

Title: PhD Toolkit on Transparent, Open, and Reproducible Research

Catalyst: Ada Gonzalez-Torres (EUI)

Co-taught with: Michele Belot (EUI), Julia Schulte-Cloos (EUI)

Location: European University Institute (EUI), Florence, Italy

Dates: Thursday October 11 and Monday October 15

Funding: This event is funded by the Berkeley Initiative for Transparency in the Social Sciences (BITSS) Catalyst Program

Abstract:

This project is an effort to share with graduate students in Economics and Political and Social sciences at the European University Institute a toolkit with the main methods for transparent, open and reproducible research. The course will give an essential overview on ethical considerations in social science research; pre-registration methods and pre-analysis plans; data mining and p-hacking; meta-analysis; reproducible workflows and open research materials and replication.

Syllabus:

1. Overview of the main statistical problem
2. Transparency & Ethics in Experimental research
 - Pre-registration & Pre-analysis Plans (PAP)
 - Protection of human subjects (IRB)
3. Transparency in Non-experimental research
 - Observational Pre-Analysis Plans
 - Multiple Inference Correction
 - Meta-Analysis
 - Replication
4. Ethical considerations
5. Open data & Data de-identification
6. Reproductive workflows

Schedule:

Thursday, October 11		Monday, October 15	
9.00h - 10.45h	Overview of the main statistical problem (Ada Gonzalez-Torres)	9.00h- 10.45h	Ethical considerations Open data & Data de-identification (Ada Gonzalez-Torres)
11.00h - 13.00h	Pre-registration (PAP) Protection of human subjects (IRB) (Michèle Belot)	11.00h- 13.30h	Reproducible work-flows R-Markdown (Julia Schulte-Cloos)
14.30h - 16.30h	Transparency in non-experimental research (Ada Gonzalez-Torres)	14.30h- 16.00h	Reproducible work-flows R-Markdown – Hands-On (Julia Schulte-Cloos)
		16.00- 16.30h	Closing, Questions, Feedback

References

1. Overview of the main statistical problem

Main Readings:

*Christensen, Garret, and Edward Miguel. (2017). "Transparency, Reproducibility, and the Credibility of Economics Research", BITSS. <http://osf.io/preprints/bits/9a3rw>

*Christensen, Garret (2018). "Manual of Best Practices in Transparent Social Science Research", unpublished manual. <https://github.com/garretchristensen/bestpracticesmanual>

*Miguel, E., C. Camerer, K. Casey, J. Cohen, K. M. Esterling, A. Gerber, R. Glennerster, et al. (2014). "Promoting Transparency in Social Science Research." *Science* 343 (6166). 30–31. [Link](#)

Extended Readings:

Angrist, Joshua D. and Jorn-Steffen Pischke. (2010). "The credibility revolution in empirical economics: How better research design is taking the con out of econometrics", *Journal of Economic Perspectives*, 24(2), 3-30. [Link](#)

Brodeur, A., Lé, M., Sangnier, M., & Zylberberg, Y. (2016). "Star wars: The empirics strike back", *American Economic Journal: Applied Economics*, 8(1), 1-32. [Link](#)

Card, David, and Alan Krueger. (1995). "Time-series minimum-wage studies: A Meta-analysis", *American Economic Review Papers and Proceedings*, 85(2), 238-243. [Link](#)

De Long, J. Bradford, and Kevin Lang. (1992). "Are all economic hypotheses false?." *Journal of Political Economy* 100.6: 1257-1272. [Link](#)

Gerber, Alan S., and Neil Malhotra. "Publication bias in empirical sociological research: Do arbitrary significance levels distort published results?." *Sociological Methods & Research* 37.1 (2008). 3-30. [Link](#)

Ioannidis, John P.A. (2005). "Why most published research findings are false", *PLoS Medicine*, 2(8), e124. [Link](#)

