In-person session 4

September 12, 2022

PMAP 8521: Program evaluation
Andrew Young School of Policy Studies

Plan for today

Quick useful R tips

Logic models

Measuring outcomes

DAGs

Final project details

Quick useful R tips

Visual markdown editor

Weird figure/table placement in PDFs

Figure and table captions and numbers

Side-by-side regression tables

	Model 1	Model 2	Model 3	Model 4
(Intercept)	362.307	−5780.831***	−5736.897***	−5433.534***
	(283.345)	(305.815)	(307.959)	(286.558)
bill_length_mm	87.415***		6.047	−5.201
	(6.402)		(5.180)	(4.860)
flipper_length_mm		49.686***	48.145***	48.209***
		(1.518)	(2.011)	(1.841)
sexmale				358.631***
				(41.572)
Num.Obs.	342	342	342	333
R2	0.354	0.759	0.760	0.807
R2 Adj.	0.352	0.758	0.759	0.805
AIC	5400.0	5062.9	5063.5	4863.3
BIC	5411.5	5074.4	5078.8	4882.4
Log.Lik.	−2696.987	−2528.427	−2527.741	−2426.664
F	186.443	1070.745	536.626	457.118

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

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See full documentation and examples for `modelsummary()` here

Make nicer tables when knitting with `kable()`

(Or even fancier tables with kableExtra!)

Logic models

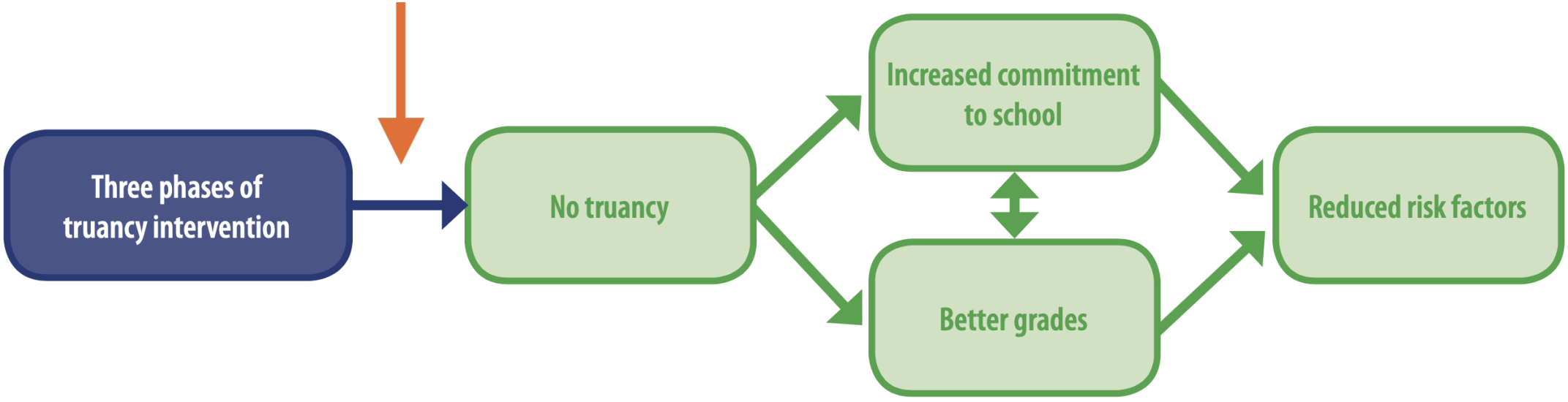
Logic models as managerial tools

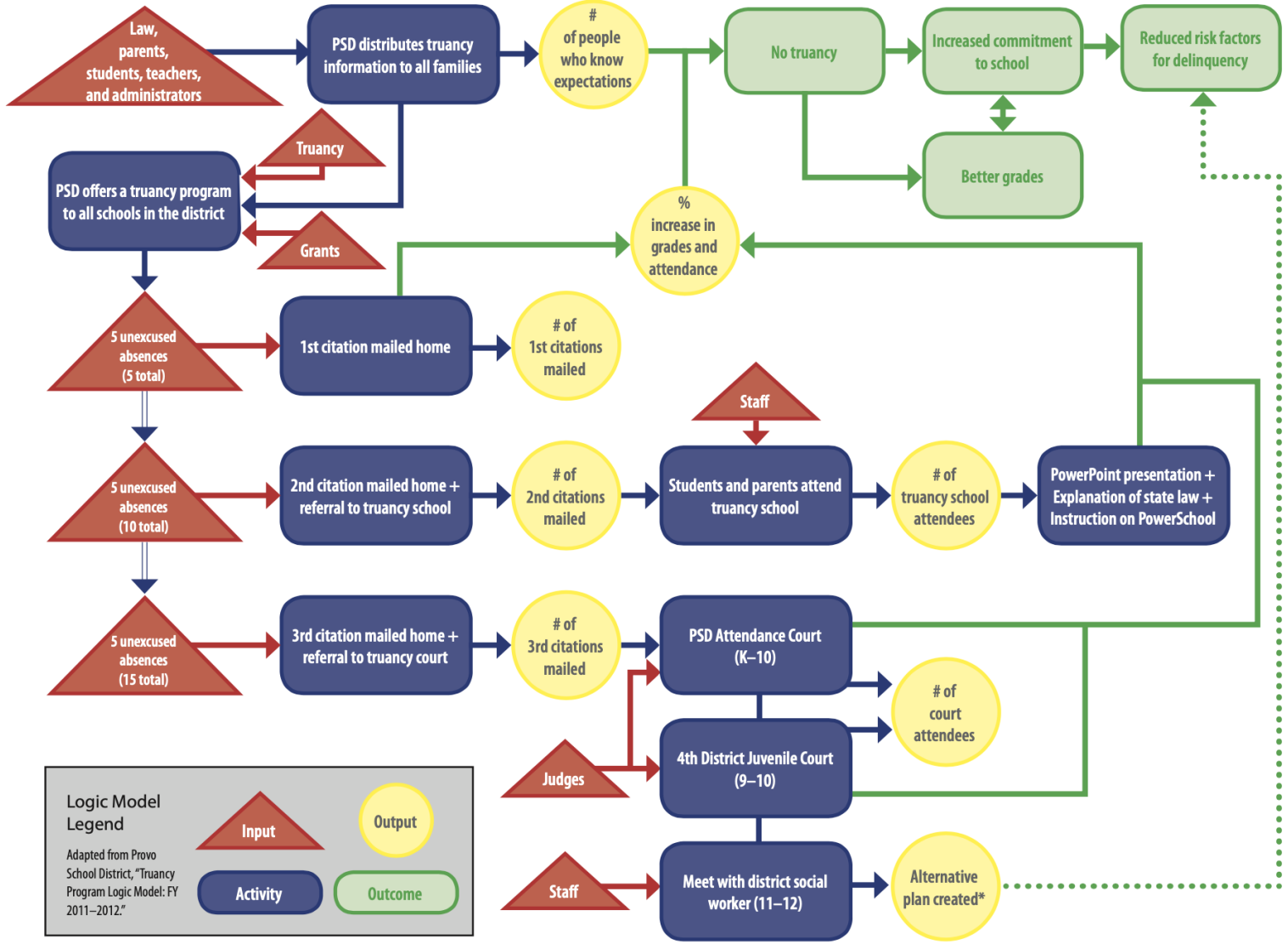
Inputs vs. Activities vs. Outputs vs. Outcomes

