

# “We’re All Social Scientists Now”

Introduction to Quantitative Social Science

# Do Police Body Cameras Affect the Use of Force?



# Do Police Body Cameras **Affect** the Use of Force?

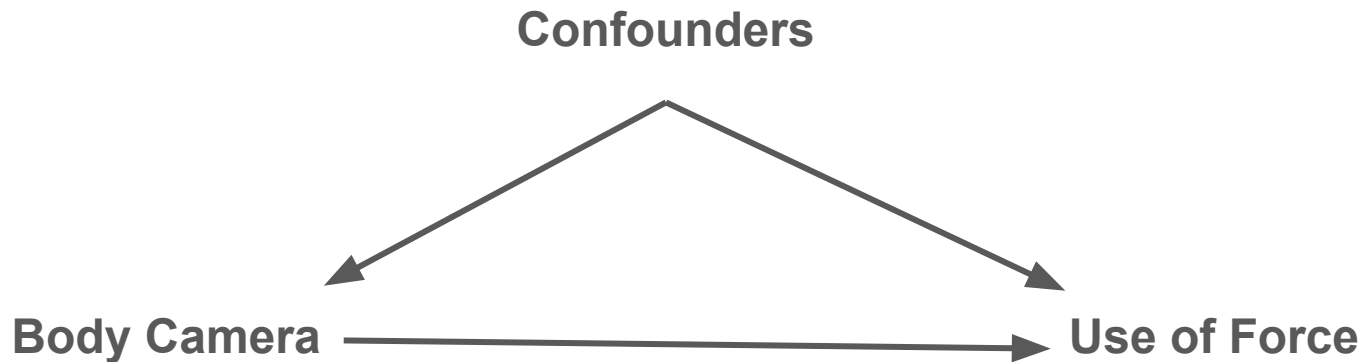


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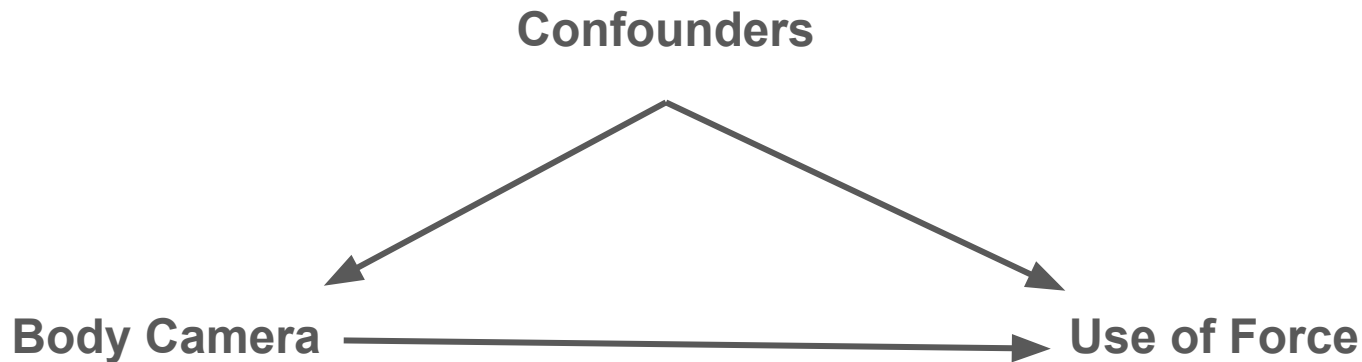
Naive estimator:  $E[\# \text{ uof} \mid \text{body cam}] - E[\# \text{ uof} \mid \sim \text{body cam}]$

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- Examples?

