Research Design and Research Logic –
2021-10-05

Instructor: Prof. Ingo Rohlfing, PhD
Office hours:
- Permanent Zoom room:
    - https://uni-koeln.zoom.us/j/9826670456
    - Meeting-ID: 982 667 0456
- Tuesday, 10.00-12.00
    - If you drop by unannounced, which you can, you might have to wait in the waiting room until the current running appointment is over. (just as with face-to-face appointments)
- Zoom by appointment. Please get in contact with me to agree on a time and date.

Room: Herbert-Lewin-Str. 2, 313.c (right next to the staircase at the South of the building)
Phone: +4922147089973
Email: i.rohlfing@uni-koeln.de

First session: 14.10.2021
No sessions: 23.12.2021 / 06.01.2022
Last session: 03.02.2022
Time: 10.00-11.30
Format: In person.
Room: Hörsaal G, Hörsaalgebäude.

Registration for exam in KLIPS2 (for Master students). PhD researchers should send an email to cccp-sekretariat@wiso.uni-koeln.de instead.

Please also regularly check the CCCP information on teaching on the internet:
http://www.cccp.uni-koeln.de/en/public/teaching/

Usually, whenever there is a big fire, there are also fire workers. Should we close all fire stations to prevent future outbreaks? There is also evidence that people who are infected with Covid-19 and get hospitalized have a higher probability of dying that infected people who are not hospitalized. Should we stop hospitalizing infected people? For both questions, the answer should be "no" because the suggested answers "get the causality wrong", yet for different reasons.

In this course, you will learn how to systemize your causal thinking and reasoning and learn about different research designs for answering causal research questions. In the first part, we will discuss what it means to infer causation and what it is that makes one factor causal and another one not.
In part two, you will make first steps to systemize your causal and theoretical thinking using directed acyclic graphs (DAGs) as a modern, informal tool of causal mapping. Simple DAGs can

demonstrate why the closing of fire stations and non-hospitalization of infected people wouldn't help much in preventing fires and deaths caused by Covid-19. More generally, DAGs can give one an idea about what causal research questions can be answered in principle and how.

In the third part, we will discuss different research designs (a map or plan for answering a research question). We will structure and compare the designs across common dimensions – few cases vs many cases; experimental vs observational; qualitative vs quantitative – and carve out their unique strengths and weaknesses for answering research questions.

At the end of the course, you will be familiar with (1) the basic elements of causality-oriented empirical research; (2) different understandings of causation; (3) how to theorize causal models, use DAGs to visualize them and understand what they imply for your analysis; (4) a variety of research designs and the research questions one can (and cannot) answer with them.

Topics and readings (list is still provisional; you will be informed if there are changes)
Part 1: Basics
14.10.2021: Varieties of research and what a research design is
- Halperin, Sandra and Oliver Heath (2012): *Political Research: Methods and Practical Skills*. Oxford, New York: Oxford University Press: Chapter 2.
  - The chapter gives an overview of different ways of doing political research. We zoom in on research aiming at making causal inferences for the rest of the course, but it is important to know there is more to political research.
- King, Gary, Robert O. Keohane and Sidney Verba (1994): *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton: Princeton University Press: Chapter 1.
  - Summarizes some elements of good research design.

21.10.2021: Research goals and research questions
- Halperin, Sandra and Oliver Heath (2012): *Political Research: Methods and Practical Skills*. Oxford, New York: Oxford University Press: Chapter 5.
  - A general overview of research questions and how to find a good research question.
- Day, Christopher and Kendra L. Koivu (2018): Finding the Question: A Puzzle-Based Approach to the Logic of Discovery. *Journal of Political Science Education* 15 (3): 377-386.
  - Focuses on puzzles as one specific way of formulating questions that is probably the most popular one in political science. We will see whether puzzles deserve this popularity or not.

