



Stockholm  
University

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Methods in Political Science  
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# Introduction

Course overview and practicalities

# Introduction

## **An (unusually) small team of teachers**

- About me
  - Research on political behaviour or political economy.
  - Joined SU 2022 – spent previous 12 years in Uppsala.
- My usual co-teacher is in the US.
- You will meet Jonas tomorrow.
- It is not a huge course – please do not hesitate to interact.
- We check our e-mails often (but not Athena).

# Introduction

## The purpose of this lecture

- Answer your questions.
- Give an overview of the course.
  - How do different moments relate to each other?
  - How does this course relate to other courses you have taken?
- Lay some foundations for the rest of the course.

This is not a dense 90 minutes lecture.

# Introduction

## Purpose of the course

- Statistical literacy, but especially:
  - Evaluating causal claims.
  - Answering causal questions.
- Important skills to have.
  - Writing your thesis.
  - Working as an analyst or field expert.
  - Preparing you for a career in academia.
  - As a citizen!
- We do our best to keep the course relevant for all these roles.

# Introduction

## Not primarily thesis preparation

- Why?
  - Many of you will not write a quantitative thesis, or no thesis at all this fall.
  - Specific causal designs are not applicable in most contexts.
- Still room for some thesis-related work
  - Some seminar assignments leave more room for choosing
  - Discuss your ideas at the office hours.
- Use this course as inspiration. The thesis course is long enough if you have an idea when it starts.

# Quantitative analysis of causal questions

## Three purposes of quantitative studies

- Description
- Prediction
- Explanation ← Our focus

## Examples of causal questions

- Why are immigrants underrepresented in politics?
- How is policy adjusted when a close election is expected?
- How does a text message affect voter turnout?

# Quantitative analysis of causal questions

## What is a quantitative study?

- Large n vs small n?
  - Points to a gradual, not categorical, divide.
  - Many quantitative studies are small.
- Numerical data?
  - Any categories can be used in quantitative research.
- Aims for generalizability? Uncovering universal laws?
  - Generalizing across contexts is always difficult.
  - Statistical inference is not even about external validity.
  - The world we are studying *is* socially constructed.

# Quantitative analysis of causal questions

## To me it is about how we make inference

- Quantitative approaches study statistical relationships.  
What is the average of  $Y$  for different values of  $X$ ?
- Impossible to say if/how a specific observation was affected.
- Less reliance on first-person information.

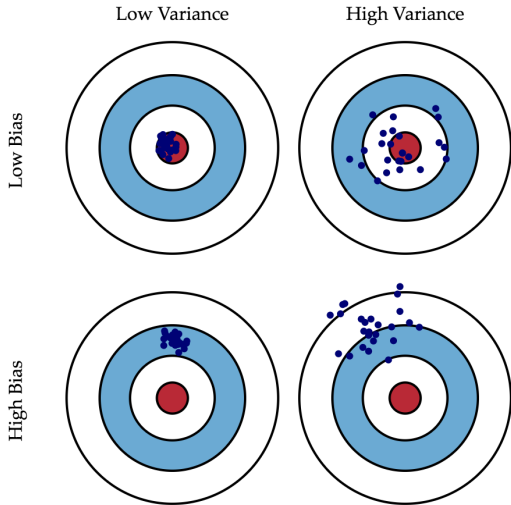
Does not apply to univariate analysis (descriptive or explanatory)  
but perhaps they are less characteristic for quant.

# Quantitative analysis of causal questions

## **The quantity of interest is always an estimation**

- The end-product is a quantity of interest, often an “effect”.
- This is an estimation. As such, it comes with errors:
  - Bias.
  - Sampling errors.
- Reducing these two is essentially what the course is about.
- If that sounds dull, it is also what the credibility revolution and the preregistration revolution are all about.

# Quantitative analysis of causal questions

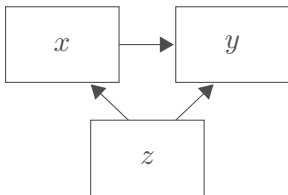


# Quantitative analysis of causal questions

## Bias

- Systematic errors which skew the results up-/downwards.
- More observations, or similarly biased studies, do not help.
- Difficult to quantify.
- Bias from bad operationalizations, measurement error and non-linearity are typically manageable.
- Biggest problem: violations of the exogeneity assumption.
  - Omitted variables (confounders).
  - Reverse causation.

# Quantitative analysis of causal questions



Confounding



Reverse causation

Two strategies: control for (all)  $z$  or create random variation in  $x$ .

# Quantitative analysis of causal questions

## **Meeting the exogeneity assumption with controls**

- Identify, measure and control for possible confounders.
- How do we do that?
- When can it be convincing?

# Quantitative analysis of causal questions

## **Meeting the exogeneity assumption through randomization**

- If the values on  $x$  are completely random, then no other variables have affected the independent variable.
- That means no confounding and no reverse causation.
- In a controlled experiment, the researcher randomly allocates people to treatment and control.
- In a natural experiment, something has created variation in  $x$  that is as good as random.

# Quantitative analysis of causal questions

## **Sampling errors / Variance of the estimator**

- Correlation (in samples) arise by chance.
- More data -> smaller errors.
- We can quantify how large errors we expect to get.
- But samples with larger errors probably get more attention.