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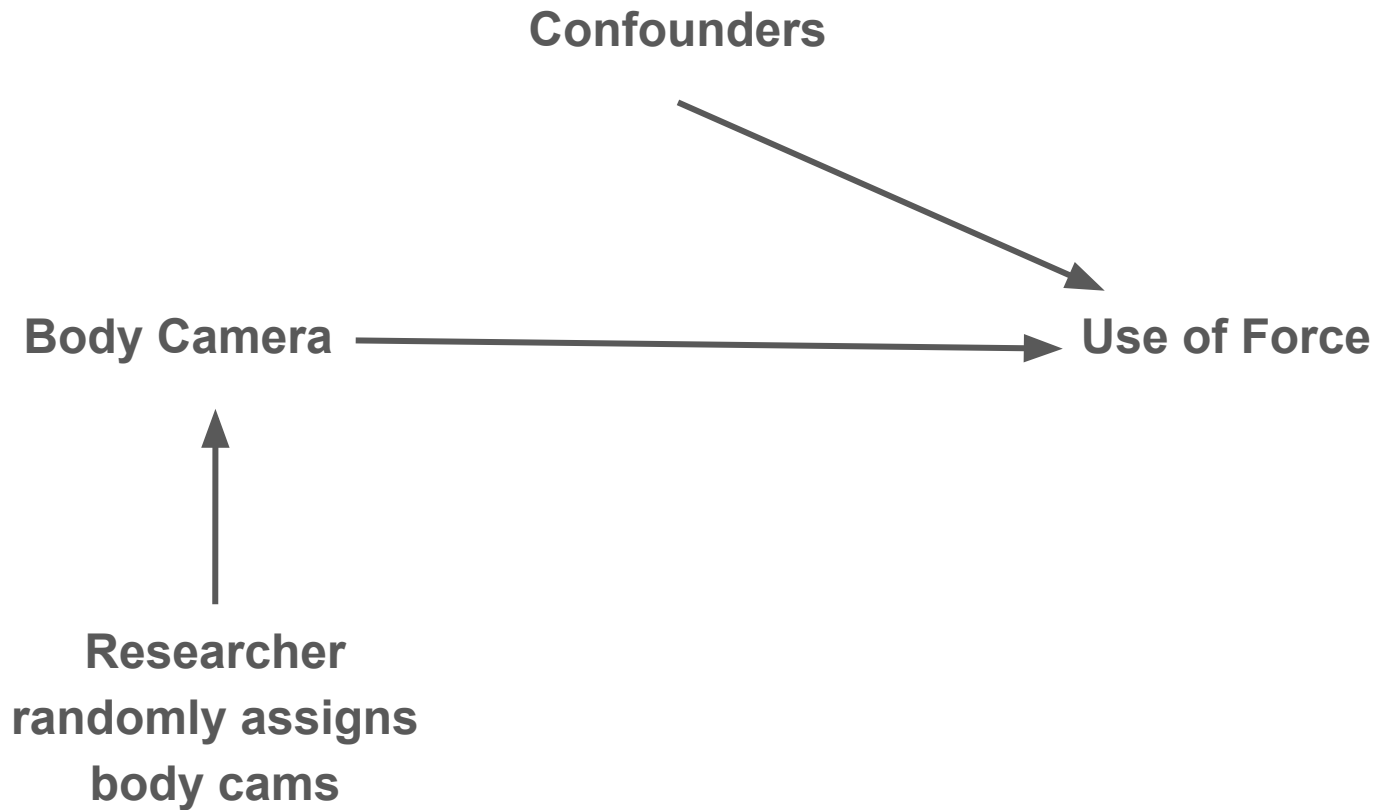


- Examples?
  - Consent decree, union, dept policy, officer assignment (e. g. undercover and patrol danger), officer quality, gvt level (fed, state, local), race, age, gender, economic status

# Causal Research Design

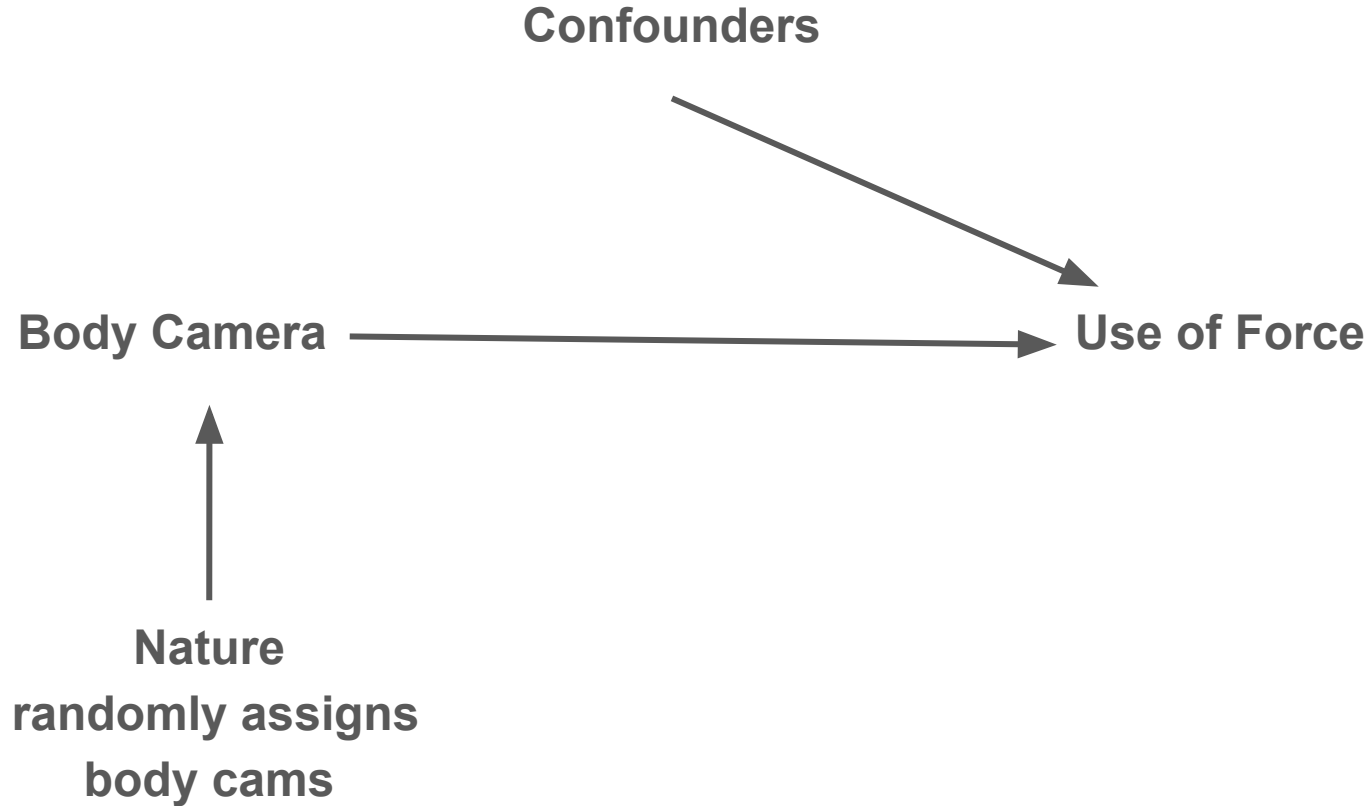
1. Experiments
2. Quasi-experiments
3. Observational studies

