



Doing Applied Research

Starting your research project

D. Mark Anderson



Introductions

- Mark Anderson (Montana State University, NBER and IZA)
 - Applied microeconomist (health and econ history)
 - Hospital desegregation and Black-White infant mortality
 - Public health investments at the turn of the 20th century and infectious disease mortality
 - Breakthrough medicines and racial health gaps
- 1.) (i) Starting your research project
 - (ii) When to cut the cord
 - (iii) Managing your projects
- 2.) How to write an effective introduction
- 3.) If we have time, we can vote on final topic to discuss...



What is this lecture?

- A hidden curriculum
- What I wish I would have learned as a graduate student/junior professor
- There is a template for starting a project
 - Especially true for projects based on well-defined natural experiments (e.g., DD)
 - But also applies more broadly within applied micro and beyond
- Part of a broader (virtual) workshop (Mixtape Session: *The Hidden Curriculum*) where we do a deep dive on how to write an applied micro paper
 - Next workshop is Aug. 5-6 (https://www.mixtapesessions.io/session/applied_aug5/)



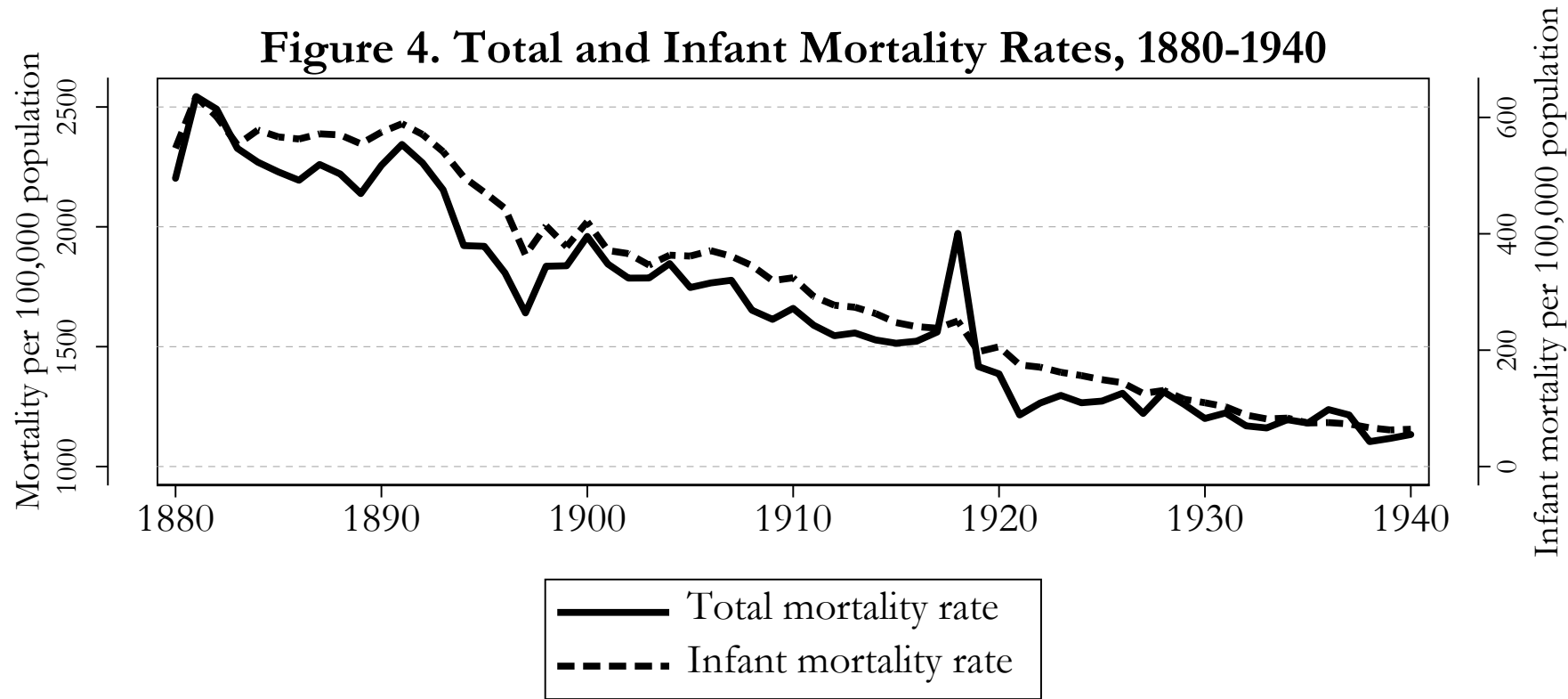
Starting Your Research Project

- What makes a research question viable?
- The three hurdles:
 - (i) Is it interesting/important/policy relevant?
 - (ii) Are you filling a clearly defined gap in the literature?
 - (iii) Are the data available? Does a well-defined natural experiment exist?
- I still use this basic process



Hurdle #1. Is it interesting/important/policy relevant?

- How do I know if my idea is interesting?
 - Seems interesting to me, but...
 - Pitch your idea broadly, especially to other (critical) economists
 - Try-to-kill-my-idea sessions
 - Pitch your idea to non-economists
 - I used to pitch my ideas to my father (and he was a dentist)
 - My wife hates all of my ideas...
- If it is interesting, does that mean it is “important”?
 - Yes! Which leads to...
- Does my idea have to be policy relevant?
 - It depends
 - Consider the U.S. mortality transition...



Notes: Based on annual data for San Francisco, CA; Washington, DC; Chicago, IL; New Orleans, LA; Baltimore, MD; Boston, MA; St. Paul, MN; St. Louis, MO; Jersey City, NJ; New York City, NY; Cincinnati, OH; Philadelphia, PA; Pittsburgh, PA; Memphis, TN

- Is there policy relevance to explaining the urban mortality transition?
 - Sure, maybe.
- But, trying to better understand “one of the most significant developments in the history of human welfare” is interesting in and of itself!
- Do not force a project to be policy relevant if it isn't or, more importantly, does not need to be





Hurdle #2. Are you filling a gap in the literature?

