Road Deaths and Injuries

A neglected public health crisis

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Acknowledgements

Stanton Glantz, PhD

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Why Road Safety?

- Has a **member of your immediate family** ever been seriously injured or killed in a car crash?
- Has a **member of your extended family** ever been seriously injured or killed in a car crash?
- Has a **close friend, classmate or colleague** ever been seriously injured or killed in a car crash?
- Has a **close friend, classmate or colleague ever lost a family member** in a car crash?

My Story: All of the above

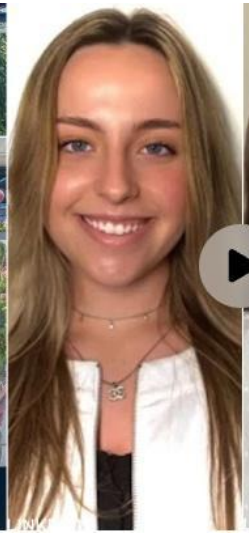
Family:

- Mother spent weeks in a coma as a child. Multiple permanent injuries.
  - Pedestrian crossing the street to the school bus. 12 years old.
- My brother hit by a hit-and run driver.
  - On bicycle in an alley. 8 years old.
- My cousin was killed on a sidewalk.
  - Walking on the sidewalk. 6 years old.
- My other cousin was in a drunk driving crash and his passenger died.
  - Driving. 16 years old.
- My aunt back ended by an elderly driver with my cousins in the car.
  - In early 30s. Permanent pain. Lifelong issues.

High School:

- Would lose a couple kids every year.
- Two brothers killed instantly.

