Statistics 9210: Observational Studies
Syllabus

Professor: Dylan Small
E-mail: dsmall@wharton.upenn.edu
Office: 417 Academic Research Building

Office Hours: TBA

Teaching Assistant: TBA

Class Website: TBA

Recommended Texts: The notes and handouts will aim to be self-sufficient. A recommended text for additional reading is
P. Rosenbaum (2002), *Observational Studies*, 2nd Edition, New York: Springer-Verlag.

Course description: This course will cover statistical methods for the design and analysis of observational studies. Topics for the course will include the potential outcomes framework for causal inference; randomization inference for randomized experiments; matching, propensity score and regression methods for controlling confounding in observational studies; tests of hidden bias; sensitivity analysis; and instrumental variables.

Course Requirements: Grades will be based on homework assignments (half) and your final project (half).   For the final project, you could choose to (1) read about a statistical method related to observational studies that was not covered in class, and carry out a simulation study or data analysis to illustrate the method; (2) develop a new statistical method or theoretical result that could be an extension of an existing method or theoretical result; or (3) conduct a thorough data analysis using some of the methods covered in class. You can work alone or in a group of 2-3 for your final project. Your final project report will be due TBA.

Computing software: We will make use of the freeware statistical computing software R. R can be downloaded from http://www.r-project.org/ .

Course Prerequisites: Stat 5200, Stat 9610 or Stat 9700, or permission of instructor.

Use of Generative AI: You may use generative AI programs (e.g., tools like ChatGPT) to help generate ideas and brainstorm. However, you should note that the material generated by these programs may be inaccurate, incomplete, or otherwise problematic. Beware that use may also stifle your own independent thinking and creativity. You may not submit any work generated by an AI program as your own. If you include material generated by an AI program, it should be cited like any other reference material (with due consideration for the quality of the reference, which may be poor).