

Veranstaltung | Workshop

Causal Inference with Causal Graphical Models

Prof. Dr. Roland Müller will show how to use causal graphical models to establish causality.

Do
04.07.

Uhrzeit
09.00-12.00

Kosten
kostenfrei

Anmeldung
Registration required

[Register now](#)

Veranstalter/in
Institute for Data-Driven Digital Transformation (d-cube) in Kooperation mit der Methodenwerkstatt Statistik

[Zum Institut](#)

Causal thinking is the basis for prediction (X will lead to Y), explanation (Y was caused by X), and improvement (changing X will improve Y). Thus, causality is central to any scientific endeavor. But practitioners also use causal thinking because they must decide how to bring about a desirable event or prevent an undesirable one. Causal reasoning is, therefore, also critical in many controversial societal discussions, such as about COVID-19 or gender discrimination. But how can we think causally, and how can we draw causal inferences from experimental or observational data?

In this seminar, you will learn the essential elements of causal inference for observational and experimental studies. The target audience for this seminar spans from PhD students and professors who want to decide on the empirical and theoretical research design to decision-makers who want to use data to build their causal mental models. This is an introductory course in causality, so no prior knowledge is needed, except basic statistics. You can follow the course without prior programming knowledge, even though we will show some hands-on examples in Python.

The following topics will be covered:

- What is the structure of causal theories (causal graphical models)?
- What are mediating, confounding, and collider variables?
- How can we reason causally with causal graphical models (d-separation)?
- How can we explain the Simpson's Paradox and the Berkson's Paradox in terms of their underlying causal structures?
- What is the difference between controlling variables and intervening on variables (do-calculus)?
- Understanding which variables to control for and which not to control for in observational studies.
- Short outlook into more advanced causal machine learning methods

This workshop will be hands-on. I have prepared datasets and code that we will work on together.

Participate online

- Online on Zoom
Meeting ID: 844 1807 7458
Passcode: 7CHmzB