Leamer, Edward E. (1983). "Let's Take the Con out of Econometrics", *American Economic Review*, 73(1), 31-43. [Link](#)

Nosek, B. A., et al. (2015). "Promoting an open research culture: Author guidelines for journals could help to promote transparency, openness, and reproducibility." *Science (New York, NY)* 348.6242: 1422. [Link](#)

Open Science Collaboration. (2015). "Estimating the reproducibility of psychological science." *Science* 349 no. 6251. [Link](#)

Rosenthal, Robert. (1979). "The file drawer problem and tolerance for null results." *Psychological bulletin* 86.3: 638. [Link](#)

Simmons, Joseph P., Leif D. Nelson, and Uri Simonsohn (2011). "False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant." *Psychological science* 22.11: 1359-1366. [Link](#)

2. Transparency & Ethics in experimental research - Prof. Michèle Belot

- Pre-registration & Pre-analysis Plans (PAP)

Glennerster, Rachel, and Edward Miguel. (2009). "Community Driven Development in Sierra Leone: GoBifo Analysis Plan", posted on J-PAL Hypothesis Registry August 21, 2009. [Link](#)

*Casey, Katherine, Rachel Glennerster, and Edward Miguel. (2012). "Reshaping institutions: Evidence on aid impacts using a pre-analysis plan", *Quarterly Journal of Economics*, 127(4), 1755-1812. [Link](#)

Finkelstein, Amy, Sarah Taubman, Bill Wright, Mira Bernstein, Jonathan Gruber, Joseph Newhouse, Heidi Allen, Katherine Baicker, and the Oregon Health Study Group. (2012). "The Oregon Health Insurance Experiment: Evidence from the First Year", *Quarterly Journal of Economics*, 127(3), 1057-1106. [Link](#)

Finkelstein, Amy, Sarah Taubman, Bill Wright, Mira Bernstein, Jonathan Gruber, Joseph Newhouse, Heidi Allen, Katherine Baicker, and the Oregon Health Study Group. (2010). "The Draft title: The short-run impact of extending public health insurance to low income adults: evidence from the first year of The Oregon Medicaid Experiment, **Analysis Plan**. [Link](#)

Humphreys, Macartan, Raul Sanchez de la Sierra, and Peter van der Windt. (2013). "Fishing, commitment, and communication: A proposal for comprehensive nonbinding research registration", *Political Analysis*, 21, 1-20.

Kling, Jeffrey R., Jeffrey B. Liebman, and Lawrence F. Katz. (2007). "Experimental Analysis of Neighborhood Effects", *Econometrica*, 75(1). 83-119.

- Protection of human subjects (IRB)

Breault, Joseph L. (2006), "Protecting Human Research Subjects: The Past Defines the Future", *Ochsner J.* 6(1), 15-20

Faulks S.W., Feldman S.R. (2016) "Genomics, Ethics, and Compliance". Norman R. (eds) *Personalized, Evolutionary, and Ecological Dermatology*. Springer, Cham

Mechling, L., David L. Gast and Justin D. Lane (2018), "Ethical Principles and Practices in Research". *Single Case Research Methodology – Applications in Special Education and Behavioral Sciences*, edited by Jennifer Ledford and David L. Gast.

3. Transparency in non-experimental research

- Observational Pre-Analysis Plans

Burlig, Fiona. (2018). "Improving transparency in observational social science research: A pre-analysis plan approach," *Economics Letters*, 168: 56--60. [Link](#)

Dal-Ré, Rafael, John P. Ioannidis, Michael B. Bracken, Patricia A. Buffler, An-Wen Chan, Eduardo L. Franco, Carlo La Vecchia, and Elisabete Weiderpass. (2014). "Making prospective registration of observational research a reality." *Science translational medicine* 6, no. 224 [Link](#)

Neumark, David. (1999). "The Employment Effects of Recent Minimum Wage Increases: Evidence from a Pre-specified Research Design", NBER Working Paper #7171.