- Become an expert of the relevant literature.
- How do I do this?
 - For each project, I create a literature-review binder
 - 1.) Start with econ search engines (JSTOR, Econ Lit, NBER WP, etc.) before more general (e.g., Google Scholar)
 - 2.) Sort by theoretical vs. empirical
 - 3.) Sort by how well the papers published
 - 4.) Sort empirical papers by the credibility or type of research design
 - Cross-sectional vs. panel
 - IV vs. DD vs. RD
 - 5.) AI can help with this process, but not a substitute
- If you do this, you will know *exactly* how you are building on existing studies.
- Do not learn the lesson the hard way...



BEYOND THE CLASSROOM: USING TITLE IX TO MEASURE THE RETURN TO HIGH SCHOOL SPORTS

Betsey Stevenson*

Abstract—Between 1972 and 1978 U.S. high schools rapidly increased their female athletic participation rates in order to comply with Title IX. This paper examines the causal implications of this expansion by using variation in the level of boys' athletic participation across states before Title IX to instrument for change in girls' athletic participation. Analysis of differences in outcomes across states in changes between pre- and postcohorts reveals that a 10 percentage point rise in state-level female sports participation generates a 1 percentage point increase in female college attendance and a 1 to 2 percentage point rise in female labor force participation.

I. Introduction

WHILE economists have spent decades estimating the returns to an additional year of schooling, less is known about how what young people do in school contributes to these returns. One presumption is that classroom learning is the source of these returns, yet academic research has simultaneously had little success connecting the returns

further research suggests that teenage height and selection into athletics are both related to socioeconomic factors.³ This research follows a long debate in both economics and sociology about the merits of high school sports. Many studies have documented a positive relationship between participation in high school athletics and educational aspirations, educational attainment, and wages later in life.⁴ However, others have argued that athletics distracts from more scholarly pursuits (Coleman, 1961).

What remains elusive is whether benefits associated with athletics are treatment effects (caused by participation) or merely selection effects (associated with the type of student who chooses to participate in athletics). Much of the existing research has focused on sorting out the possible mediating mechanisms without adequately addressing the fact that students are not randomly assigned to participation in

Hurdle #3. Are the data available? Does a well-defined natural experiment exist?



