BSTA660: Design of Observational Studies

Fall 2022, October 19 – December 12, Blockley 418
Monday and Wednesday 12:00 – 1:30
Office hours: Wednesday 11:00 – 12:00

Course Director

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Course Description

The objective of this course is to prepare students to design and analyze medical research studies using observational data. Through a combination of lectures and hands-on assignments, students will learn to identify an appropriate study design to answer a given research question, identify possible sources of bias, conduct an analysis appropriate to a given study design and interpret results, and conduct sensitivity analyses to evaluate robustness of results to common sources of bias and error.

Topics for the course will include:
- observational study designs
- common sources of bias
- confounder control via matching and propensity scores
- sensitivity analysis

Course Requirements and Grading

- Three homework assignments (15% each)
- Final project (30%)
- Class participation (25%)

Course Materials

Required Text: Lash T, Vanderweele T, Haneuse S, Rothman KJ. *Modern Epidemiology,* 4th Edition. Philadelphia: Wolters Kluwer; 2021.
Optional Text: Weiss N, Koepsell T. *Epidemiologic Methods,* 2nd Edition. New York: Oxford UP; 2014.

Material from the textbook will be supplemented with readings from the statistical and epidemiologic literature.

In case of conflict, lecture material takes precedence over readings.

Class Canvas Site

This course will use Canvas to share materials including lecture notes and readings, to submit homework assignments, and to interact outside of the classroom via the discussion board. Lecture notes and readings from sources other than the textbook will be made available prior to class each week. Links to recordings of lectures will also be made available via Canvas. Students should check Canvas regularly for information.

Expectations

Students are expected to:

- Complete all assigned readings prior to class.
- Participate in class discussions and activities.
- Complete all homework assignments and the final project by the due date. No credit will be given for late assignments except in extraordinary circumstances.
- Comply with the University of Pennsylvania's Code of Academic Integrity policy on plagiarism. Students may work together on homework assignments, but the final submitted document should be prepared by each individual student. No credit will be given for work that is plagiarized, either from another student, the internet, or any other source.