Causal Inference in Program Evaluation: Methods and Applications

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Lecturers
- Monica Costa-Dias, University of Bristol
- Andrew Goodman-Bacon, Federal Reserve Bank of Minneapolis

Reading list

Note. The following list reflects the material that will be taught. Further material will be provided before the beginning of the course and during the lectures.

Part 1 (Prof. Costa-Dias)

Day 1: RCT

1. Abadie and Cattaneo (2018). "Econometric methods for program evaluation." *Annual Review of Economics*, 10, 465-503. https://doi.org/10.1146/annurev-economics-080217-053402
2. Athey and Imbens (2017). "The econometrics of randomized experiments." *in* Banerjee and Duflo (eds), Handbook of Economic Field Experiments, MIT. https://doi.org/10.1016/bs.hefe.2016.10.003
3. Rothstein and von Wachter (2016). "Social experiments in the labor market." *in* Banerjee and Duflo (eds), Handbook of Economic Field Experiments, MIT. https://doi.org/10.1016/bs.hefe.2016.10.001
4. Rosenbaum (2007). "Interference between units in randomized experiments." *Journal of the American Statistical Association*, 102(477), 191-200. https://doi.org/10.1198/016214506000001112

Day 2: Power calculations

1. Cameron and Miller (2015). "A practitioner's guide to cluster-robust inference." *Journal of Human Resources*, 50(2), 317-372. https://doi.org/10.3368/jhr.50.2.317
2. de Chaisemartin and Ramirez-Cuellar (2024). "At what level should one cluster standard errors in paired and small-strata experiments?" *American Economic Journal: Applied Economics*, 16, 193-212.

https://doi.org/10.1257/app.20210252

3. MacKinnon, Nielsen and Webb (2023) "Cluster-robust inference: A guide to empirical practice." *Journal of Econometrics*, 232(2), 272-299. https://doi.org/10.1016/j.jeconom.2022.04.001
4. McConnell and Vera-Hernandez (2022). "More powerful cluster randomized control trials." IFS working paper 22/22. https://doi.org/10.1920/wp.ifs.2022.2222

Day 3: IV, Local and Marginal Treatment Effects

1. Angrist, Imbens and Rubin, "Identification of causal effects using instrumental variables." *Journal of the American Statistical Association*, 91, 444-455. https://doi.org/10.2307/2291634
2. Brinch, Mogstad and Wiswall (2017). "Beyond LATE with a discrete instrument." *Journal of Political Economy*, 125(4), 985-1039. https://doi.org/10.1086/692712
3. Carneiro, Heckman and Vytlacil (2011). "Estimating marginal returns to education." *American Economic Review*, 101(6), 2754-81. https://doi.org/10.1257/aer.101.6.2754
4. Heckman, Urzua and Vytlacil (2006). "Understanding instrumental variables in models with essential heterogeneity." *The Review of Economics and Statistics*, 88(3), 389-432. https://doi.org/10.1162/rest.88.3.389
5. Imbens and Angrist (1994). "Identification and estimation of local average treatment effects." *Econometrica*, 62, 467-475. https://doi.org/10.2307/2951620

Day 4: Instrumental Variables and Multiple Treatments

1. Abadie and Cattaneo (2018). "Econometric methods for program evaluation." *Annual Review of Economics*, 10, 465-503. https://doi.org/10.1146/annurev-economics-080217-053402
5. Bhuller and Sigstad (2024). "2SLS with multiple treatments." *Journal of Econometrics*, 242(1), 105785. https://doi.org/10.1016/j.jeconom.2024.105785
6. Heckman and Pinto (2018). "Unordered monotonicity." *Econometrica*, 86(1), 1-35. https://doi.org/10.3982/ECTA13777
7. Kirkeboen, Mogstad and Leuven (2016). "Field of study, earnings, and self-selection." *Quarterly Journal of Economics*, 131(3), 1057-1111. https://doi.org/10.1093/qje/qjw019

Day 5: Selection, IV and Control Functions

1. Heckman (1979). "Sample selection bias as a specification error." *Econometrica*, 47, 153-161. https://doi.org/10.2307/1912352
2. Kline and Walters (2019). "On Heckits, LATE and numerical equivalence." *Econometrica*, 87(2), 677-696. https://doi.org/10.3982/ECTA15444
3. Mogstad, Torgovitsky and Walters (2024). "Policy evaluation with multiple instrumental variables." *Journal of Econometrics*, 243(1-2), 105718.