28.10.2021: How to write a research paper
- https://medium.com/@write4research/why-do-academics-and-phders-carefully-choose-useless-titles-for-articles-and-chapters-518f02a2ecbb (PDF version on ILIAS)
  - An instructive blog post about choosing the title of your paper wisely.

- https://medium.com/@write4research/structuring-and-writing-academic-papers-5ccae16c33a4 (no file on ILIAS because page cannot be properly stored)
    - o Another post by Writing for Research about how to write and structure papers.

Part 2: Causation, causal inference and causal models
Some of the texts on causal inference, causal models and research designs overlap one develops a design for making causal inferences and the inferences that one can make depend on the design at hand.

04.11.2021: This thing called "causation" and how to identify it when it is there
- Rohlfing, Ingo and Christina Isabel Zuber (2021): Check Your Truth Conditions! Clarifying the Relationship between Theories of Causation and Social Science Methods for Causal Inference. *Sociological Methods & Research* 50 (4): 1623-1659.
    - o This paper gives an overview over different perspectives on causation and causal inference that have been developed over the decades (or even centuries, when we go back to Hume in the 18th century)
- Huntington-Klein, Nick (2021): *The Effect: An Introduction to Research Design and Causality.* Boca Raton: Chapman and Hall/CRC: chapter 5 (https://theeffectbook.net/ch-Identification.html).
    - o The book has not been published yet, but the author has put all chapters online. Hence, I include the URLs here. This chapters introduces the idea of 'identification' that is central for the following sessions.

11.11.2021: Causal models I: Clarification of basic terms
- Huntington-Klein, Nick (2021): *The Effect: An Introduction to Research Design and Causality.* Boca Raton: Chapman and Hall/CRC: chapters 6 (https://theeffectbook.net/ch-CausalDiagrams.html), 7 (https://theeffectbook.net/ch-DrawingCausalDiagrams.html).
    - o A relatively intuitive way to visualize causal models, aka as directed acyclic graphs (DAGs).
- VanderWeele, Tyler (2015): *Explanation in Causal Inference.* Oxford: Oxford University Press: 22-35.
    - o A non-technical discussion of moderation and mediation, which we will situate in the work on causal models and modeling.

18.11.2021: Causal models II: Keep that backdoor shut
- Huntington-Klein, Nick (2021): *The Effect: An Introduction to Research Design and Causality.* Boca Raton: Chapman and Hall/CRC: chapter 8. (https://theeffectbook.net/ch-CausalPaths.html)
    - o Once we have covered the basics of causal models, we discuss how one can use them to think about whether and how one can learn something about the causal effect of a variable. The backdoor criterion is one of the strategies to identify whether a variable is causal.
- Empirical example: Mutz, Diana C. (2016): Harry Potter and the Deathly Donald. *PS: Political Science & Politics* 49 (4): 722-729.

- o We use this text, which does not include a causal diagram, to construct one ourselves to see how sound the quantitative analysis is (one does not need to anything about regression for this).

25.11.2021: Causal models III: Walking through the front-door
- Huntington-Klein, Nick (2021): *The Effect: An Introduction to Research Design and Causality*. Boca Raton: Chapman and Hall/CRC: chapter 9. (https://theeffectbook.net/ch-FindingFrontDoors.html)
  - o The frontdoor criterion is another strategy to try to identify the effect of a variable.
- Empirical illustration: *yet to be determined*

Interlude (for the third assignment)
02.12.2021: How to design and develop a research poster
- *Literature yet to be added*

Part 3: Research designs for causal inference
09.12.2021: Basics of (quantitative) designs
- Keele, Luke (2015): The Statistics of Causal Inference: A View from Political Methodology. *Political Analysis* 23 (3): 313-335.
  - o Introduces the distinction between design-based inference and model-based inference and different ways to make both types of inferences.
- Angrist, Joshua D. and Jörn-Steffen Pischke (2009): *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton: Princeton University Press: Chapter 2.
  - o This chapter is focused on quantitative research and designs. This is useful, but we will broaden the perspective and apply the general idea behind their approach to quantitative and qualitative methods.