Impact theory vs. logic model

Impact theory

Ensure that the theory linking activities to the outcomes is sound!





* Because 11th and 12th graders who receive 3rd citations are generally unable to graduate from high school, district social workers no longer attempt to increase their commitment to school. As such, any outcomes that occur as a result of the alternative plans made for these students (work study programs, career development assistance, etc.) are only tangentially related to the outcomes of the truancy program itself. The system for creating alternative plans is an entirely separate program with its own logic model, goals, and outcomes.

MPA/MPP at GSU

Master of Public Policy

Preparing students for roles as effective citizens and workers in the public sphere.

About | Curriculum | Admissions | MPA vs. MPP | Current Students

The Master of Public Policy (MPP) is an interdisciplinary degree program designed to prepare students for work in the analysis, development, and evaluation of public policies. In all levels of government and on a global scale, public needs and limited resources require public policy choices that are at once economically efficient, socially and technically effective, and politically responsive. Such choices confront policymakers in a broad range of critical issues, including health, education, economic development, public finance, social policy, nonprofit policy, and disaster policy.

Decision-makers often lack the knowledge and skills needed to interpret the full social, political, economic, and technical dimensions of the policy issues they face. In response, state and local governments, businesses, and federal agencies have turned to trained policy analysts for assistance in assessing policy options and in evaluating public programs. The same is true for nonprofit agencies, such as hospitals, schools, emergency preparedness and relief agencies, and regional planning organizations.

Master of Public Administration

A flexible program for working professionals and full-time scholars.

About | Curriculum | Careers | Admissions | MPA vs. MPP

The mission of the Master of Public Administration (MPA) program is to prepare students to become leaders in public service careers as executives, managers, analysts, and policy specialists in government and nonprofit organizations.

Isn't it best to always have an articulated theory?

Should implicit theory and articulated theory be the same thing in most cases?

How much does this evaluation stuff cost?

Can you do scaled-down versions of these evaluations?

What if a program exists already and doesn't have a logic model?

Why would a program aim for final outcomes that can't be measured?

What should you do if you find that your theory of change (or logic model in general) is wrong in the middle of the program? Is it ethical to stop or readjust?