https://doi.org/10.1016/j.jeconom.2024.105718

4. Vytlacil (2002). "Independence, monotonicity, and latent index models: An equivalence result." *Econometrica*, 70(1), 331-341. https://doi.org/10.1111/1468-0262.00277

Part 2 (Prof. Goodman-Bacon)

Day 1: Simple 2x2 DiD and DiD with Covariates

1. Cunningham (2021). "Difference-in-differences." In *Causal Inference: The Mixtape*. https://mixtape.scunning.com/09-difference_in_differences.html
2. Abadie (2005). "Semiparametric difference-in-differences estimators." *The Review of Economic Studies*, 72(1), 1-19. https://doi.org/10.1111/0034-6527.00321
3. Sant'Anna and Zhao (2020). "Doubly robust difference-in-differences estimators." *Journal of Econometrics*, 211(1), 65-80. https://doi.org/10.1016/j.jeconom.2020.06.003
4. Callaway and Caetano (2024). "Difference-in-Differences when parallel trends hold conditional on covariates." https://doi.org/10.48550/arXiv.2406.15288

Day 2: Staggered Binary DiD Designs

1. Goodman-Bacon (2021). "Difference-in-differences with variation in treatment timing." *Journal of Econometrics*, 225(2), 254-277. https://doi.org/10.1016/j.jeconom.2021.03.014
2. Callaway and Sant'Anna (2021). "Difference-in-differences with multiple time periods." *Journal of Econometrics*, 225(2), 200-230. https://doi.org/10.1016/j.jeconom.2020.12.001
3. Sun and Abraham (2021). "Estimating dynamic treatment effects in event studies with heterogeneous treatment effects." *Journal of Econometrics*, 225(2), 175-199. https://doi.org/10.1016/j.jeconom.2020.09.006
4. Baker, Larcker and Wang (2022). "How much should we trust staggered difference-in-differences estimates?" *Journal of Financial Economics*, 144(2), 370-395. https://doi.org/10.1016/j.jfineco.2022.01.004

Day 3: Continuous DiD Designs

1. Goodman-Bacon, Callaway and Sant'Anna (2024). "Difference-in-differences with a continuous treatment." https://doi.org/10.48550/arXiv.2107.02637
2. de Chaisemartin and D'Haultfœuille (2020). "Fuzzy differences-in-differences." *The Review of Economic Studies*, 87(2), 789-825. https://doi.org/10.1093/restud/rdx049

Day 4: Assessing Parallel Trends (Robustness)

1. Ghanem, Sant'Anna and Wuthrich (2024). "Selection and parallel trends." https://doi.org/10.48550/arXiv.2203.09001
2. Marx, Tang and Tamer (2024). "Parallel trends and dynamic choices." *Journal of Political Economy: Microeconomics*, 2(1), 129-171.

https://www.journals.uchicago.edu/doi/full/10.1086/727363

3. Rambachan and Roth (2023). “A more credible approach to parallel trends.” *The Review of Economic Studies*, 90(5), 2555-2591. https://doi.org/10.1093/restud/rdad018
4. Roth (2022). “Pre-test with caution: Event-study estimates after testing for parallel trends.” *American Economic Review: Insights*, 4(3), 305-322. https://doi.org/10.1257/aeri.20210236

Day 5: Extra Topics

1. Puhani (2012). “The treatment effect, the cross difference, and the interaction term in nonlinear 'difference-in-differences' models.” *Economics Letters*, 115(1), 85-87. https://doi.org/10.1016/j.econlet.2011.11.025
2. Deaner and Ku (2024). “Causal duration analysis with diff-in-diff.” https://doi.org/10.48550/arXiv.2405.05220
3. Athey and Imbens (2006). “Identification and inference in nonlinear difference-in-differences models.” *Econometrica*, 74(2), 431-497. https://doi.org/10.1111/j.1468-0262.2006.00668.x
4. Miyaji (2024). “Instrumented difference-in-differences with heterogeneous treatment effects.” https://doi.org/10.48550/arXiv.2405.12083