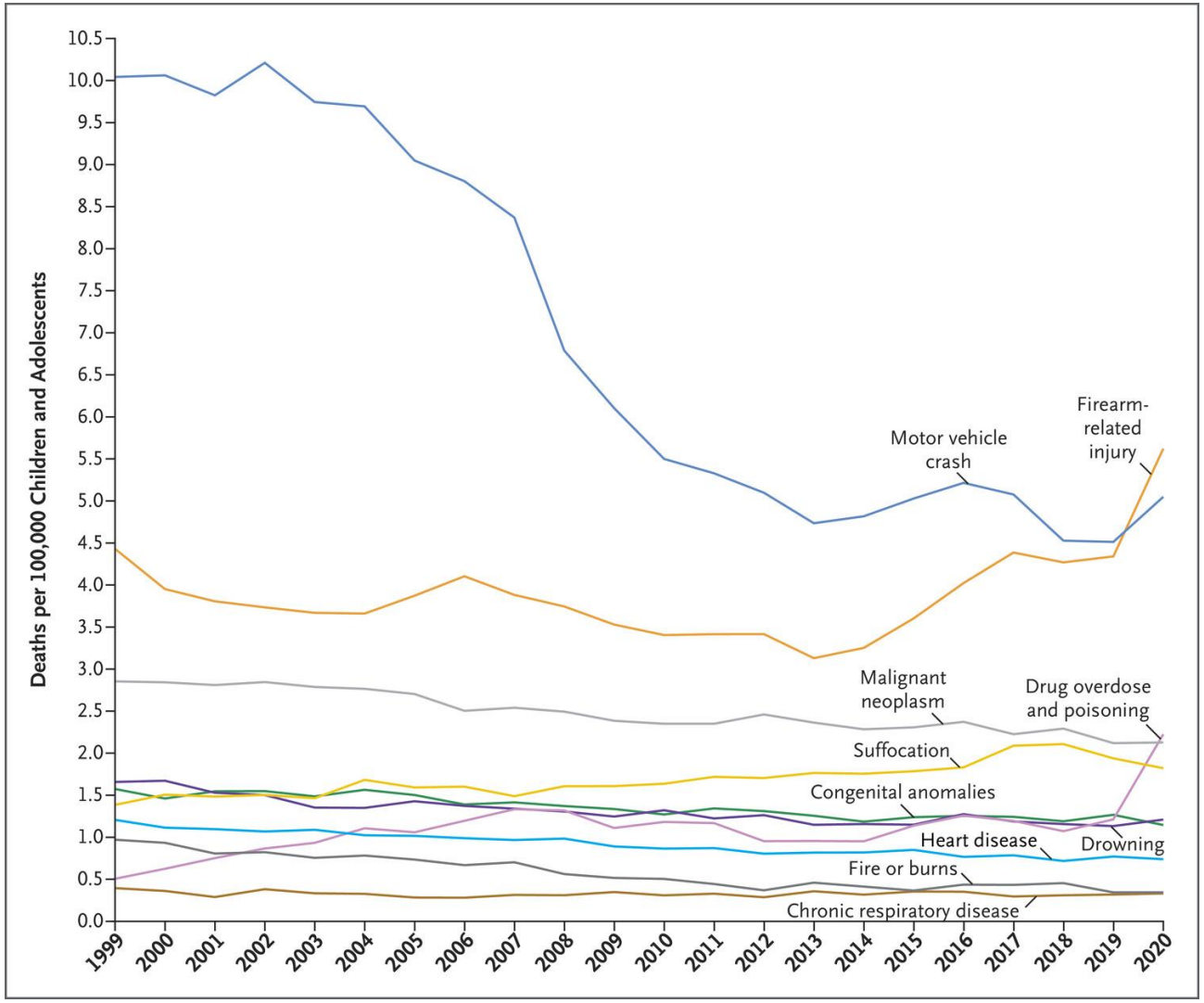
Road Safety is Personal



Things I’m trying to change on Xitter

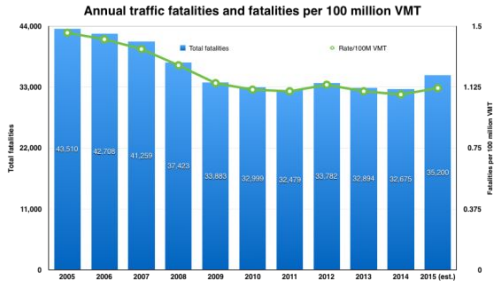
- Awareness
- Measurement
- Road Design
- Human Rights
- Outcomes

