

LO: Course Orientation

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Welcome + Course Basics

- We will meet twice a week in person:
 - Monday's 1-2:30 in M1152 SPH II
 - Wednesday's 1-2:30 in M3755 SPH I
- Textbook:
 - "What If?" By Miguel Hernán and James Robins
 - Other readings will be provided as pdfs

Course Structure

Tour of **Canvas site**

What is Causal Inference?

- Causal inference is the art and science of using statistical tools to answer causal questions.
- Interpreting statistical parameters as causal parameters requires:
 - A language and philosophy of causality.
 - A model of the system you are studying.

What We Will Learn in this Class

- Languages of causality:
 - Counterfactuals and Potential Outcomes
 - Graphical models
 - Structural Equation Models
- Identifiability conditions
- Estimation strategies:
 - Weighting, standardization, G-estimation
 - Propensity scores and matching
 - Instrumental variable analysis
 - Methods for time-varying treatment
 - ...

About Me

- Jean Morrison (call me Jean, Dr. Morrison is also ok) (they/them).
- Research Interests:
 - Statistical genetics
 - Instrumental variable analysis with genetic instruments
 - High dimensional biological data
 - Data integration (combining multiple sources of Hi-D data)
 - Applications of ML tools in causal inference.
- I like animals and outdoor activities (hiking, biking, kayaking, etc).



About This Class

- This is the first teaching of this variation of this class!
- Please tell me what you like and what you don't like.
- Plans may change as the semester progresses.
- I will teach it again next year: If you are auditing because you don't have time this year, consider taking the class next year.

About This Class

- The goal is to create an active, collaborative, learning environment.
- Ground rules:
 - Be engaged, ask questions, and contribute to discussions.
 - Complete assignments on schedule.
 - Be respectful of me and your classmates.

Covid Contingency Plans

- The class is in-person unless the University changes course.
 - I do not control this.
- There will always be a Zoom option:
 - Let me know ahead of time if you are planning to Zoom.
 - Use the Zoom option for circumstances when you really can't be here (you or your family are sick or exposed, an emergency has kept you home, travel disruptions, etc.).
 - You don't have to tell me why you are Zooming in.
- If I get sick or have a close exposure we will switch to remote until I can come back.
 - Or I will ask a colleague to cover classes.

Intro Survey

Please fill out **the introductory survey** by Friday.