Measuring outcomes

Outcomes and programs

Outcome variable

Thing you're measuring

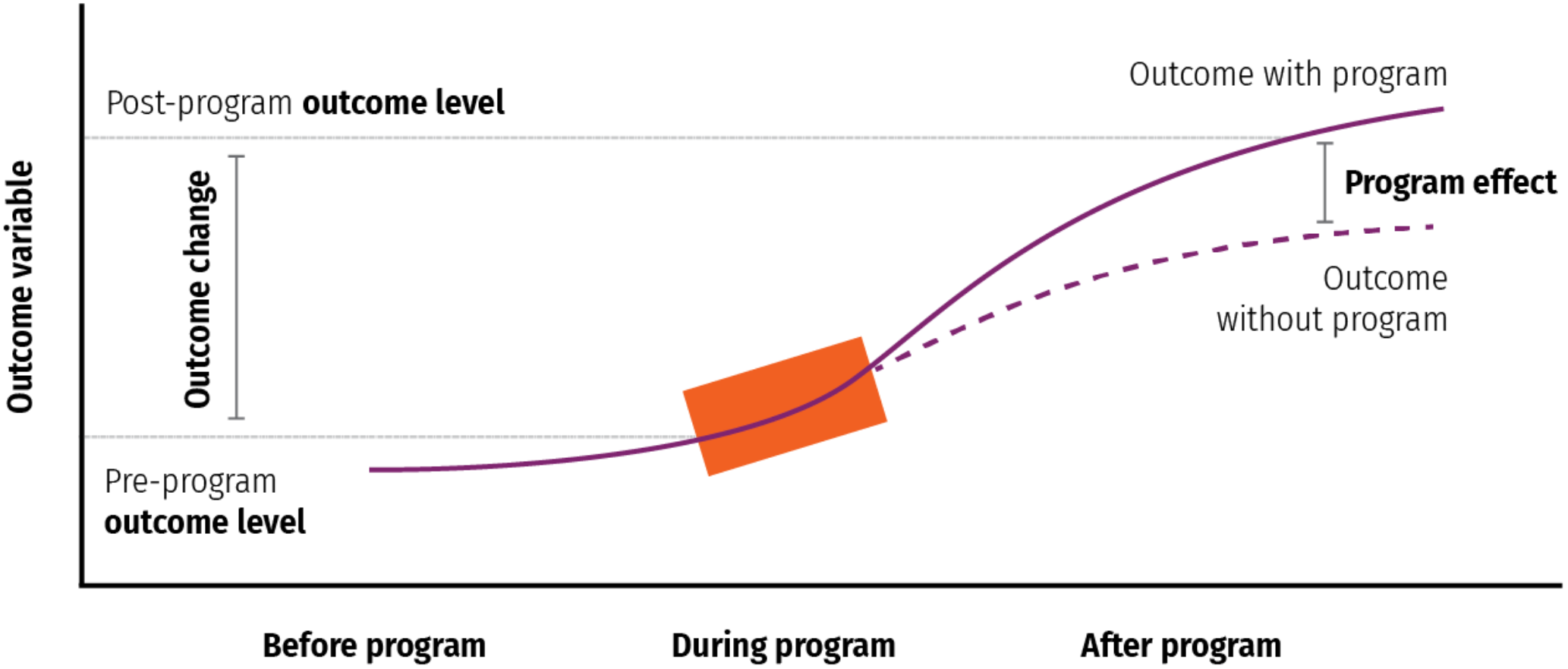
Outcome change

Δ in thing you're measuring over time

Program effect

Δ in thing you're measuring over time *because of* the program

Outcomes and programs



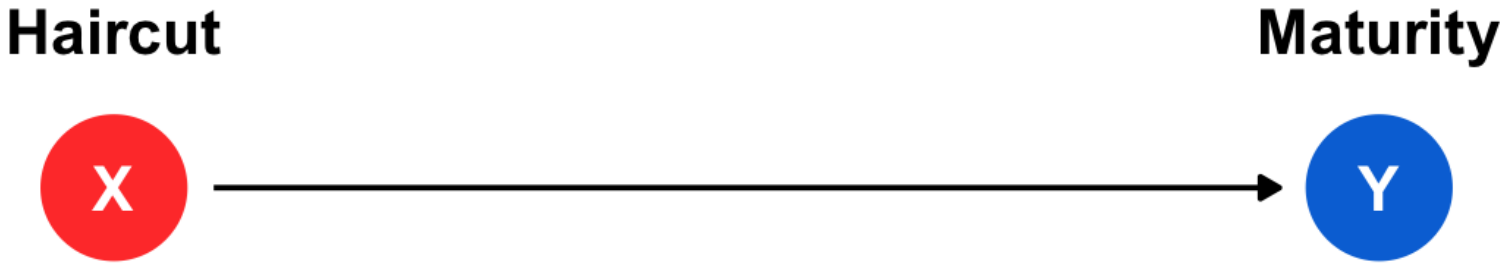
Abstraction

DAGs

Causal thinking is necessary—even for descriptive work!

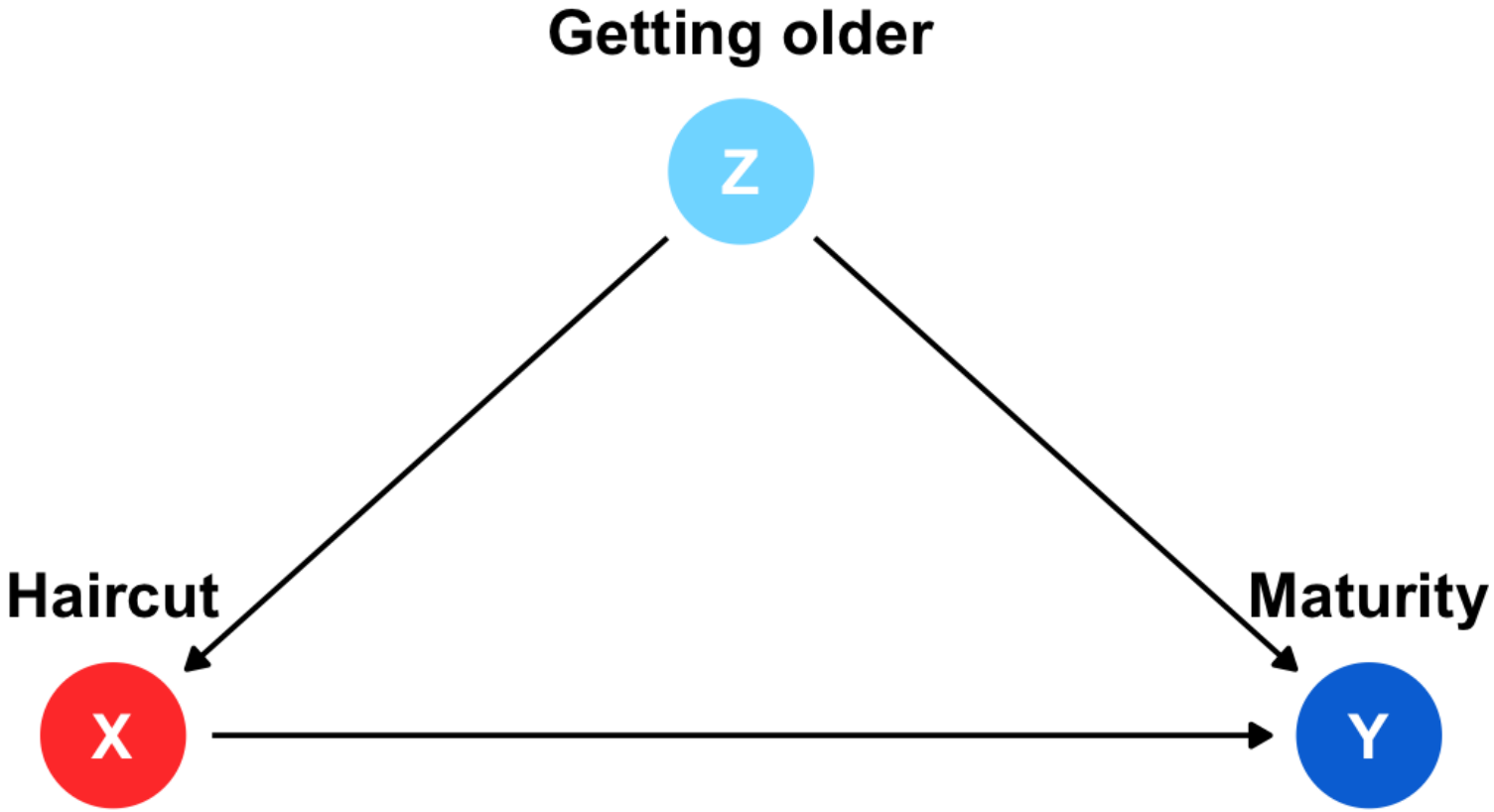
"Every time I get a haircut, I become more mature!"