# Quantitative analysis of causal questions

## How is this visible on the course?

- Sampling errors and controls is the theme for week 2.
- The control approach is the context for the first half.
- Creating random variation in  $x$  is the theme for week 6–8.
- Specifying a model is often a trade-off between bias and sampling errors. Many examples throughout the course.
- The focus on exogeneity is also reflected in the emphasis on other things than math and technicalities.

# Quantitative analysis of causal questions

## **Less technical compared to other MA quant courses**

- Focus on linear regression with OLS.
- Focus on exogeneity, but take other OLS assumptions lightly.
- Intuition rather than mathematical derivations.

## **Why? Not primarily a teaching philosophy**

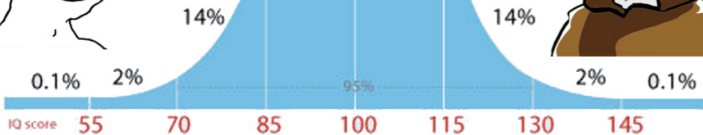
- Credibility is not determined by technicalities.
- In practice, math obfuscates more than it clarifies.
- It is hard to solve challenging problems with math.



**ORDERED LOGISTIC**  
**BAYESIAN HIERARCHICAL**  
**MIXED EFFECTS**

**LINEAR REGRESSION**

**LINEAR REGRESSION**



# Course structure

## **First block: The basics**

Week 1 Repetition.

Week 2 Statistical inference and control variables.

Important building bloc for the rest of the course.

# Course structure

## **Second block: Advanced topics in regression analysis**

Week 3 Non-linearities, outliers, interactions.

Week 4 Panel data.

Week 5 Differences-in-differences.

Dif-in-Dif could have been placed in third block as well.

# Course structure

## **Third block: Design-based causal inference**

Week 6 Experiments.

Week 7 Regression Discontinuity Designs.

Week 8 Instrumental Variables.

The first week is important for understanding the other two.

# Course structure

## **Fourth block: Wrapping up and looking forward**

Week 9 Writing a quantitative thesis.

Week 10 Exam preparations.

No new course content.

# Course structure

## Standard week

- Introductory lecture(s).
- Workshop.
- Office hours (if you have questions).
- Mandatory seminar.
- Weekly assignments.
  - Start working at the workshop.
  - Complete it before the seminar, but hand it in after.
  - Encouraged to work in pairs.
  - Ok to use ChatGPT and other AI-tools.

Holidays mess things up. Short time between seminar 1 and 2.

# Practicalities

**Read this! And download an offline copy. Added two texts 3/3.**

## Syllabus for Quantitative Methods

Pär Nyman

Spring 2026, updated 3 March

This document describes the course *Methods in the Study of Politics* (SV7096/SV7086) for those who have chosen to focus on quantitative methods. I encourage you to read through the whole syllabus before the course begins. However, if you are only looking for the necessary preparations, my suggestion is the following: i) get the book *Mastering metrics* by Joshua Angrist and Jörn-Steffen Pischke, ii) install Stata (see below), and iii) if you believe that you need to refresh your methodological skills from previous courses, browse through Marcus Österman's and Olle Folke's text *Getting started with quantitative analysis* (available on Athena). You can then return to the rest of this document as the course is about to start. If you have questions that are not answered by this text, do not hesitate to contact me ([par.nyman@statsvet.su.se](mailto:par.nyman@statsvet.su.se)). I usually respond quickly to e-mails, which I prefer over Athena, and I am happy to

# Practicalities

## Stata

- Every week you will hand-in assignments based on your analyses of a dataset.
- Stata is what we, and most of our colleagues, know and use.
- No Stata questions on the exam.
- Install it now unless you already have (free license from SU).

# Practicalities

## Literature

- Folke & Österman for the first week.
- Nyman for second, third and fourth week.
- 2 x Beck & Katz and Wilson & Butler for panel data.
- Roth et al for dif-in-dif.
- Angrist & Pischke throughout.
  - Ch. 1 and 2 as an alternative presentation for first two weeks.
  - Separate chapters on DiD, RD and IV.
  - Sixth chapter has bearing on both week 2 and 8.
- Dunning is a nice introduction to natural experiments, with tons of examples. Read cursorily.
- Cattaneo et al on RD (week 8).

# Practicalities

## Literature

- This is a pretty long reading list for a method's course.
- Read journal articles selectively. Do not worry about understanding every detail.
- Stay focused on what we cover in lectures and seminars.
- The exam will not include questions about:
  - Topics that we have not addressed during the lectures.
  - What an author says on a topic.
- But we do believe the literature is essential for understanding what is covered in lectures and seminars.

# Practicalities

## Examination

- The course is examined through a digital on-campus exam.
- Your grade is solely based on this exam (but you need to finish the seminars to pass the course).

# Concluding

Questions?

# Concluding

I hope you will enjoy the course!

# Concluding

## Grading criteria for E

- Show elementary insight into the central techniques in quantitative analysis.
- A basic understanding of some of the assumptions underlying some of these techniques.
- Present basic but mostly correct interpretations of the results.

All criteria are limited to methods covered by the course.

# Concluding

## Grading criteria for A

- Have a particularly well-argued and insightful understanding of central techniques in quantitative analysis.
- Excellent command of the assumptions underlying these techniques.
- Present particularly well-argued, insightful and correct interpretations of the results as well as well-argued evaluations of their societal importance.
- Particularly insightful discussions of advantages and drawbacks of alternative quantitative approaches to a given research problem.

All criteria are limited to methods covered by the course.