

OPEN SCIENCE & CAUSAL ANALYSIS

June 18-19 & 22-23, 2026

University of Lausanne, Amphipôle Building, Room 334

Open Science is a crucial part of contemporary scientific work, and in this interactive module (18 June 2026), we will demonstrate how to put Open Science principles into practice, to strengthen one's research project, contribute to the betterment of science more broadly, and boost one's skills as a life course research professional. Combining theoretical presentations and plenty of hands-on exercises, we will explore all the different aspects of Open Science, from planning a research project, through data management, publication, all the way to policy. At the end of the course, students will be able to preregister their studies, submit registered reports, make their own Data Management Plans, produce FAIR data, publish their datasets in open online repositories, publish Open Access, and have an overview of OS best practices.

In the second part of this module (19, 22-23 June 2026), you will be introduced to the counterfactual framework of **causality and experiments** (Day 1), **difference-in-differences** (Day 2), and the **regression discontinuity design** (Day 3). It has three aims:

- To introduce you to each method.
- To learn how to implement each method in R and/ or Stata and how to interpret its results for a research paper.
- To discuss how to justify and criticize the use of each method in the analysis of your own research and published journal articles of other researchers.

Teachers:

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Alicia García-Sierra, University Carlos III of Madrid, aligarci@clio.uc3m.es

Michael Grätz, University of Lausanne and Stockholm University, michael.gratz@unil.ch

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Thursday, June 18, 2026

The OS Landscape

- **9:00 – 9:15** Introduction & Icebreaker
- **9:15 – 9:45** Defining Open Science
- **9:45 – 10:00** The Incentive Structure

Open Methodology & Pre-registration

- **10:00 – 11:00** The Problem of HARKing (Hypothesizing After Results are Known) and what to do about it

11:00 – 11:15 Coffee break

- **11:15 – 12:00** Workshop: Pre-registration Simulation

12:00 – 13:00 Lunch break

Open Data & Reproducibility

- **13:00 – 13:30** FAIR Principles Deep Dive
- **13:30 – 14:30** Data Management Plan (DMP) to practice
- **14:30 – 15:00** Publish your data

15:00 – 15:30 Coffee break

Open Access & Scholarly Communication

- **15:30 – 16:00** The Business of Publishing
- **16:00 – 16:40** OA in Action
- **16:40 – 17:00** Rights Retention
- **17:00 – 17:15** Wrap-up and Q&A

Friday, June 19, 2026

EXPERIMENTS (Michael Grätz)

9:00 - 10:30: Potential outcomes and the experimental ideal

10:30 – 11:00 Coffee break

11:00 - 12:30: RCT and natural experiment replication

12:30 – 13:30 Lunch

13:30 - 16:00: RCT and natural experiment replication and discussion

(with coffee break)

READINGS

- Angrist, Joshua, and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics*. Princeton University Press. Chapters 1 and 2. Pages 3–22.
- Finkelstein, Amy, et al. "The Oregon health insurance experiment: evidence from the first year." *The Quarterly journal of economics* 127.3 (2012): 1057-1106.
- Krueger, Alan (1999). "Experimental Estimates of Education Production Functions." *The Quarterly Journal of Economics*, 114(2), 497–532.

BACKGROUND READINGS. You can read up if you have missed something in the lecture. This reading list is not compulsory (* = recommended).

- Rubin, Donald B. "Estimating causal effects of treatments in randomized and nonrandomized studies." *Journal of educational Psychology* 66.5 (1974): 688.
- * Huntington-Klein, Nick. 2022. *The Effect: An Introduction to Research Design and Causality*. Abingdon: CRC Press. Chapters 1-10. <https://theeffectbook.net/index.html>
- * Cunningham, Scott. *Causal inference: The mixtape*. Yale university press, 2021. Chapter 4. <https://mixtape.scunning.com/>

Monday, June 22, 2026

REGRESSION DISCONTINUITY DESIGN (Michael Grätz)

9:00-10:30: Lecture

10:30 – 11:00 Coffee break

11:00-12:30: Practical exercises

12:30 – 13:30 Lunch

13:30-16:00: Discussion of example studies. During the session, each participant will be assigned one article from the **READINGS** list below to read. The assigned readings will be discussed in small groups.