"Every time I get a haircut, I become more mature!"



$$E[\text{Maturity} \mid \text{do}(\text{Get haircut})]$$

Getting older opens a backdoor path

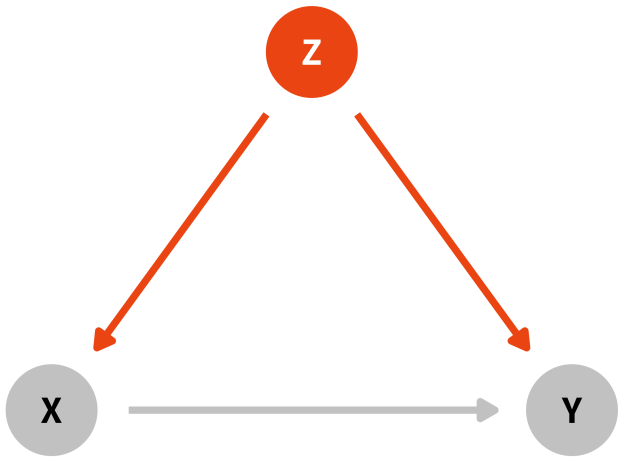


But what does that mean, "opening a backdoor path"?

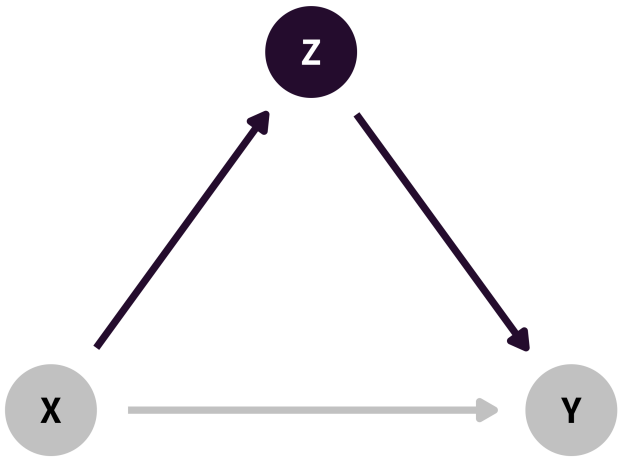
How does statistical association get passed through paths?

How do I know which of these is which?

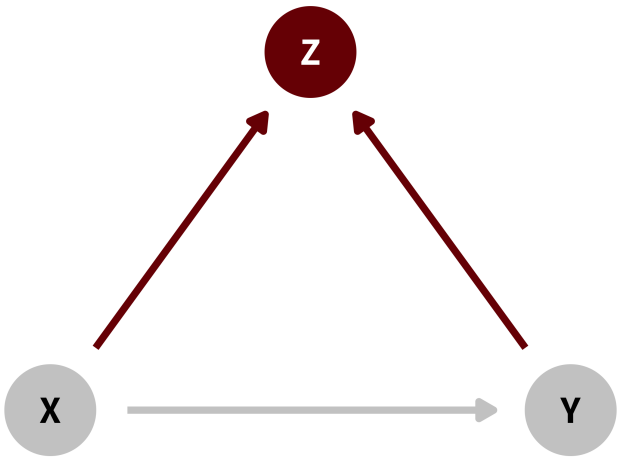
Confounder
(Fork)



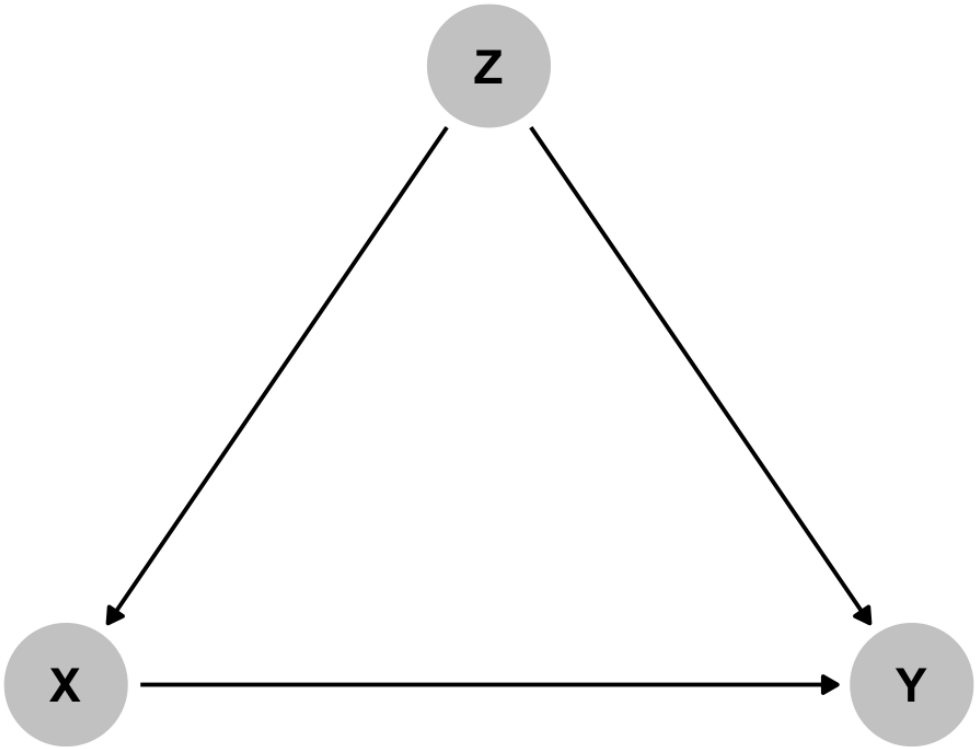
Mediator
(Chain)



