**PhD Sessions**

[**https://talkingphysics.wordpress.com/2018/06/11/creating-your-first-scene-manim-series-part-2/**](https://talkingphysics.wordpress.com/2018/06/11/creating-your-first-scene-manim-series-part-2/)

[**https://www.dropbox.com/sh/zj91darudf2fica/AADj\_jaf5ZuS1muobgsnxS6Za?dl=0**](https://www.dropbox.com/sh/zj91darudf2fica/AADj_jaf5ZuS1muobgsnxS6Za?dl=0)

[**https://www.youtube.com/watch?v=jJNbQ55JUvw&list=PLWWcL1M3lLlojLTSVf2gGYQ\_9TlPyPbiJ**](https://www.youtube.com/watch?v=jJNbQ55JUvw&list=PLWWcL1M3lLlojLTSVf2gGYQ_9TlPyPbiJ)

Aug 24: Introduction; Simulation as a Guide for Study Design and Inference

Aug 31: Fixed, Random, and Correlated Random Effects

Sep 7: Statistical Inference for Policy Evaluation

<https://apoorvalal.github.io/posts/29012022_bootstraps.html>

<https://cameronraymond.me/blog/power-simulations-in-r/>

<https://economics.mit.edu/files/13927>

Sep 14: Difference-in-Differences and Event Studies Revisited

<https://arelbundock.com/posts/2021-09-30-extendedtwfe/>

Sep 28: Difference-in-Differences and Event Studies Revisited: Applied Case Study

Oct 5: Interrupted Time Series vs. Difference-in-Differences

Oct 12: No Class

Oct 19: No Class – Midterm Exercise Due (peer-review)

Oct 26: Nonlinear Differences-in-Differences and Functional Form Considerations

Nov 2: Quantile Treatment Effects and Changes-in-Changes

Nov 9: Semi-Parametric DID, Double/Debiased Machine Learning for DID, and Synthetic Control Methods

<https://medium.com/towards-data-science/double-debiased-machine-learning-part-1-of-2-eb767a59975b>

<https://economics.mit.edu/files/17847>

<https://apoorvalal.github.io/posts/09122021_ElasticNetSyntheticControl.html#di2016-estimator>

Nov 16: Partial Identification Methods: Treatment Effect Bounds

Dec 1: Principal Stratification

Dec 8: Wrap-Up

https://towardsdatascience.com/understanding-contamination-bias-58b63d25d2ef

# Extended two-way fixed effects https://arelbundock.com/posts/2021-09-30-extendedtwfe/

# Matrix completion: https://yiqingxu.org/packages/fect/fect.html,

# Matrix completion: https://arelbundock.com/posts/panel\_heterogeneous\_effects/

# ML DID https://apoorvalal.github.io/posts/21052022\_semiparDID.html

# https://diff.healthpolicydatascience.org/#semiparametric

**# Add bias vs. consistency ? https://eranraviv.com/bias-vs-consistency/**

**# Principal Stratification : https://files.eric.ed.gov/fulltext/EJ1160773.pdf**

**# https://scholar.harvard.edu/lmiratrix/resources and https://arxiv.org/pdf/1701.03139.pdf**

**# Geographic Regression Discontinuity: http://www.lukebornn.com/papers/rischard\_jasa\_2020.pdf and https://github.com/maximerischard/GeoRDD.jl**

**# and https://www.cambridge.org/core/journals/political-analysis/article/geographic-boundaries-as-regression-discontinuities/2A59F3077F49AD2B908B531F6E458430**