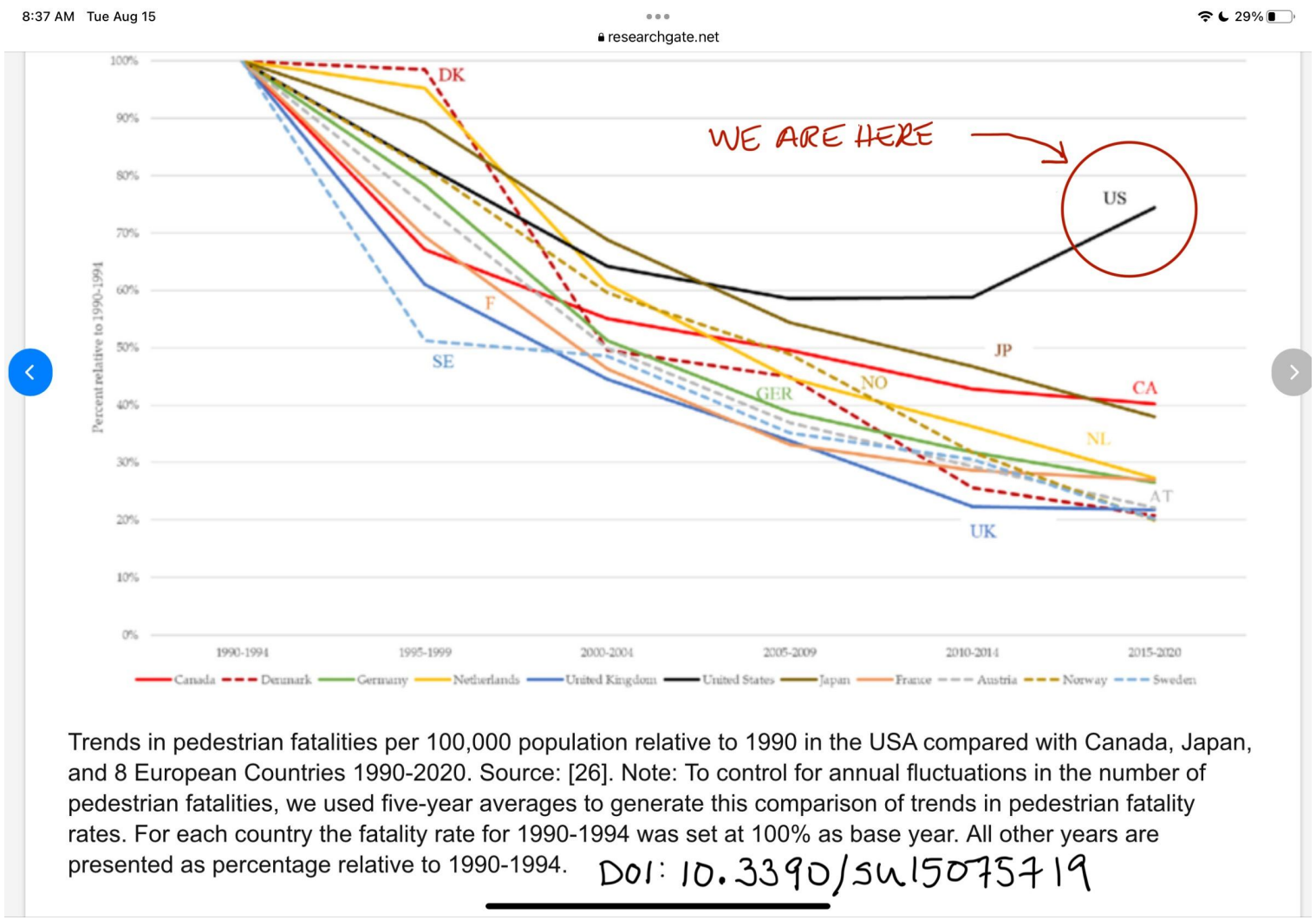
Magnitude of the Problem: A/the leading cause of Premature Morbidity and Mortality



Goldstick JE, Cunningham RM, Carter PM. Current Causes of Death in Children and Adolescents in the United States. N Engl J Med. 2022;386(20):1955-1956. doi:10.1056/NEJMc2201761

The US is an outlier

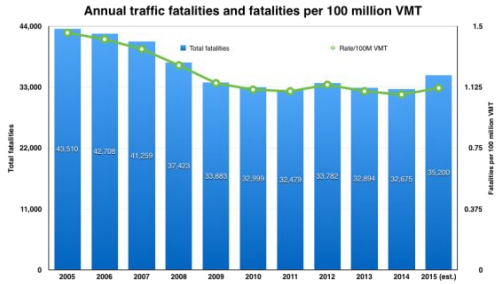




Trends in pedestrian fatalities per 100,000 population relative to 1990 in the USA compared with Canada, Japan, and 8 European Countries 1990-2020. Source: [26]. Note: To control for annual fluctuations in the number of pedestrian fatalities, we used five-year averages to generate this comparison of trends in pedestrian fatality rates. For each country the fatality rate for 1990-1994 was set at 100% as base year. All other years are presented as percentage relative to 1990-1994.

DOI: 10.3390/su150757 19

In every way and for all groups



Measurement Issues: Tombstone Outcomes

- Outcomes parsed into dead/not-dead
- Doesn't account for Years of Life Lost (YLL), QALYs or DALYs
- The nature of the deaths (sudden, violent)
- Injuries: 66:1

Burying a child or a young spouse does not have the same impacts on families as burying an elderly relative who has lived a full life.

Measurement: Injuries to Children in the US

- ~6M crashes per year with ~3M injuries
- Motor vehicle injury is significantly more common than other types of serious injury/illness in children.
- Research spending does not map to disease burden.