- Hardest hurdle to overcome.
- Do not assume the data exist...get on this yesterday!
 - Even if data exist, collecting/cleaning/etc. can be a heavy lift...get on this yesterday!
- Data on X and Y are available, but I do not have a well-defined natural experiment. Should I dump the idea?
 - As a grad student trying to write your JMP, you should probably dump it.
 - As a junior prof. trying to get tenure, you should probably dump it.
 - Maybe you can pivot to a non-econ journal, but this takes time
 - You can become a structural labor economist, but then you won't have any friends.
 - Just kidding!

Hurdle #3 (continued)



Start with hypothesis of interest and then try to identify a natural experiment
vs.

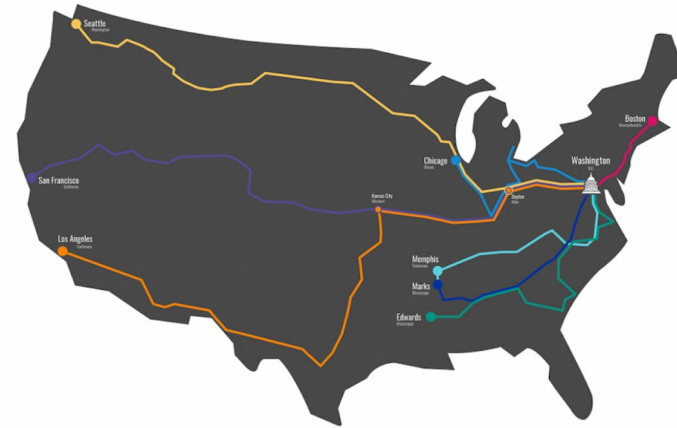
Observe a natural experiment and then come up with a question

- Some think the pure form of research is to do the former.
 - Impractical
 - Miss out on a lot of good topics
- Always have your natural-experiment radar on..."one does not know where an inspiration will come from."



- My trip with Dan to the Smithsonian Museum of American History

Poor People's Caravan – March on D.C. to demand economic and human rights for poor Americans of diverse backgrounds in 1968.



Contents lists available at [ScienceDirect](#)

Explorations in Economic History

journal homepage: www.elsevier.com/locate/eeh



Research Paper

Civil rights protests and election outcomes: Exploring the effects of the poor people's campaign

D. Mark Anderson^{a,*}, Kerwin Kofi Charles^b, Krzysztof Karbownik^c, Daniel I. Rees^d, Camila Steffens^e





- “Lively discussions” with my wife

Are child car seats effective?

ARE BOOSTER SEATS MORE EFFECTIVE THAN CHILD SAFETY SEATS OR SEAT BELTS AT REDUCING TRAFFIC FATALITIES AMONG CHILDREN?

D. MARK ANDERSON
SINA SANDHOLT

American Journal of
Preventive Medicine

RESEARCH ARTICLE

Booster Seat Effectiveness Among Older Children:
Evidence From Washington State

D. Mark Anderson, PhD,¹ Lindsay L. Carlson, MD,² Daniel I. Rees, PhD³

Original research

Rear-facing child safety seat effectiveness: evidence from motor vehicle crash data

D Mark Anderson ,^{1,2} Ridge W Peterson¹



Journal of Health Economics

Volume 91, September 2023, 102774



Does becoming a physician increase prescription drug use and worsen mental health?

The effects of becoming a physician on prescription drug use and mental health treatment

D. Mark Anderson^{a, e}  , Ron Diris^{b, e}, Raymond Montizaan^{c, e}, Daniel I. Rees^d



But, most importantly, become an expert of the institutional details, historical context, literature, etc. of your areas of interest

- Do this and ideas will naturally come!

- If you can get over these 3 hurdles, you are off to the races!



Edwin Moses, the greatest 400m hurdler of all time

- If you can't, get back up, and go back to the drawing board.





Doing Applied Research

When to quit



"If I started with a hundred ideas, I'm lucky if two or three of those ideas will ever turn into academic papers. One of my great skills as an economist has been to recognize the need to fail quickly and the willingness to jettison a project as soon as I realize it's likely to fail."

— Steven Levitt, *Freakonomics* podcast, "The Upside of Quitting"

"Society teaches us 'quitters never win and winners never quit,' but in reality, the data from my experiment suggests we would all be better off if we did more quitting."

