



Difference-in-Differences

Dates: May 28 – 30, 2023

Instructor: [Scott Cunningham](#)
Ben H. Williams Professor of Economics
Baylor University

Host: University of Stirling



Workshop description

In this workshop, we will discuss the econometric methodologies associated with two popular research designs that use repeated cross-sections and panel data: the difference-in-differences design and the synthetic control design. The former primarily focuses on multiple units receiving some intervention, whereas the latter traditionally focuses on multiple units being treated, though we will also cover matrix completion or synthetic difference-in-differences to bring the two methods together. The workshop will include exercises that range from basics of difference-in-differences using spreadsheets, to programming in R and Stata. It will bring the participant up to the cutting edge of how to handle complex situations like the inclusion of covariates and differential timing.

Daily Structure

This is a three-day workshop. The goal of the workshop is for students to gain enough knowledge from the lectures and experience from the programming activities that they become confident and capable enough to implement and interpret these methods in their own work, as well as continue to learn this new material on their own after the workshop concludes.

Audience

This Summer School is intended primarily for PhD students conducting research in economics and in other disciplines within the Social Sciences. Staff are also welcome to attend.

Assumed Prior Knowledge

Participants are expected to have a good knowledge of statistics or econometrics (demonstrated as successful completion of at least one post-graduate level course on the topic) and basic understanding of computer programming practices.

Prior exposure to the Stata system for statistical analysis is necessary.



Subject to change

Day 1: The Fundamentals of diff in diff	
0845	Arrival and registration. Welcome Dr Hector Gutierrez Rufrancos (University of Stirling)
0900 - 1030	Potential outcomes, the ATT, the DiD equation and parallel trends.
1030 - 1045	Refreshment break
1045 - 1230	OLS specifications with only one treatment group and one non-treated group.
1230 - 1330	Lunch
1330 - 1500	Best practices: bite, falsifications, event study plots.
1500 - 1515	Refreshment break
1515 - End	Parallel trends violations I: Triple differences, compositional changes.

Day 2: Differential timing	
0845	Arrival
0900 - 1030	Parallel Trends Violations II: covariates and conditional parallel trends
1030 - 1045	Refreshment break
1045 - 1230	Fixed effects and pathologies: fixed effects, constant treatment effects, differential timing and heterogenous treatment effects (Bacon decomposition)
1230 - 1330	Lunch
1330 - 1530	Callaway and SantAnna and Sun and Abraham solutions
1530 - 1545	Refreshment break
1545 - End	Imputation methods, applications

Day 3: Synthetic Control	
0845	Arrival
0900 - 1030	Canonical synth by Abadie, Diamond and Hainmueller
1030 - 1045	Refreshment break
1045 - 1230	Augmented synth by Ben-Michael, et al.
1230 - 1330	Lunch
1330 - 1530	Matrix completion with nuclear norm regularization by Athey, et al.
1530 - 1545	Refreshment break
1545 - End	Synthetic diff-in-diff



Fees and Registration

	Course Fee*	Application Portal Opens	Application Portal Closes
PhD students from within Scotland	£150	17-April-2023	19-May-2023
Members of staff affiliated with an SGPE member HEI	£300	17-April-2023	19-May-2023
External Participants	£400	17-April-2023	19-May-2023

*Apart from the costs directly associated with the Summer School, the course fees cover refreshments provided during the morning and afternoon breaks with lunch. The fees also cover a group dinner, which will take place on the 29th of May, details will be confirmed in due course. Accommodation is to be arranged separately by delegates.

Nearby Hotels

- [Stirling Court Hotel](#)
- [Stirling Highland Hotel](#)
- [The Golden Lion](#)
- [The Old Tram House B&B](#)
- [Castle Walk B&B](#)
- [Robert the Bruce Apartment](#)

For further information and to apply, please go to:

[SGPE PhD Summer School 2023](#)

Admission decisions will be communicated within a week of the respective application deadline and registration is to be completed within a week of admission notification, as otherwise the admission decision will be rescinded.

Please direct any queries to the SGPE Office: sgpe@ed.ac.uk