Vision Zero Experiments

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Important policy questions deserve the best research designs!

RCT and traffic safety background

- Randomized controlled trials (RCTs) are the "gold standard" of evidence
- We require them in medicine for approval of new treatments
- The stakes are just as high with traffic safety!
  - On the order of 2 million life-years lost from traffic fatalities each year, which is similar to estimates of life-years lost to smoking-attributable cancer deaths
- Quote from 2007 NHTSA compendium:
  - *"Recommendations for future implementations of automated speed enforcement systems* ***stress the need for authorities and researchers to collaborate*** *on studies of safety effects* ***using controlled, randomized experiments****."*

We are interested in evaluating high-impact policies using the best research designs and data

Research designs

- Key issue in any study is inferring the counterfactual — **what would have happened absent the intervention?**
- Often we worry that sites are chosen based on historical accident rates (e.g. Elvik 2002)
- Efforts to statistically adjust for confounding have not been reliable historically, leading to the "credibility revolution" in my own field, with a focus on experiments and quasi-experimental designs
- New technologies, particularly AI processing of video, also enable data collection that was prohibitively expensive one or two decades ago

We bring free funding and expertise!

What we offer

- Our goal is to investigate highly policy-relevant topics with a dearth of evidence
- **Funding is key: we can package this to be attractive to a lot of different streams**
- Collaborative work allows the study to be funded from multiple novel sources!
  - Academic grant funders
    - A lot of funding in my field for randomized experiments
    - In February we received a $125,000 grant for this type of project
  - Technology demonstration grants
    - Type of application people want to fund (positive AI application!)
  - Government infrastructure initiatives
- We have decades of training and experience in experimental design and statistical analysis, but we do not charge the budget for PI time!

Focus on policies with lower implementation costs and higher uncertainty on benefits/costs

What we're interested in

- **We're interested in interventions with high potential benefits/costs and low implementation costs**
- Uncertainty on benefits/costs is critical because we want our findings to have large policy impacts
- Low implementation costs (e.g. $1k/site) are important for two reasons:
  - Necessary sample sizes dictate that we can't fund interventions costing $200,000/site (i.e. study costs exceeding $10 million)
  - If we find significant benefits, it's ideal if policymakers can "scale up" the intervention quickly

Example: No turn on red (NTOR) — funded!

NTOR overview

- Almost all US drivers outside NYC expect to be able to turn right on red
- But this only became legal on the East Coast after the 1970s oil crises, and it's still generally banned in Europe!
- Research question: How do NTOR restrictions affect failure to yield to pedestrians, pedestrian near misses and injuries, and vehicle-to-vehicle near misses and collisions?
- **We worked with SFCTA/SFMTA and secured $125,000 to start funding the data collection infrastructure**
- If any other jurisdictions are interested in evaluating this policy, we would be happy to link up with research design and funding already in hand!

Example: Daylighting — highly topical policy!

Daylighting overview

- AB 413 outlaws parking on approaches of crosswalks
- Enforcement/curb marking is up to local jurisdictions
- Research question: **How does daylighting affect failure to yield to pedestrians, pedestrian near misses and injuries, and driver and pedestrian behavior?**
- Initially we and SFCTA were interested in evaluating daylighting enforcement in high-risk zones; then SFMTA moved ahead with painting curbs citywide
- But a lot of jurisdictions have yet to decide how/if they will enforce this policy, so we'd love to do an evaluation with a partner who wants to understand its impacts!
- I expect we'd have an appealing pitch for funding from evaluation grants and technology demonstration funders

Example: Leading pedestrian interval — increasingly adopted!

Leading pedestrian interval overview

- A 3+ second leading pedestrian interval (LPI) is one of the DOT-recommended safety countermeasures
- SF has implemented this at most intersections citywide
- **But the evidence base for it is not as robust as we would hope for a DOT-recommended countermeasure!**
- Research question: How does LPI affect failure to yield to pedestrians, pedestrian near misses and injuries, and driver and pedestrian behavior?
- One advantage: data collection is easier near traffic signals

Example: Reduced speed limits — recently available!

Speed limit overview

- Reducing collision speed is a guaranteed way to lessen injuries/fatalities
- Historically, lowering speed limits has been difficult or counterproductive!
- **AB 43 allows local govts to lower speed limits in business and residential areas and other "safety corridors" without applying the "85th percentile rule"**
- Cities across the Bay Area have begun using this tool
- Research question: How do reduced speed limits affect vehicle speed, driver behavior, pedestrian near misses and injuries, and vehicle-to-vehicle collisions?
- It would be great to get evidence on this policy as adoption increases!

Please feel free to reach out at any time!

Closing remarks

- We're interested in interventions with modest implementation costs and high uncertainty around benefits and costs
- Our projects are packaged to be inherently attractive to multiple funding streams
- We offer free expertise in experimental design and data analysis
- The examples I gave are far from exhaustive — let me know if there are other topics you're interested in
- More generally, I'm not planning to go anywhere. You can always find me by searching "Michael Anderson Berkeley".
- **If you have an idea for a project a few years from now, please reach out!**

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