16.12.2021: Natural experiments
- Dunning, Thad (2008): *Natural Experiments in the Social Sciences: A Design-Based Approach*. Cambridge: Cambridge University Press: Chapter 2.
- Empirical illustration: Silva, Bruno Castanho and Sven-Oliver Proksch (2020): Fake It 'Til You Make It: A Natural Experiment to Identify European Politicians' Benefit from Twitter Bots. *American Political Science Review*: 1-7.

13.01.2022: Regression-discontinuity designs
- Dunning, Thad (2008): *Natural Experiments in the Social Sciences: A Design-Based Approach*. Cambridge: Cambridge University Press: Chapter 3.
- Smith, Leah M., Linda E. Lévesque, Jay S. Kaufman and Erin C. Strumpf (2017): Strategies for evaluating the assumptions of the regression discontinuity design: A case study using a human papillomavirus vaccination programme. *International Journal of Epidemiology* 46 (3): 939-949.
- Empirical illustration: *yet to be determined*

20.01.2022: Differences-in-differences
- Worldbank (2011): Impact Evaluation in Practice: Chapter 6.
- Empirical illustration: *yet to be determined*

27.01.2022: Comparative case studies
- Lijphart, Arend (1971): Comparative Politics and the Comparative Method. *American Political Science Review* 65 (3): 682-693.
  - A classic, foundational text on case comparisons that popularized the term "the comparative method".
- Rohlfing, Ingo (2012): *Case Studies and Causal Inference: An Integrative Framework*. Basingstoke: Palgrave Macmillan: Chapter 4.
  - A text on comparative case studies in which I try to synthesize work on case comparisons. The difference between correlational and set-relational research can be ignored because I do not find it relevant anymore (you will have seen why when we got to this part of the course).
- Empirical illustration: Eckert, Sandra (2010): Between Commitment and Control: Varieties of Delegation in the European Postal Sector. *Journal of European Public Policy* 17 (8): 1231 - 1252.

03.02.2022: Process tracing & wrap up
- Bennett, Andrew and Jeffrey Checkel (2014): Process Tracing: From Methodological Roots to Best Practices. Andrew Bennett and Checkel, Jeffrey (ed.): *Process Tracing in the Social Sciences: From Metaphor to Analytic Tool*. Cambridge: Cambridge University Press: 1-37.
- Trampusch, Christine and Bruno Palier (2016): Between X and Y: How Process Tracing Contributes to Opening the Black Box of Causality. *New Political Economy* 21 (5): 437-454.
  - Both texts together give good overviews of what process tracing and mechanisms are and what they are good for.
- Empirical illustration: Bonjour, Saskia (2011): The Power and Morals of Policy Makers: Reassessing the Control Gap Debate. *International Migration Review* 45 (1): 89-122.

Exam and grading
- The exam in this course is the *portfolio exam*. Participants have to submit multiple assignments.
- The final grade depends on all assignments. The final grade is determined based on the sum of the points across all assignments and is graded using a 100-point scale (see below).
- Failing a single assignment does not have consequences. Only passing in the end matters.
- The assignments will be graded and returned to the participants with comments.
- Submissions have to be made on ILIAS.

Total number of points and final grade

Points	Grade
100-95	1
94.5-90	1.3
89.5-85	1.7
84.5-80	2
79.5-75	2.3
74.5-70	2.7
69.5-65	3
64.5-60	3.3
59.5-55	3.7
54.5-50	4
0-49	5

You have to perform three assignments in this course. More details will be shared later during the term.

	Task	Deadline	Weight
1	Write a short essay with a research question and its justification	10.11.2021, 23.55	15 points
2	Based on the research question, formulate hypotheses on a causal relationship of your choice and formalize them in a causal model	08.12.2021, 23.55	35 points
3	Present your research question, its motivation, the theory and causal model, and a research design appropriate to test them in a research poster	28.02.2022, 23.55	50 points