

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 **instrumental variables** (Day 1), **regression discontinuity designs** (Day 3), and **difference-in-differences** (Day 3). Each day 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:

Lorenzo Di Sopra, EPFL Library, lorenzo.disopra@epfl.ch

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

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

Vincenzo Palattella, EPFL Library, vincenzo.palatella@epfl.ch

Nora Turoman, EPFL Library, nora.turoman@epfl.ch

Francesco Varrato, EPFL Library, Francesco.varrato@epfl.ch

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

10:00 – 10:15 Coffee break

Open Methodology

- **10:00 – 11:00** The Problem of QRP's (Questionable Research Practices) and what to do about it
- **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
INSTRUMENTAL VARIABLES (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

- Grätz, Michael, and Juho Härkönen. 2024. "The Effect of Parental Separation on Educational Achievement: An Instrumental Variable Analysis." *Social Science Research* 122: DOI: 10.1016/j.ssresearch.2024.103040.
- Kirk, David. 2009. "A Natural Experiment on Residential Change and Recidivism: Lessons from Hurricane Katrina." *American Sociological Review* 74:484–505.
- Laidley, Thomas, and Dalton Conley. 2018. "The Effects of Active and Passive Leisure on Cognition in Children: Evidence from Exogenous Variation in Weather." *Social Forces* 97:129–56.
- Meierriks, Daniel, and Daniel Auer. 2025. "Bribes and Bombs: The Effect of Corruption on Terrorism." *American Political Science Review* 119:670–86.

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, Guido Imbens, and Donald Rubin. 1996. "Identification of Causal Effects Using Instrumental Variables." *Journal of the American Statistical Association* 91:444–55.
- Angrist, Joshua, and Alan Krueger. 2021. "Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments." *Journal of Economics Perspectives* 14:69–85.
- * Angrist, Joshua, and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics*. Princeton University Press. Chapter 4. Pages 113–218.
- * 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 11. Pages 218–242.
- Cunningham, Scott. 2021. *Causal Inference*. Yale University Press. Chapter 7. Pages 315–85.
- Huntington-Klein, Nick. 2022. *The Effect: An Introduction to Research Design and Causality*. Abingdon: CRC Press. Chapter 19. Pages 469–503.
- Morgan, Stephen L., and Christopher Winship. 2014. *Counterfactuals and Causal Inference: Methods and Principles for Social Research. Second Edition*. Cambridge: Cambridge University Press. Chapter 9. Pages 291–324.

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.
- 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.
- Garcia-Sierra, Alicia, and Michael Grätz. 2026. Does Expanding Free Secondary Education Moderate the Relationship between Genes and Socioeconomic Outcomes? Evidence from the Education Act of 1944 in England. *American Journal of Sociology*, 131, 1074–1107. DOI: 10.1086/740030.
- 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.