

Research Design

Master in Computational Social Science
Universidad Carlos III de Madrid

Fall 2022

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Office: 18.2.D15
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Tuesday 15:00–18:00h
Room 0.A.01 (Puerta de Toledo)
September 13th - October 25th

1 Description

This course provides an introduction to blah blah

2 Requirements

blah blah

Attendance is **mandatory**.

3 Materials

This course does not follow any textbook in particular. However, there are some books that were used to design the course and can be very useful to expand on what is covered in class:

- Nick Huntington-Klein, *The Effect: An Introduction to Research Design and Causality* (Chapman and Hall/CRC Publishing, 2021).
- Ethan Bueno de Mesquita & Anthony Fowler, *Thinking clearly with data: A guide to quantitative reasoning and analysis* (Princeton University Press, 2021).
- Scott Cunningham, *Causal Inference: The Mixtape* (Yale University Press, 2021).
- Paul M. Kellstedt & Guy D. Whitten, *The Fundamentals of Political Science Research* (Cambridge University Press, 2018).

Some of these books (Huntington-Klein's *The Effect* and Cunningham's *Mixtape*) are available online for free.¹ Besides, I will make available additional readings in *Aula Global*.

¹<https://theeffectbook.net/> and <https://mixtape.scunning.com/>.

4 Assessment

Final essay (40%)

In-class exercises (30%)

In every session, during the second half, we will make practical exercises related to what was covered each day in class. These exercises can be made individually or in groups

Workshop presentation (20%)

- Present a topic in general terms, why is it relevant?
- Specific research question
- Empirical strategy:
 - What type of variation is going to be exploited? Unit of analyses
 - Data: source, variables, measurement
 - Empirical comparisons

Participation (10%)

5 Course outline

September 13th: Introduction to social research

- What is social *science*?
- Using empirical evidence to answer questions
- Importance of research design
- Types of research questions and types of empirical research

September 20th: Social mechanisms and causality

- What are we explaining? Building blocks: units, variables, processes
- Simplifying social complexity
- Different units of analysis and mechanisms
- How to approach this empirically? Key idea: variability

September 27th: Understanding empirical evidence

- What is *data*? Types of empirical evidence
- Unit of analysis and variability, different approaches
- Raw data and final data, aggregating and disaggregating, measurement problems

October 4th: Causal inference design

- The experimental ideal in the natural and social sciences
- How to get closer with observational data?
- Confounding, selection bias, collider bias, etc

October 11th: Assessing external and internal validity

- Bringing it all together
- Where does evidence come from? External validity
- Issues with unit of analysis? Ecological fallacy
- Unaccounted for processes? Diffusion, unit independence

October 18th: Introduction to causal inference methods

- Understanding the logic of methods to determine causality, without the use of statistics
- Controls, matching
- Exploiting exogeneity: difference-in-differences, regression discontinuity

October 25th: Presentations workshop

* Final essay **deadline**: November 4th, 23.59h