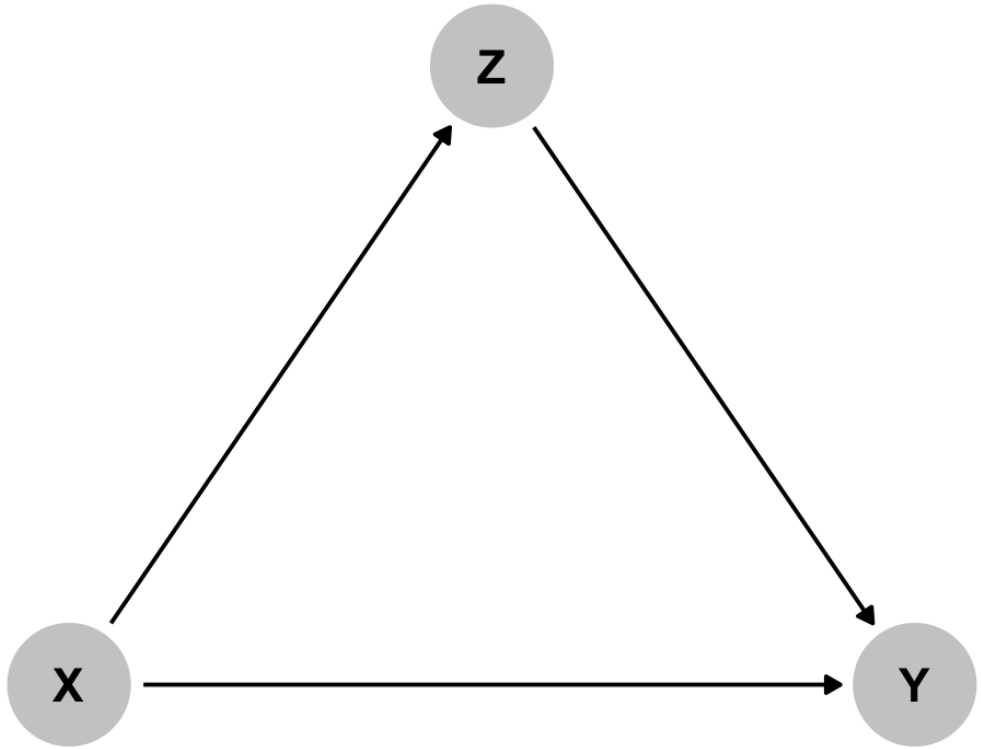
Collider
(Inverted fork)



