Research design and research logic – 20-09-19

Instructor: Prof. Ingo Rohlfing, PhD
Office hours: Online by appointment. Please get in contact with me to agree on a time and date
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First session: 05.11.2020
Last session: 11.02.2021
No session: 24.12.2020 / 31.12.2020 (public holiday)
Room: Seminar will be exclusively online. Zoom links will be shared via ILIAS.
Time: 14.00-15.30

Registration for exam in KLIPS2 (for Master students)

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.

Assignments, exam and grading

- The exam in this course is the *portfolio exam*. Participants have to submit assignments during the course.
- 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 negative consequences. Only passing in the end matters.
- The assignments will be returned to the participants with comments and a grading scheme.
- If I detect cases of *plagiarism*, the part of the assignment that has been plagiarized will receive 0 points. I will report the case to the department and the "Prüfungsausschuss" (committee overseeing exams) will decide about the consequences.

The task is to develop a theory and research design step by step over the course of the winter term. The assignments should show that you are able to

(1) identify, present and justify a research question;
(2) build a theory around the research question using causal modeling;
(3) develop a research design that could be implemented to answer the research question.

The assignments are about the basics and planning stage of an empirical analysis. You are *not* required to collect or analyze data, but you should take data constraints into account. The data that you would need should exist or it should be possible to collect with reasonable effort.

Task	Deadline for submission	Points
Identify and justify a research question	04.12.2020 (incl.)	20
Develop a theory using causal modeling based on the research question	15.01.2021 (incl.)	40
Develop a research design appropriate for answering the research question and achieving the theoretical goal	26.02.2021 (incl.)	40

The recommended style guide for the papers is the following (for comparability of the papers):

- 2.5 cm margin at each side
- Times New Roman
- 12 points font size
- 1.5 line spacing
- References in the reference list should be complete and should be specific enough to allow readers to find the text online.

Grading is based on a 100-point scale:

Points	Grades
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	2