READINGS

- Aksoy, Ozan, and Francesco C. Billari. 2018. “Political Islam, Marriage, and Fertility: Evidence from a Natural Experiment.” *American Journal of Sociology* 123:1296–340.
- Angrist, Joshua D. and Victor Lavy. 1999. “Using Maimonides’ Rule to Estimate the Effect of Class Size on Scholastic Achievement.” *Quarterly Journal of Economics* 114:533–75.
- Caughey, Devin and Jasjeet S. Sekhon. 2011. “Elections and the Regression Discontinuity Design: Lessons from close U.S. House Races, 1942–2008.” *Political Analysis* 19:385–408.
- Hainmueller Jens, Dominik Hangartner, and Dalston Ward. 2019. “The Effect of Citizenship on the Long-Term Earnings of Marginalized Immigrants: Quasi-Experimental Evidence from Switzerland.” *Science Advances*, DOI: 10.1126/sciadv.aay1610.

BACKGROUND READINGS ON THE METHOD. You can read up if you have missed something in the lecture. This reading list is not compulsory. (* = recommended).

- Angrist, Joshua, and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics*. Princeton University Press. Chapter 6. Pages 251–67.
- Bueno de Mesquita, Ethan, and Anthony Fowler. 2021. *Thinking Clearly with Data: A Guide to Quantitative Reasoning and Analysis*. Princeton, NJ: Princeton University Press. Chapter 12. Pages 243–65.
- Lee, David S., and Thomas Lemieux. 2010. “Regression Discontinuity Design in Economics.” *Journal of Economic Literature* 48:281–355.

TUESDAY, June 23, 2026

DIFFERENCE-IN-DIFFERENCES (Alicia García-Sierra)

9:00-10:30: Lecture

10:30 – 11:00 Coffee break

11:00-12:30: Practical exercises

12:30 – 13:30 Lunch

13:30-16:00: Discussion of example studies. During the session, each participant will be assigned one article from the **READINGS** list below to read. The assigned readings will be discussed in small groups.

READINGS

- Colombo, F., Ferrara, A., Dinas, E., Vassou, F. M., & Bernardi, F. 2024. “From the Streets to the Voting Booth: The Electoral Effect of Grassroots Mobilization Against the Far Right”. *Public Opinion Quarterly*, 88(3), 1032-1043.
- Valdés, M.T., Espadafor, M.C. & Conte Keivabu, R. 2025. “Can a low emission zone improve academic performance? Evidence from a natural experiment in the city of Madrid”. *Population Environment*. 47(1), 8.
- Grätz, Michael. 2023. “Does Schooling Affect Socioeconomic Inequalities in Educational Attainment?”. *Sociological Science*. 10: 880–902.
- Torche, Florencia. 2011. “The Effect of Maternal Stress on Birth Outcomes: Exploiting a Natural Experiment.” *Demography*. 48:1473–91.

BACKGROUND READINGS ON THE METHOD. *You can read up if you have missed something in the lecture. This reading list is not compulsory (* = recommended).*

- * Angrist, Joshua, and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics*. Princeton University Press. Chapter 5. Pages 227–43.
- Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan. 2004. “How Much Should We Trust Differences-in-Differences Estimates?” *Quarterly Journal of Economics* 119:249–75.

- Bueno de Mesquita, Ethan, and Anthony Fowler. 2021. *Thinking Clearly with Data: A Guide to Quantitative Reasoning and Analysis*. Princeton, NJ: Princeton University Press. Chapter 13. Pages 266–89.
- Cunningham, Scott. 2021. *Causal Inference*. Yale University Press. Chapter 9. Pages 406–510.
- * Huntington-Klein, Nick. 2022. *The Effect: An Introduction to Research Design and Causality*. Abingdon: CRC Press. Chapter 18. Pages 435–67.
- Lechner, Michael 2011. “The Estimation of Causal Effects by Difference-in-Difference Methods.” *Foundations and Trends in Econometrics* 4:165–224.
- * Wang, G., Hamad, R., & White, J. S. (2024). “Advances in difference-in-differences methods for policy evaluation research”. *Epidemiology*, 35(5), 628-637.