QTM: Causal II
QTM 521
Tuesdays, 2:30 – 5:00 PM (PAIS Room 561)
Joe Sutherland

Prerequisites and workload

The course is designed for masters students in QTM and has QTM 520 or equivalents as a prerequisite. It is also open to other masters students with sufficient preparation. We expect students to have basic knowledge of probability and statistics, and to be comfortable with computer programming for data analysis.

Workload: weekly responses/problem sets; a final paper.

Readings to be assigned weekly. They may include journal articles in addition to book chapters.

Syllabus (tentative)

1. Graphical Models (1/23)
2. Linear Graphical Models (1/30)
3. Causal Discovery (2/6)
4. Potential Outcomes (Review) (2/13)
5. Randomized Controlled Trials (2/20)
6. Noncompliance and Attrition (2/27)
7. Mediation and Spillovers (3/5)
8. Spring Break (3/12)
9. Selection on Observables (3/19)
10. Sensitivity Analysis (3/26)
11. Times Series and Panel Data (4/2)
12. Heterogeneous Treatment Effects with ML (4/9)
13. NLP-Based Treatment Effects (4/16)
14. Industry Tricks of the Trade (4/23)

Readings

Cunningham, Scott. Causal inference: The mixtape. Yale university press, 2021. Available online: https://mixtape.scunning.com

Gerber, Alan and Donald Green. Field experiments: Design, analysis, and interpretation. WW Norton, 2012.

Hernan, Miguel and Jamie Robins. Causal inference: What if. Available online: https://www.hsph.harvard.edu/miguel-hernan/causal-inference-book/