Cause of Injury	Injuries (ED) (2019)	Serious Injuries*
Motor Vehicle Crash	518,679	46,826*
Firearm-related injury	16,644	13,501
Malignant neoplasm	15,000	13,147

From CDC WISQARS (FARS data)
* Transferred, hospitalized or observed.
** All Unintended Injuries

Data Issues: FARS Police Crash Reports, Linkage difficult to impossible

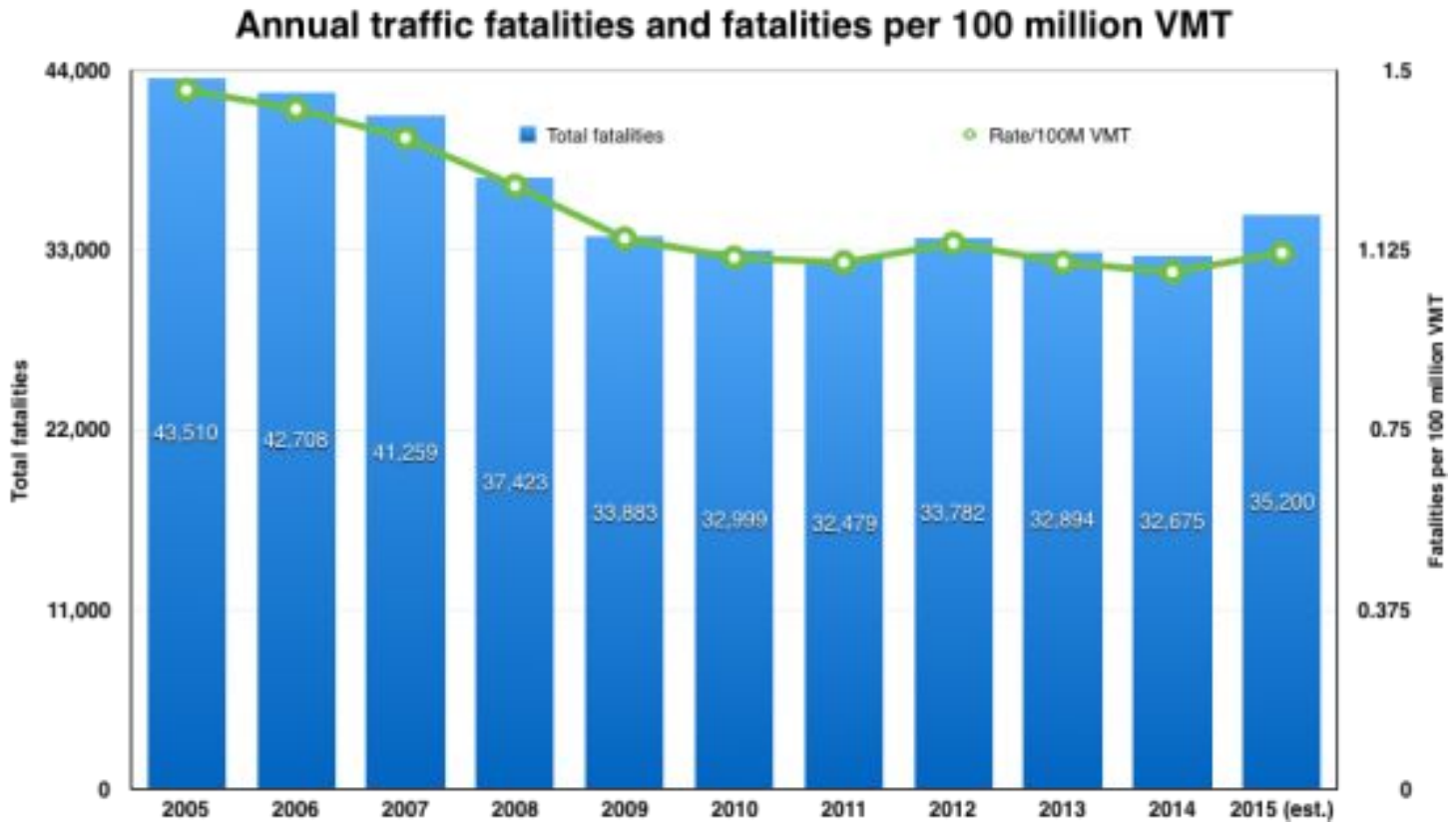
- Police reported crash data underestimate incidence.