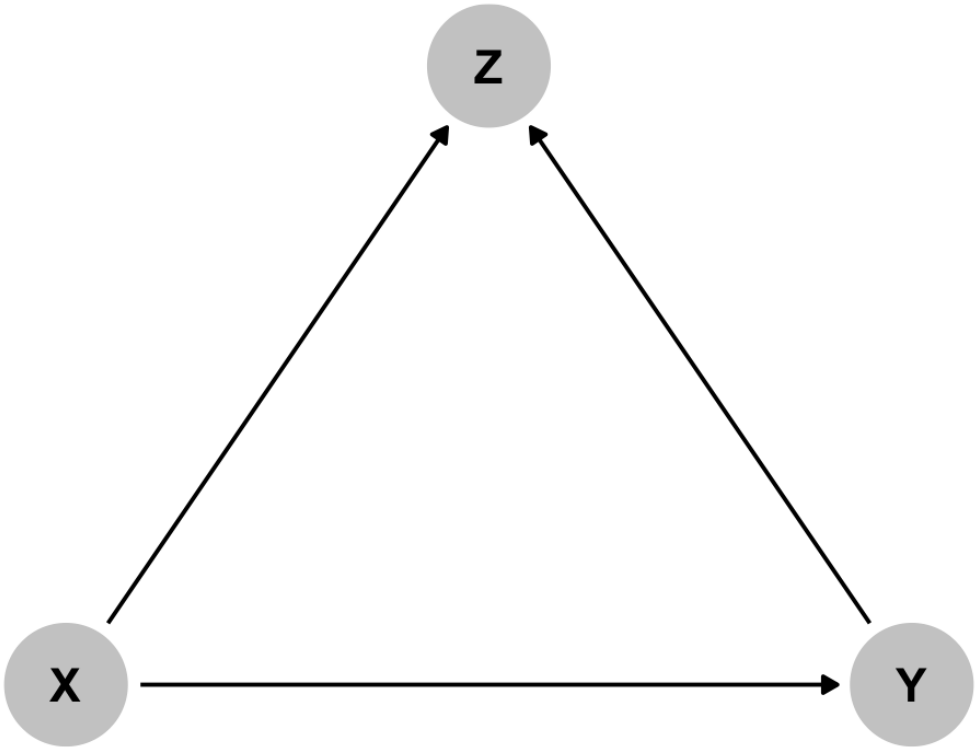

LUTRON


Z
X
Y


LUTRON


Z
X
Y


LUTRON


Z
X
Y

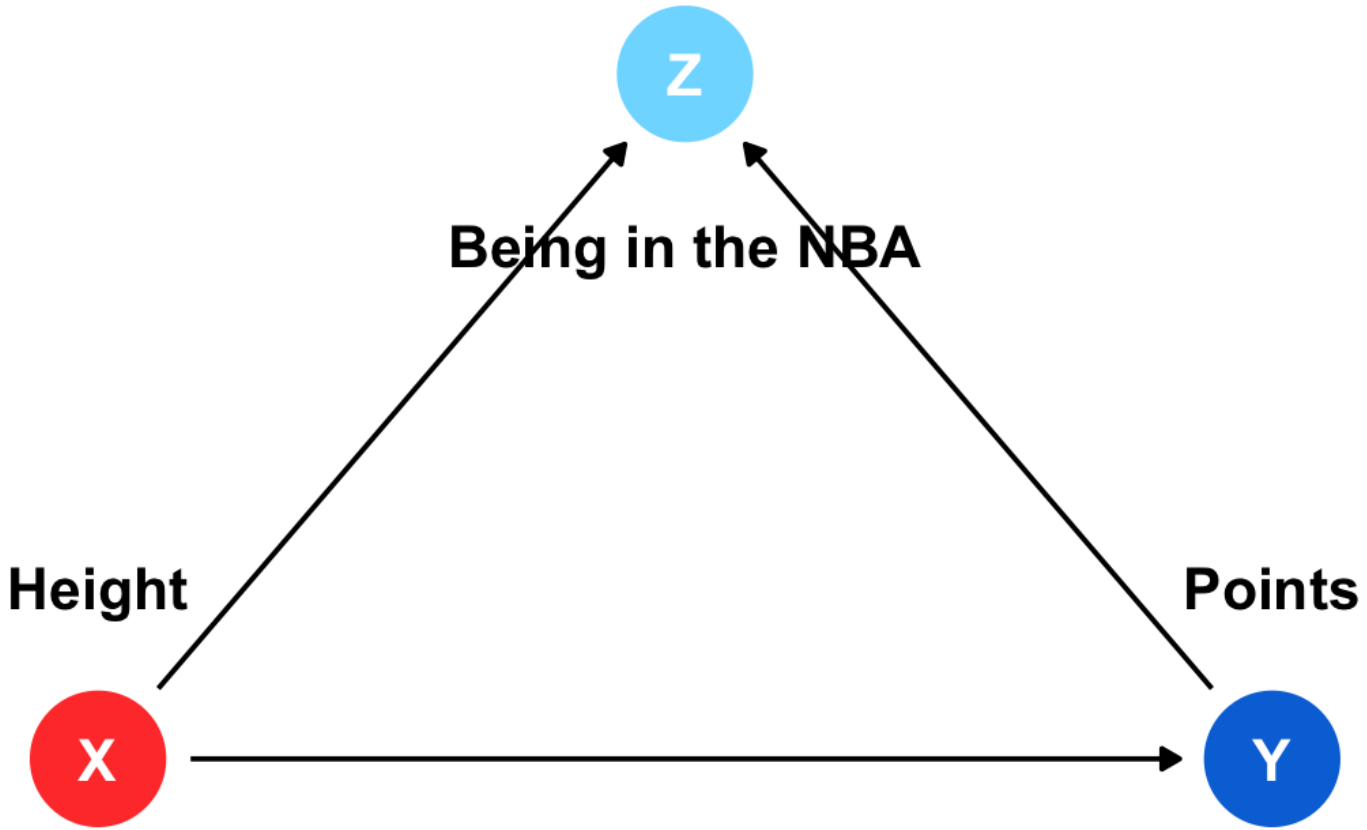
d-separation

Except for the one arrow between X and Y,
no statistical association can flow between X and Y

This is **identification**—
all alternative stories are ruled out
and the relationship is isolated

How exactly do colliders mess up your results?

It looks like you can still get the effect of X on Y

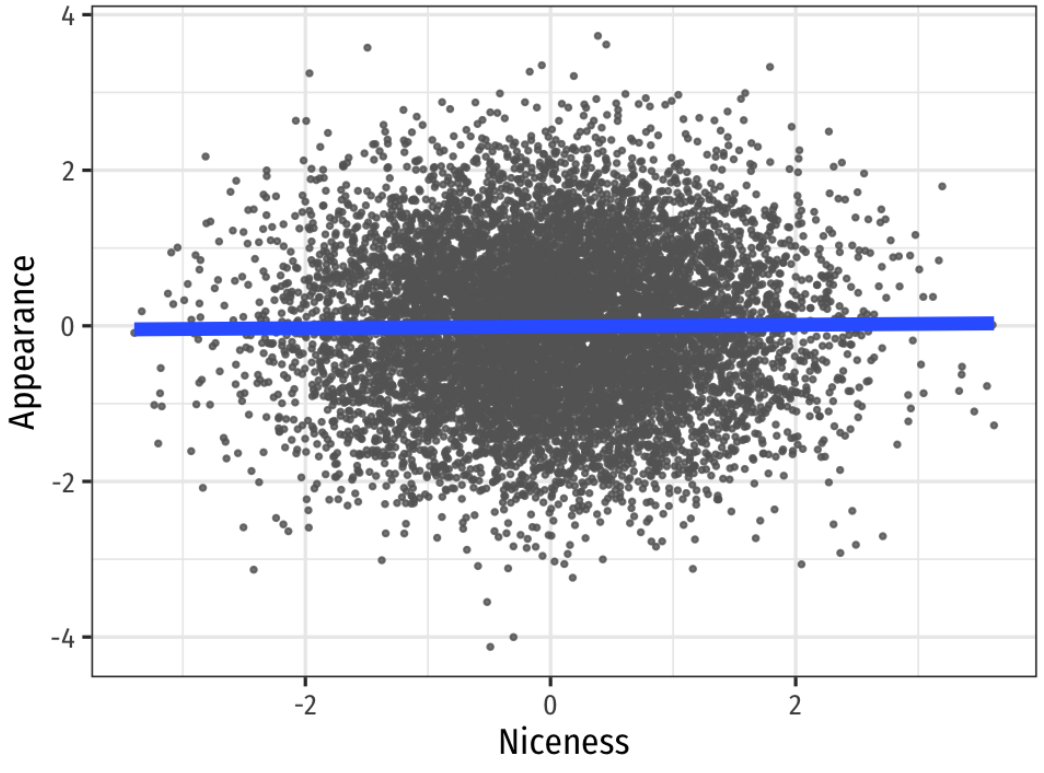

Z
Being in the NBA
Height
Points
X
Y

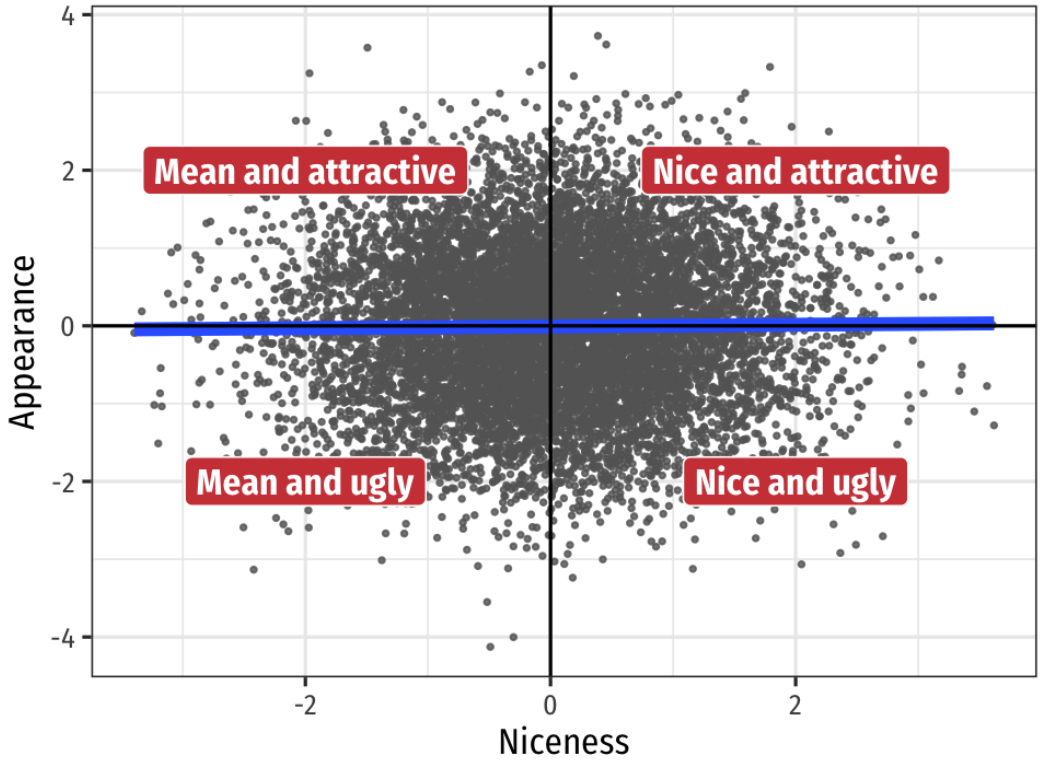
Sept. 10, 2021, 3:58 p.m. ET
By Davey Alba