Neumark, David. (2001). "Evidence on Employment Effects of Recent Minimum Wage Increases from a Pre-Specified Research Design", *Industrial Relations*, 40(1). 121-144. 6 [Link](#)

- Multiple Inference Correction

Anderson, Michael L. (2008). "Multiple Inference and Gender Differences in the Effects of Early Intervention: A Reevaluation of the Abecedaian, Perry Preschool, and Early Training Projects." *Journal of the American Statistical Association*, 103(484), 1481-1495. [Link](#)

- Meta-Analysis

Borenstein, M., Hedges, L. V., Higgins, J. P., and Rothstein, H. R. (2009). *Introduction to meta-analysis*. John Wiley & Sons. [Link](#)

Burke, Marshall, Solomon M. Hsiang, and Edward Miguel. (2015). "Climate and Conflict." *Annu. Rev. Econ.* 7.1. 577-617. [Link](#)

Hsiang, Solomon M., Marshall Burke, and Edward Miguel. (2013). "Quantifying the influence of climate on human conflict." *Science* 341. [Link](#) - Supplementary Materials [Link](#)

Stanley, Tom D., and Stephen B. Jarrell. (1989). "Meta-regression analysis: a quantitative method of literature surveys." *Journal of economic surveys* 3 (2). 161-170. [Link](#)

- Replication

Chang, A. C., & Li, P. (2015). "Is Economics Research Replicable? Sixty Published Papers from Thirteen Journals Say" Usually Not" (No. 2015-83). Board of Governors of the Federal Reserve System (US). [Link](#)

Dafoe, Allan (2014). "Science deserves better: the imperative to share complete replication files." *PS: Political Science & Politics* 47 (1) 60-66. [Link](#)

Hamermesh, Daniel S. (2007). "Replication in economics". *Canadian Journal of Economics/Revue canadienne d'économique*, 40 (3), 715-733. [Link](#)

4. Ethical considerations

Anderson, Melissa S., Brian C. Martinson, and Raymond De Vries. (2007). "Normative dissonance in science: Results from a national survey of US scientists." *Journal of Empirical Research on Human Research Ethics* 2.4: 3-14. [Link](#)

List, J. A., Bailey, C. D., Euzent, P. J., & Martin, T. L. (2001). Academic economists behaving badly? A survey on three areas of unethical behavior. *Economic Inquiry*, 39(1), 162-170. [Link](#)

Merton, Robert K. 1973 [1942]. "The Normative Structure of Science." in Merton, Robert K., *The Sociology of Science: Theoretical and Empirical Investigations*. Chicago: University of Chicago Press. ISBN 978-0-226-52091-9, OCLC 755754. [Link](#)

John, Leslie K., George Loewenstein, and Drazen Prelec (2012). "Measuring the Prevalence of Questionable Research Practices With Incentives for Truth Telling", *Psychological Science*, Vol 23, Issue 5, pp. 524 – 532, [Link](#)

5. Open data & Data de-identification

El Emam, Khaled. (2010). "Risk-based de-identification of health data". *IEEE Security & Privacy*, (3), 64-67. [Link](#)

Fraser, Ross and Don Willison (2009): "Tools for De-Identification of Personal Health Information" Prepared for the Pan Canadian Health Information Privacy (HIP) Group. [Link](#)

Heffetz, Ori, and Katrina Liggett. (2014). "Privacy and data-based research", *Journal of Economic Perspectives*, 28(2), 75-98. [Link](#)

King, G. (1995). "Replication, replication". *PS: Political Science & Politics*, 28(3), 444-452. [Link](#)

6. Reproductive workflows

Goodman, S. N., Fanelli, D., & Ioannidis, J. P. 2016. "What does research reproducibility mean?" *Science Translational Medicine*, Vol. 8. Ch. 341. [Link](#)

R Markdown Reference Guide [Link](#)