Hypothetical interventions for exposure mixtures

Practical theory and applications for epidemiologists

End: What you did and didn’t learn today

What you didn’t learn

- Longitudinal g-computation
  - Particularly with time-varying confounders
  - The level of difficulty goes up quickly
- Causal diagrams and how to more deeply interrogate causal assumptions
- Dealing with missing data, measurement error, etc. which can complicate things like bootstrapping
- Inverse probability weighting and why it doesn’t usually work in environmental epidemiology

What you did learn

- Causal methods allow us to ask interesting questions about mixtures that relate to public health
- The methods themselves do not permit interpretation as causal effects: need to understand assumptions!
- Practical approaches to analyze mixtures and other environmental exposures beyond logistic and linear regression (but still using them!)
- Simulation based tools to develop intuition about causal inference

Resources to take next steps:

- https://github.com/alexpkeil1/ISEE_2020_causal/
- https://causalab.hsph.harvard.edu/
- https://miguelhernan.org/whatifbook
- alex.keil@nih.gov

Questions?