Facebook sent flawed data to misinformation researchers.

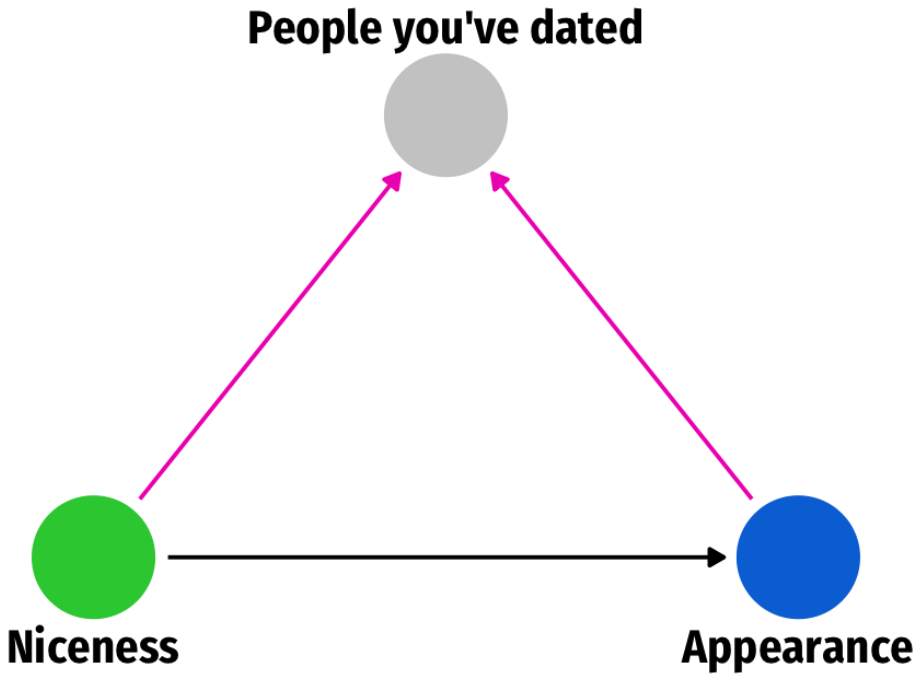
Mark Zuckerberg, chief executive of Facebook, testifying in Washington in 2018. Tom Brenner/The New York Times

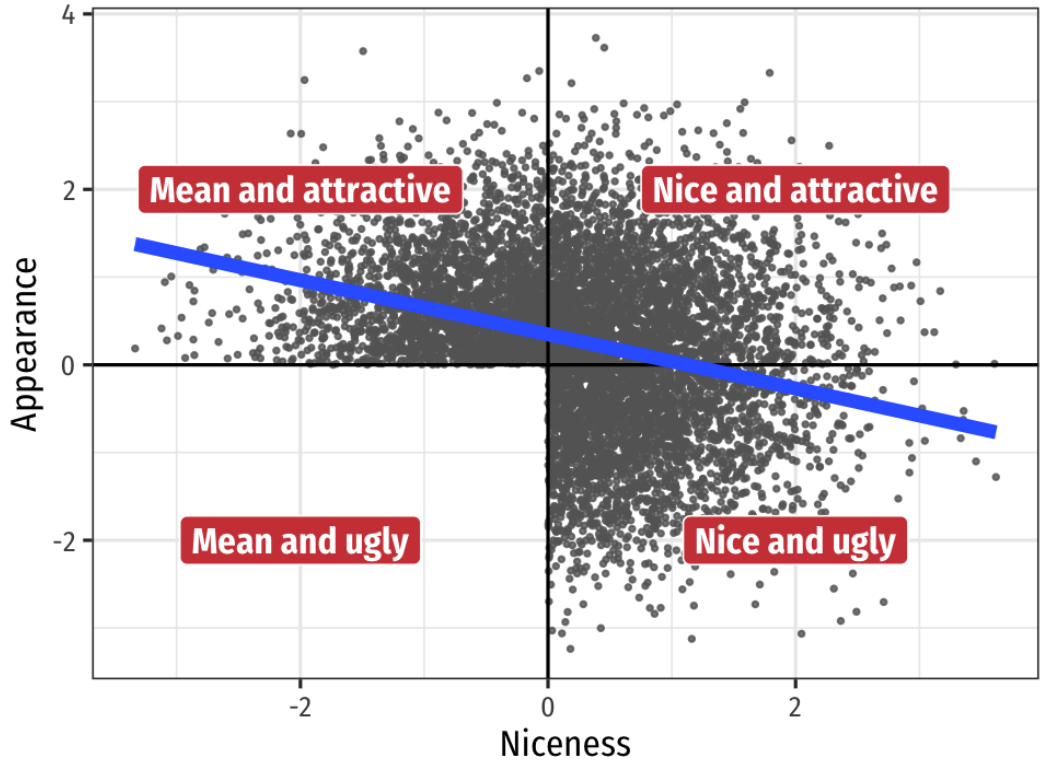
Does niceness improve appearance?