— Steven Levitt, *Review of Economic Studies* (2020)



When to cut the cord on a project

- *You've cleared the 3 hurdles*, but when do I call it quits?
 - This can be a make-it or break-it decision
 - Graduate student trying to come up with a great JMP
 - Jr. prof. trying to get tenure
 - Old, tenured professor trying to spend more time fly fishing
- When does this come up?
 - 1.) Null results
 - 2.) Cannot identify mechanisms
 - 3.) Something better comes along



The Null Result

- (1) Zero is a number too! But is it always interesting?
 - Example 1: No effect of minimum wage hike on unemployment
 - Interesting and policy relevant zero.
 - Example 2: Prenatal exposure to Super Bowl and low birth weight (Duncan et al. 2017, *JHR*)
 - Probably only interesting if you find an effect.
- Duncan et al. (2017) is a high risk-high reward project
 - Null effect would not make for a good JMP
 - Null effect would not publish well.
 - Does this cause a type of file-drawer bias?
 - Sure
 - But need to weigh the trade-offs between which projects to pursue and which ones to quit
- (2) Zero is a number too, but only if it is precise!
 - Big difference between pitching a tight vs. noisy zero.
 - If 95% CI contains large values on either side of zero, we do not learn much.

The Null Result

Precise zeros can publish well

American Economic Journal: Applied Economics 2019, 11(2): 143–175
<https://doi.org/10.1257/app.20170411>

Was the First Public Health Campaign Successful?[†]

By D. MARK ANDERSON, KERWIN KOFI CHARLES,
CLAUDIO LAS HERAS OLIVARES, AND DANIEL I. REES*

The US tuberculosis (TB) movement pioneered many of the strategies of modern public health campaigns. Using newly transcribed mortality data at the municipal level for the period 1900–1917, we explore the effectiveness of public health measures championed by the TB movement, including the establishment of sanatoriums and open-air camps, prohibitions on public spitting and common cups, and requirements that local health officials be notified about TB cases. Our results suggest that these and other anti-TB measures can explain, at most, only a small portion of the overall decline in pulmonary TB mortality observed during the period under study. (JEL H51, I12, I18, N31, N32)

- If null is interesting/policy relevant and precise, then proceed!
-But know that the burden of proof can be much higher.

Imprecise zeros, not as well



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ELSEVIER

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International Review of Law and Economics



Per se drugged driving laws and traffic fatalities



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ABSTRACT

In an effort to reduce drugged driving by 10%, the Office of National Drug Control Policy is encouraging all states to adopt per se drugged driving laws, which make it illegal to operate a motor vehicle with a controlled substance in the system. To date, 20 states have passed per se drugged driving laws, yet little is known about their effectiveness. Using data from the Fatality Analysis Reporting System for the period 1990–2010, the current study examines the relationship between these laws and traffic fatalities, the leading cause of death among Americans ages 5 through 34. Our results provide no evidence that per se drugged driving laws reduce traffic fatalities.

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1. Introduction

Arizona was the first state to pass a per se drugged driving law. As of June 28, 1990 it became illegal to operate a motor vehicle in Arizona with detectable levels of cocaine, marijuana, methamphetamine, phencyclidine (i.e., PCP) or any other controlled substance in the system. Arizona drivers who test positive for a controlled substance are presumed to be impaired and can be

Drugged driving is often characterized as a serious and growing threat to public safety (Leinwand, 2004; Walsh and DuPont, 2007; Westall, 2010; Freeman and DyBuncio, 2011; DuPont et al., 2012). Indeed, according to data from the 2010 National Survey on Drug Use and Health, 10.6 million Americans reported driving under the influence of an illicit drug in the past year; in comparison, 28.8 million Americans reported driving under the influence of alcohol (Substance Abuse and Mental Health Services Administration.



Identifying Mechanisms

- Suppose you have a great natural experiment but cannot pin down mechanism(s).
 - Death sentence?
 - Not necessarily! It depends on the topic...
- Example 1: Medical marijuana laws (MMLs) → traffic fatalities (Anderson et al. 2013, *J of Law and Econ*)
 - MMLs → large reductions in price of marijuana
 - MMLs → 8 to 11% decrease in traffic fatalities
 - Effect driven by alcohol-related crashes
 - Plus, beer sales and self-reports of binge drinking fell
 - Without shedding light on mechanism, would not have published very well.
 - An ok, but not great, job market paper.