**# and https://titiunik.mycpanel.princeton.edu/papers/KeeleLorchPassarellaSmallTitiunik2017-AIE.pdf**

**Session 1: August 24, 9-11 AM**

**Description:** Directed Acyclic Graphs

**Session 2: August 31, 9-11 AM**

**Description:** Directed Acyclic Graphs

**Session 3: September 7, 9-11 AM**

**Description:** Directed Acyclic Graphs

**Session 4: September 14, 9-11 AM**

**Description:** Directed Acyclic Graphs

**Session 5: September 28, 9-11 AM**

**Description:** Directed Acyclic Graphs

**Session 6: October 5, 9-11 AM**

**Description:** Directed Acyclic Graphs

**Session 7: October 12, 9-11 AM**

**Description:** Directed Acyclic Graphs

**Session 8: October 19, 9-11 AM**

**Description:** Directed Acyclic Graphs

**October 26, 9-11 AM NO CLASS**

**Session 9: November 2, 9-11 AM**

**Description:** Directed Acyclic Graphs

**Session 10: November 9, 9-11 AM**

**Description:** Directed Acyclic Graphs

**Session 11: November 16, 9-11 AM**

**Description:** Directed Acyclic Graphs

**Session 12: November 30, 9-11 AM**

**Description:** Directed Acyclic Graphs

**Session PHD: APRIL 30, 2-3:30 PM (RECORDED LECTURE AVAILABLE IN ADVANCE)**

**Description:** Synthetic Control Methods

**Session PHD: APRIL 30, 2-3:30 PM (RECORDED LECTURE AVAILABLE IN ADVANCE)**

**Description:** Simulating a Data Generation Process

**Session PHD1: APRIL 16, 2-3:30 PM (RECORDED LECTURE AVAILABLE IN ADVANCE)**

**Description:** Treatment Effect Bounds

Note: Examples and code will be provided in R and Stata (where possible)

**Readings for Today:**

Manski, Charles F., and Francesca Molinari. "Estimating the COVID-19 infection rate: Anatomy of an inference problem." *Journal of Econometrics* 220.1 (2021): 181-192.

Manski, Charles F. *Bounding the predictive values of COVID-19 antibody tests*. No. w27226. National Bureau of Economic Research, 2020. Available from https://www.nber.org/papers/w27226

Jiang, Zhichao, Yasutaka Chiba, and Tyler J. VanderWeele. "Monotone confounding, monotone treatment selection and monotone treatment response." *Journal of causal inference* 2.1 (2014): 1-12.

McCarthy, Ian, Daniel L. Millimet, and Manan Roy. "Bounding treatment effects: A command for the partial identification of the average treatment effect with endogenous and misreported treatment assignment." *The Stata Journal* 15.2 (2015): 411-436.

**Session PHD2: APRIL 23, 2-3:30 PM (RECORDED LECTURE AVAILABLE IN ADVANCE)**

**Description:** Panel Data Methods 1 – Fixed and Random Effect Estimators

Readings to come.

**Session PHD3: APRIL 30, 2-3:30 PM (RECORDED LECTURE AVAILABLE IN ADVANCE)**

**Description:** Panel Data Methods 2 – Event Studies and Differences-in-Differences Revisited

<https://www.chloeneast.com/metrics-discussions.html>

<https://github.com/kylebutts/did2s/>

Scott Cunningham, “Callaway and Sant'anna DD estimator”, Available from <https://causalinf.substack.com/p/callaway-and-santanna-dd-estimator>

Borusyak, Kirill, and Xavier Jaravel. "Revisiting event study designs." *Available at SSRN 2826228* (2017). Available from <https://scholar.harvard.edu/files/borusyak/files/borusyak_jaravel_event_studies.pdf>

Athey, Susan, and Guido W. Imbens. *Design-based analysis in difference-in-differences settings with staggered adoption*. No. w24963. National Bureau of Economic Research, 2018.

**Session PHD4: APRIL 30, 2-3:30 PM (RECORDED LECTURE AVAILABLE IN ADVANCE)**

**Description:** NonlinearDifferences-in-Differences

**Session PHD4 MAY 7, 2-3:30 PM (RECORDED LECTURE AVAILABLE IN ADVANCE)**

**Description:** Statistical Inference for Policy Evaluation

Note: Examples and code will be provided in R and Stata (where possible)

Rokicki, Slawa, et al. "Inference with difference-in-differences with a small number of groups." *Medical Care* 56.1 (2018): 97-105.

Conley, Timothy G., and Christopher R. Taber. "Inference with “difference in differences” with a small number of policy changes." *The Review of Economics and Statistics* 93.1 (2011): 113-125.

Montiel Olea, José Luis, and Mikkel Plagborg‐Møller. "Simultaneous confidence bands: Theory, implementation, and an application to SVARs." *Journal of Applied Econometrics*34.1 (2019): 1-17.