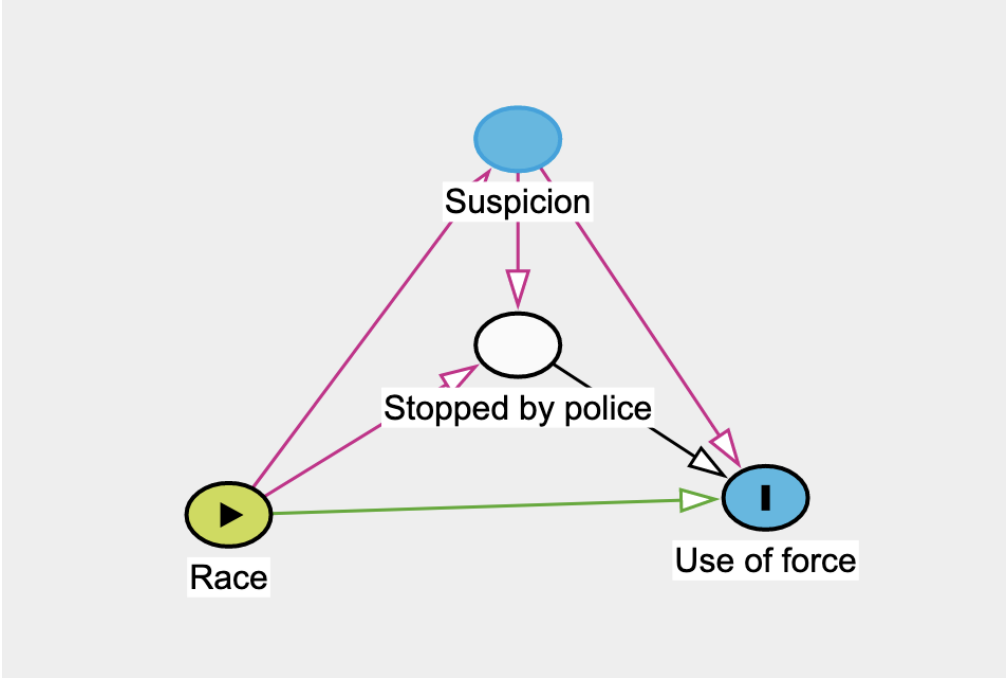
Collider distorts the true effect!





Effect of race on police use of force using administrative data

Effect of race on police use of force using administrative data



American Political Science Review, Page 1 of 19
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Administrative Records Mask Racially Biased Policing

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Researchers often lack the necessary data to credibly estimate racial discrimination in policing. In particular, police administrative records lack information on civilians police observe but do not investigate. In this article, we show that if police racially discriminate when choosing whom to investigate, analyses using administrative records to estimate racial discrimination in police behavior are statistically biased, and many quantities of interest are unidentified—even among investigated individuals—absent strong and untestable assumptions. Using principal stratification in a causal mediation framework, we derive the exact form of the statistical bias that results from traditional estimation. We develop a bias-correction procedure and nonparametric sharp bounds for race effects, replicate published findings, and show the traditional estimator can severely underestimate levels of racially biased policing or mask discrimination entirely. We conclude by outlining a general and feasible design for future studies that is robust to this inferential snare.

Concern over racial bias in policing, and the public availability of large administrative data sets documenting police–civilian interactions, have prompted a raft of studies attempting to quantify the effect of civilian race on law enforcement behavior. These studies consider a range of outcomes including ticketing, stop duration, searches, and the use of force (e.g., Antonovics and Knight 2009; Fryer 2019; Ridgeway 2006; Nix et al. 2017). Most research in this area attempts to adjust for omitted variables that may correlate with suspect race and the outcome of interest. In contrast, this study addresses a more fundamental problem that remains even if the vexing issue of omitted variable bias is solved: the inevitable statistical bias that results from studying racial discrimination using records that are themselves the product of racial discrimination (Angrist and Pischke 2008; Elwert and Winship 2014; Rosenbaum 1984). We show that when there is any biased absent additional data and/or strong and untestable assumptions.

This study makes several contributions. We clarify the causal estimands of interest in the study of racially discriminatory policing—quantities that many studies appear to be targeting, but are rarely made explicit—and show that the conventional approach fails to recover any known causal quantity in reasonable settings. Next, we highlight implicit and highly implausible assumptions in prior work and derive the statistical bias when they are violated. We proceed to develop informative nonparametric sharp bounds for the range of possible race effects, apply these in a reanalysis and extension of a prominent article on police use of force (Fryer 2019), and present bias-corrected results that suggest this and similar studies drastically underestimate the level of racial bias in police–civilian interactions. Finally, we outline strategies for future data collection and re-

Smoking → Cardiac arrest example

How can you be sure you include everything in a DAG?

How do you know when to stop?

Is there a rule of thumb for the number of nodes?

Why can we combine nodes in a DAG if they don't represent the same concept?

Why include unmeasurable things in a DAG?

Why do DAGs have to be acyclic?

What if there really is reverse causation?

How do we actually adjust for these things?

What's the difference between logic models and DAGs?

Can't I just remake my logic model in Dagitty and be done?

DAGs vs. Logic models

DAGs are a *statistical* tool

Describe a data-generating process and isolate/identify relationships

Logic models are a *managerial* tool

Oversee the inner workings of a program and its theory

Berkeley Will Fully Close Its Streets to Create Giant Outdoor Dining Rooms

3

Berkeley is moving fast to expand outdoor dining

by Eve Batey | May 14, 2020, 1:02pm PDT

SHARE

How cities can add accessible green space in a post-coronavirus world

June 11, 2020 3.40pm EDT

Cities can prepare for climate change emergencies by adding green spaces to help manage stormwater, heat stress and air quality. (Shutterstock)

The COVID-19 pandemic has forced governments to weigh the benefits of keeping green spaces open against the public health concerns that come from their use. During the pandemic, playgrounds have been taped off, parks locked and access to outdoor spaces for recreation cut off.

Green spaces have positive effects on mental health, physical fitness, social cohesion and spiritual wellness. Although researchers say the coronavirus spreads more easily indoors than outdoors, they also believe the concentrated use of green spaces will increase the transmission of COVID-19.

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