



## Research Designs in Political and Policy Studies

**Instructor:** Fedra Negri

**Hours:** 20

**Credits:** 3 (you can take it as a lab, or as an elective course)

**Places:** 15

**Synthesis:** The course explains why 'correlation does not imply causation' in observational studies. Then, it helps attending students performing multivariate analyses in STATA by discussing under which assumptions the association they find may be given a causal interpretation.

**Registration:** To enroll, please send an e-mail to [fedra.negri@unimi.it](mailto:fedra.negri@unimi.it) by February 28 (midnight). Provide your name, surname and student ID. Classes are open to II and III year BA students in Political Science (SPO). Due to space limitation and technicalities, only the first 15 students will be admitted. Notice that students have to attend at least 80% of the classes to access to the final examination (i.e. team work).

**Language:** English

**Timetable:**

Classes will take place at the Laboratorio Informatico of the Department of Social and Political Sciences (II floor - Passione Str. side) from 14.30 to 17.30 (except from June 05 class, that will run from 14.30 to 16.30).

- April 10 (3h) → Correlation vs. causation in observational research designs: going beyond the mantra.
- April 17 (3h) → A gentle introduction to STATA I: data management
- May 8 (3h) → A gentle introduction to STATA II: descriptive statistics and OLS regression
- May 15 (3h) → How to deal with selection bias due to observables characteristics: cem
- May 22 (3h) → An alternative: ebalance
- May 29 (3h) → Supervised team work: test your own hypotheses
- June 05 (2h): Team work presentations (14.30-16.30)

**Teaching method:** Lectures, hands on sessions on STATA (statistical software) and team work.



## Aims

The very first notion almost everyone learns in their introductory statistics classes is that ‘correlation does not imply causation’. Usually, students are presented with several examples of spurious correlations to stress that just because two variables move in *tandem*, this does not necessarily signal a causal relationship between them. In the everyday practice of statistics teaching, the message this sentence carries has been taken a little too far: it is repeated like a mantra, to criticize every observational study as being unable to detect causation behind statistical association.

The course provides a gentle introduction to statistical analysis in the field of political science. Students who will attend classes, will by the end of the module be able to:

- understand under which assumptions correlation unveils causation in observational studies;
- develop a sound research design and perform multivariate analyses on STATA;
- grasp the improvements introduced by weighting and matching procedures;
- master debates on the necessary conditions for their own inferences on observational data to justify a causal interpretation.

**Content:** The module explains that ‘correlation does not imply causation’ in observational studies because of selection bias and model dependence. Then, it introduces attending students to the statistical software STATA, showing them how to perform simple multivariate regression analyses on observational data in the field of Political Science. Lastly, it reviews and simplifies matching and weighting procedures that attempt to mimic an experimental research design using observational data.

**Exam:** Students will be assessed based on their actively taking part to the class, individual work as well as teamwork. In detail, working in groups of three people, attending students will have to: 1. identify an original research question and formulate related hypotheses; 2. find a suitable dataset and develop a feasible research design to test the hypotheses; 3. run the statistical analysis; 4. present and discuss their results through