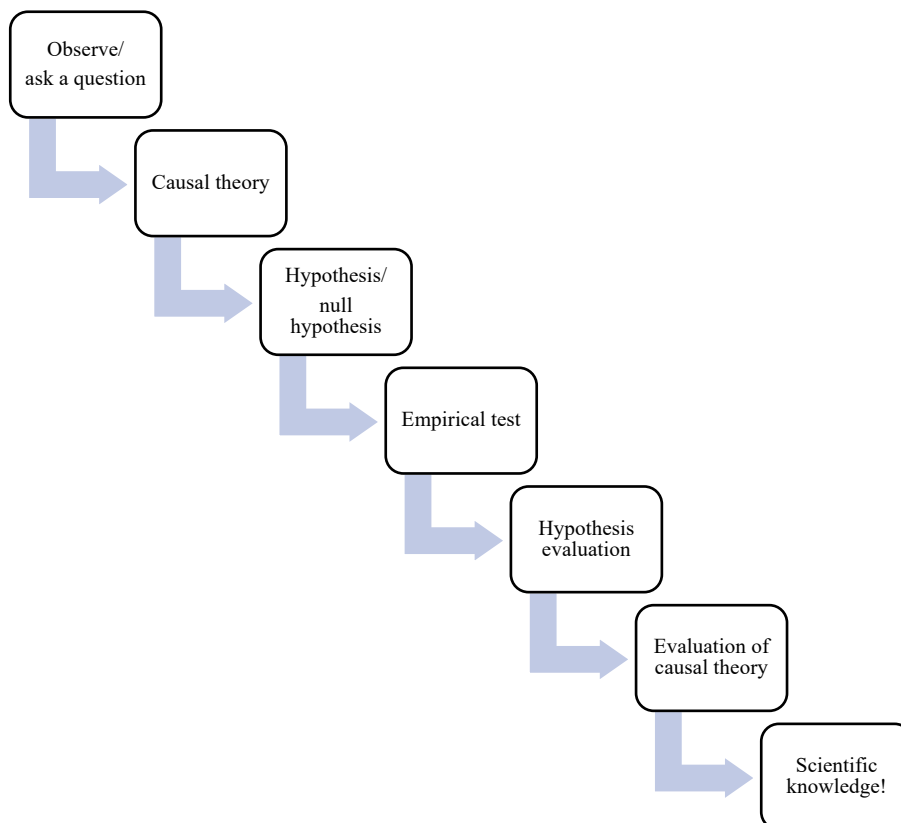
In this class, I could have just had homework assignments and tests asking you to regurgitate facts about political methodology or copy tasks we have completed in statistical software (e.g., what is the formula for Cronbach's Alpha, generate a correlation coefficient between two variables). There is a place for those skills, and I know that several of you put down in the introductory survey that you learn best by doing. And we will be doing a lot in workshops this term. However, today, and for most of the lectures this term, I want to focus on developing your research skills by first asking the “why” question.

These why questions are both the result of (and sometimes the cause) of the all-important curiosity that drives the most innovative and interesting research.

***How do we know what we know?***

***How open are we to changing our minds when confronted with new evidence?***

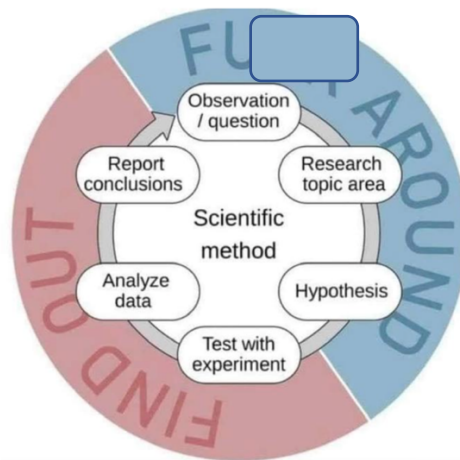
These philosophical questions are at the heart of explaining why we care about correlations, regressions, thick description, etc. Answering these questions is at the heart of the scientific method. Put simply it can be stated as follows:<sup>2</sup>



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<sup>2</sup> Adapted from Kelstedt & Whitten (2018: 4)

Put another way (and note the **cycle format**):



<https://knowyourmeme.com/photos/2110821-fuck-around-and-find-out>

The goal is to **not prove a desired result** (more the area of defence lawyers), but to pose as tough of a test as possible. A key ingredient is **scepticism**.

A challenging part of this process is **moving from theory to hypothesis to empirical test**. Many of my students over the years have come to me asking what the difference is between a theory and a hypothesis. One key difference is that the hypothesis links causal theories to real world case studies or data.<sup>3</sup>

Independent variable (a concept) -----causal theory----- > Outcome (also a concept)

Operationalisation	
operationalisation	

Measured proxy-----	hypothesis ----->	measured dependent variable
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<sup>3</sup> Figure adapted from Kelstedt & Whitten (2018: 10).



