Humboldt University Berlin
Institute of Marketing

Prof. Dr. Daniel Guhl

Causal Inference in Marketing (707102)

Syllabus 2025

Lecture / Exercise:

Tuesday, 10:15 - 11:45 / 12:15 - 13:45, SPA 1, room 220

Course description:

The course focuses on *experimental* and *quasi-experimental* approaches to identify and infer *causal relationships* in a *marketing* context, such as the impact of online ads on website visits or price discounts on demand. Using *counterfactual reasoning* when optimizing marketing actions, the course covers various methods like *difference-in-differences*, *regression discontinuity*, *instrumental variables*, *propensity score matching*, *synthetic control*, and *selection bias correction* to estimate the causal effects. Students learn how to clearly assert identifying assumptions and how to explore the *behavioral mechanisms* of a causal effect. Lastly, the course also teaches students how firms use customer data for *targeting* and how to evaluate these policies. In hands-on exercises, students will study *academic marketing papers* using causal inference and apply the statistical software `R` to reproduce/replicate the results (i.e., manage (potentially large) data sets, estimate causal effects, and communicate the findings).

Recommended module(s) or comparable previous knowledge:

It is recommended that students have completed the module *Applied Econometrics* and have a basic understanding of *marketing instruments* and *strategies*.

Web Page:

The course material and additional information will be made available via the *moodle system* (`https://moodle.hu-berlin.de/course/view.php?id=133938`) of HU Berlin. You will receive the course key in the first lecture.

Literature:

This lecture is not based on an explicit textbook. However, the following textbooks and papers provide a good overview of essential parts of the lecture.

- Cunningham (2020): *Causal Inference: The Mixtape*
- Angrist & Pischke (2009): *Mostly Harmless Econometrics*
- Imbens & Rubin (2015): *Causal Inference for Statistics, Social, and Biomedical Sciences*
- Allenby & Rossi (2019): *Inference for marketing decisions*
- Goldfarb et al. (2022): *Conducting Research in Marketing with Quasi-Experiments*

Examination:

Your performance in this course will be assessed via a 90-minute written exam. This exam may include arithmetic and text tasks. The final dates of the written examination will be announced by the Examination Office.

Software:

In this lecture, `R` (`https://www.r-project.org`), a free programming language for statistical computing and statistical graphics, is used.

Course structure and schedule:

Week	**Date**	**Content**
16	April 15	Introduction to Causal Inference in Marketing and `R`
17	April 22	Potential Outcomes (and DAGs)
18	April 29	Randomized Experiments (RCTs) in Marketing
19	May 6	Selection on ObservablesMatching and Weighting (Propensity Scores)
20	May 13	Traditional Difference-in-Differences (DiD)
21	May 20	Modern DiD Approaches
22	May 27	Synthetic Control Methods
23	June 3	Dies Academicus
24	June 10	Regression Discontinuity Designs (RDD)
25	June 17	Instrumental Variables (IV)
26	June 24	Mechanisms (Mediation and Moderation)
27	July 1	Customer Targeting via CATEs (Part I)
28	July 8	Customer Targeting via CATEs (Part II)
29	July 15	Communicating and Summarizing Findings
...	...	...
??	July ??	Exam