Identifying Mechanisms

- Example 2: Military deployments → crime (Anderson and Rees 2015, *J of Law and Econ*)
 - Army brigades without combat experience led to more violent crime near their home base
 - Army brigades with recent combat experience had no effect on local violent crime upon returning home
 - Never-deployed brigades represent a greater threat to public safety...why?
 - Unable to say much
 - But (interesting) results ran counter to common perception and paper published well
- Example 3: Medical marijuana laws (MMLs) → suicide (Anderson, Rees, and Sabia 2014, *American J of Public Health*)
 - MMLs → reductions in suicides among young adult males
 - Policy relevant? Yes.
 - General interest (within econ) without mechanism(s)? Probably not.
 - Low ceiling within econ journals
 - Not a great JMP
 - Recommendation: Move on or pivot to a non-economics journal



Identifying Mechanisms

- Try to gauge early on whether you will be able to address underlying mechanisms.
 - Maybe consider this hurdle #4.
- Try to gauge early on just how crucial it will be to address underlying mechanisms.
- If you end up sinking a lot of time into a project and cannot address mechanisms, you can pivot to a non-economics journal



Doing Applied Research

Managing your research projects



Managing your research projects

Allocating your effort

As a graduate student

- Goal: Top-notch JMP.
 - Your efforts can be more concentrated
 - Not so much as a junior professor trying to get tenure.
- That said, do not underestimate the value of a non-JMP publication.
 - Especially important when you aren't from, say, a top-10 institution.
 - For me, this was key
- You do not have to work on a dozen papers as a graduate student.
 - Takes time away from JMP
 - Sends a quantity (as opposed to quality) signal, which is not always a good thing



Managing your research projects

Allocating your effort

As a junior prof.

- Goal: A portfolio of projects at different phases
 - (i) Always have one to two projects that are your main focus
 - Some can manage more.
 - (ii) As you progress, always try to have at least a few papers under review or at the RR stage
 - (iii) When your papers in (i) are submitted, make sure data collection efforts are already under way on other projects.
 - If you have RA resources, spend them here.
- If going into (or are already in) academia, figure out tenure requirements asap!
 - Helpful advice given to me: “You’re in an ag. economics department, so do not forget that quantity matters.”

Managing your research projects



Targeting journals

- FAQ: “Where should I send paper X? How high should I aim?”
- If you become an expert of the literature, the set of relevant journals will be clear
- First shot is a reach.
 - If you think you have a good shot at an *AEJ*, try a top-5 first.
 - If you think you have no shot, don’t waste your time.
- Some journals are slow
 - Important if on a time crunch! Do your homework prior to submitting
 - E.g., if considering *AEJ* vs. *RESTAT* and job market is looming, submit to an *AEJ*.
 - Many journals publish decision-time stats on website
 - If they don’t, ask around...some journals have well-known reputations.
- My approach is to consider 3 tiers:
 - (i) Journals that are a reach, but not unreasonable (take a shot or two at these)
 - (ii) Journals where I think there is a good chance (take two or three shots)
 - (iii) A large set of “backup” options (just keep trying until something sticks)



Managing your research projects

When to target a non-economics journal

- You need to pivot because...
 - Estimates are correlations only
 - You cannot identify mechanisms
 - You just don't have enough "meat" for a full-length paper
 - You need a mental health break!



Managing your research projects

- Every summer, I take a break from the econ-paper grind and write a paper for a medical journal.
 - It's fun!
 - Important to learn how to write for a different audience
 - Transferable human capital
- Papers for non-econ journals take *much* less time
 - Medical journals have word ($\approx 3,000$ - $4,000$) and figure (≈ 4 - 5) limits
 - “Research letter” options
 - Word ($< 1,000$) and figure (≈ 1 - 2) limits
 - Faster turnaround (< 1 month)
 - But non-econ pubs do not “count” as much on the econ job market or for tenure in an econ department
 - Carefully weigh tradeoffs of pursuing these pubs vs. simply quitting (or not starting) a project altogether.