Source: <https://www.psychologytoday.com/au/blog/love-and-gratitude/201803/sand-castle-solitude-generates-gratitude-inspires-memoirs>

Theoretical and empirical trends in research design are like complicated but impermanent sandcastles. New methods, new theories, and new contexts often supplant previous approaches. The important thing across methods and approaches is to think about thinking (Sartori 1970: 1033).

“To be successful, social science must steer a careful course between the Scylla of lovely but untested theory and Charybdis, the maelstrom of information unstructured by theory.” (Geddes 2003: 4)

### Several suggestions

The goal is to **focus on causality** and to not solely let your data drive your theories. This is a distinct approach to knowledge, often called an **inductive approach**. Look at **real world evidence** and **avoid normative statements**. Aim for **generality** and **parsimony**. Make your **assumptions** as clear as possible.

Let's turn now to this week's readings, which were selected for several reasons. First, the textbook covers the basics and introduces several crucial words we will be using this term. The Mexico case connects to my own research (hey, research-led teaching!), Second, the drink walking article models several of the research steps we discussed above to study a topic of definite relevance back when I was an undergrad.

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## PART 3: READINGS

### Kellstedt and Whitten (2018, Chapter 1)

#### Their rules of the road

- Focus on causality.
- Do not let the data alone drive your theories.
- Consider only empirical evidence.
- Avoid normative statements.
- Check your ideology at the door.
- Pursue both generality and parsimony.

#### Several important terms

- Causality
- Correlation
- Data
- Dependent variable
- Generality
- Hypothesis and null hypothesis
- Hypothesis testing
- Independent variable
- Measure
- Parsimony
- Theory
- Variable

### Pelligrini and Breda (2024)

- Who are the relevant **actors**?
- What **motivates** them?
- What is the **level of analysis**?
- What **geographical factors** of this region are potentially relevant?
- What potential connections might exist **between subnational and national** politics?
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### Amelia Hoover Green's (2013) optional guide to reading political science.

		Important	
		Yes	No
Complicated	Yes	<i>Less than ideal but still worthwhile</i>	<i>Aren't I smart!</i>
	No	<i>Ideal!</i>	<i>Avoid! Basically, my masters' thesis</i>

### Oviedo-Trespalacios et al. (2021) example

**Table 1. Demographics by country**

**Table 2. Prevalence of alcohol-impaired walking**

**Figure 2. Country clusters and theory-planned behavior**

### Several questions to think about

- Does this connect to **your knowledge** of Australian behaviour? Which of the four groups does Australia fall into?
- The Mexico article has a subnational focus. Are there potential **subnational dynamics** at play?
- What about **country characteristics**? The group clustering discussion included a discussion of them, but they are not included as predictors.
- What are their recognized **limitations**? Do you think these limitations (or these types of limitations) might also apply to political science research? Why or why not?
- Do the **survey respondents** accurately reflect the characteristics of all drinkers within their countries? **Have you ever completed a survey?**

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### Part 4: CLASS OVERVIEW

Student engagement and results with most classes approximate the **standard normal distribution**.

**Readings**—Almost all readings are from the textbook. All required and additional readings are on Wattle. I have made a YouTube video about how to access and download the article information (posted under Week 1).

**Lecture**—Every week. In person. My goal is to make them as interesting and as informative as possible. They will cover some of the hardest and most theoretical material so that students can ask questions and I can gauge students' reaction in real time.

I will provide content warnings when possible and when I think a topic or resource might be distressing. However, it is not possible to predict what individual students will find distressing, so please exercise self-care, and let me know if any material is particularly distressing.

**Workshops**—None this week, will begin next week. All signups on the new centralized form. The goal for workshops are: (1) linking lecture and readings, (2) asking questions, (3) applying methods to things that matter to politics and you.

Most classes like this involve labs where you sit in front of old computers and punch buttons. I want to do this differently. Instead of getting you to just push buttons, I want you to understand why we might be interested in pushing buttons and why. I also want to make sure that you will develop some skills that you might use in your life after this class. While I would love it if you developed a passion for statistical software like Stata, R, Python, SPSS, and QGIS, history suggests that most students will find learning new statistical software as fun as visiting a dentist. Instead, when we do try and play with data, we will focus on a software in pretty much every office in the world—Microsoft



Excel. Google Sheets is also possible to use. In my experience (and the introductory survey), 90-95% of my students bring laptops to lectures and tutorials. Therefore, having a computer is necessary for tutorials. If you lack access to a computer, then let me know sooner rather than later. I will make a video about how to download Excel using both the download and the online Microsoft 365 online software.

**Assessment**—Participation, workshop activities and quizzes, and a final. I do plan on having in-person exams if the university offers central exam planning.

**Covid**—Still here, still an issue. If I get it, I will record lectures while isolating. If our tutor gets it, I will cover the workshop by myself. If you get it, follow ACT and ANU procedures.

### **Who am I?**

- research
- teaching
- where to find me (office hours Tuesdays 1:30-2:30pm), email (during business hours).