# Experiment

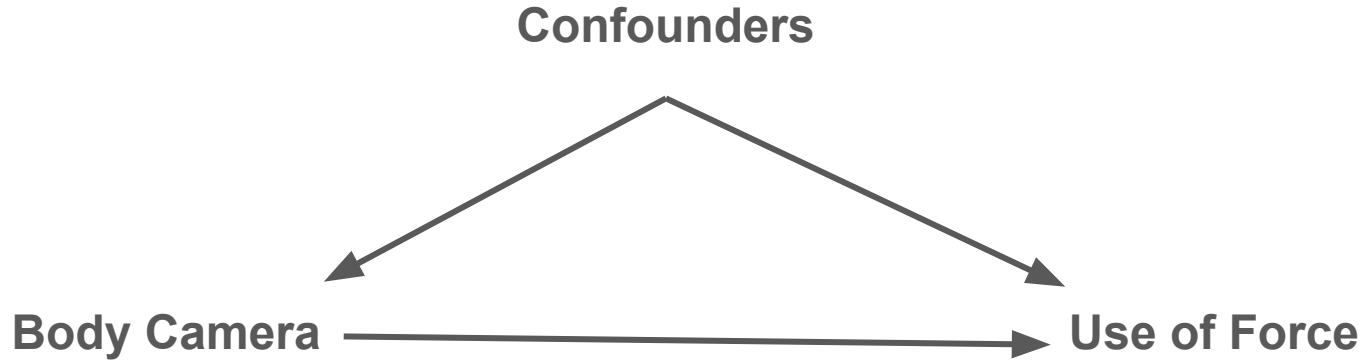




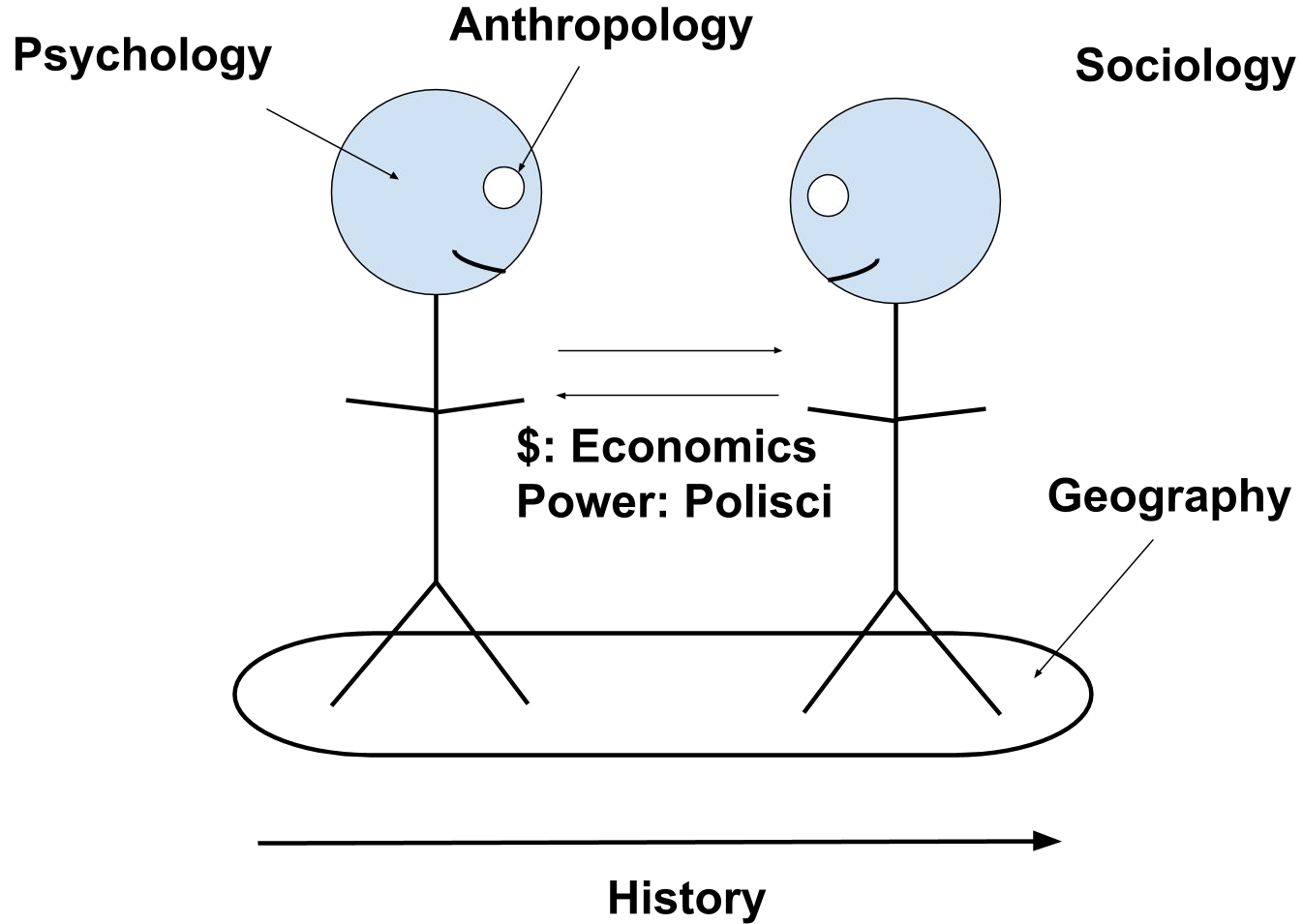
# Quasi-Experiment



# Observational Study



Include confounders in regression



# Why Social Science?

- We're interested in people
- We want to change behaviors
- Privacy, bias, inclusion

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“Statistics”: from “state.” It was meant to improve government.

# Machine Learning vs Social Science

	<b>Machine Learning</b>	<b>Social Science</b>
<b>Primary Goal</b>	Prediction	Explanation
<b>Model Selection</b>	Out-of-sample accuracy	Theory & Parameter Estimates

# Body Camera Example

- Machine learning example:  
 $E[\# \text{ uof} \mid \text{bodycam, confounders \& everything else}]$
- Social science example:  
 $E[\# \text{ uof} \mid \text{bodycam, confounders}] - E[\# \text{ uof} \mid \sim \text{bodycam, confounders}]$



# Important Social Science Issues

- Unobserved variables (missing columns)
  - E.g. 2013 NFP project: motivation of mothers in/out of the program
- Selection bias (missing rows)
  - E.g. vulnerable populations are less likely to report police misconduct
- Measurement (values are incorrect)
  - E.g. how to measure gender/race/racism?
  - E.g. How to handle missing values?
- Model specification
  - E.g. linear versus non-linear
- Stable Unit Treatment Value Assumption (SUTVA)
  - E.g. effectiveness of police department diversity training depends on group size
- Ecological inference
  - Individual-level predictions from group-level predictions
- Ethics
  - E.g. send mailers placing non-partisan judicial candidates on ideological spectrum with Montana state seal

# Some Lessons Learned for DSSG Projects

- Behaviors are better predictors than demographics
- Some important predictors
  - Race
  - Age
  - Gender
  - Econ status
  - Geography
- Some useful datasets
  - American Community Survey
  - American Time Use Survey
  - General Social Survey
  - Behavioral Risk Factor Surveillance System

# Social Science Examples

- Stanford Prison Experiment
- Milgram's Obedience Experiment
- Asch Conformity Study
- Implicit Association Test
- Social Pressure and Voter Turnout
- The Michigan Model (partisan ID)
- Republicans Should Pray for Rain
- The Political Legacy of American Slavery
- Effective Messages in Vaccine Promotion
- Crime and Punishment
- Geography and Trade
- Minimum Wages and Employment