We identified 19,699 pedestrians injured in our NC ED visit data, as compared to 14,264 pedestrians in the crash data: a percent increase of 38%.

- Police reported crash data underestimate injury severity

In the linked NC crash-ED visit data, 38% of pedestrians sustained a serious or fatal injury, based on information present in the ED visit record. Had we used "K" (fatal) and "A" (disabling) injuries as our indicator of serious pedestrian injury, only 10% of the pedestrian injuries in the linked data would have been classified as "serious".

Measurement Issues: Measuring per Mile not per Person



Measurement: Pop Health is People Centered

- Motor vehicle traffic is a hazardous exposure
- Cumulative driving exposure
- Measure of second hand driving exposure (can’t opt out)
  - VMT, Vehicle size, weight and *speed.*
- Noise pollution
- PM 2.5
- Displacement of walking/bicycling and transit

Cultural Issues: The Car as the Base Unit of Transportation

Table 4C-4. Minimum Number of Reported Crashes in a One-Year Period

Community less than 10,000 population or above 40 mph on major street					
Number of through lanes on each approach		Total of angle and pedestrian crashes (all severities)[a]		Total of fatal-and-injury angle and pedestrian crashes[a]	
Major Street	Minor Street	Four Legs	Three Legs	Four Legs	Three Legs
1	1	4	3	3	3
2 or more	1	10	9	6	6
2 or more	2 or more	10	9	6	6
1	2 or more	4	3	3	3

[a] Angle crashes include all crashes that occur at an angle and involve one or more vehicles on the major street and one or more vehicles on the minor street

Table 4C-5. Minimum Number of Reported Crashes in a Three-Year Period

Community less than 10,000 population or above 40 mph on major street					
Number of through lanes on each approach		Total of angle and pedestrian crashes (all severities)[a]		Total of fatal-and-injury angle and pedestrian crashes[a]	
Major Street	Minor Street	Four Legs	Three Legs	Four Legs	Three Legs
1	1	6	5	4	4
2 or more	1	16	13	9	9
2 or more	2 or more	16	13	9	9
1	2 or more	6	5	4	4

[a] Angle crashes include all crashes that occur at an angle and involve one or more vehicles on the major street and one or more vehicles on the minor street

Crossing Warrants: MUTCD, 1935 and 2023

Human mobility, health, safety and even life is often set to zero when it directly competes with automobile throughput or storage

Unfortunately, this is often.

Cultural Issues: AASHTO, NHTSA and State DOTs – Autos, Asphalt and Oil

AASHTO Community Development and Quality of Life National Award Winner 2021

https://twitter.com/aashtospeaks/status/1438598518621544449?s=20
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American Association of State Highway and Transportation Officials
(AASHTO)

The runner ups

AASHTO Community Development and Quality of Life National Award Winner 2021

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American Association of State Highway and Transportation Officials (AASHTO)

Cultural Issues: Victim Blaming vs Safe Systems

Move Utah
@moveutah

Bet you don't normally think about distracted walking - but it's a thing. Keep your phone in your pocket and stay aware of your surroundings. This can be an added safety measure to protect against tripping, veering off of the sidewalk, and any other possible safety hazards.

9:29 AM · Sep 1, 2021 · eClincher

1 Quote Tweet **3** Likes

Move Utah
@moveutah

Walking in a group can be a lot of fun! But remember to walk single file if you're walking close to traffic. It keeps everyone further away from any vehicles on the roadway.

15:55 · 13/10/2021 · eClincher

4 Retweets **258** Quote Tweets **24** Likes

https://twitter.com/aashtospeaks/status/1438598518621544449?s=20
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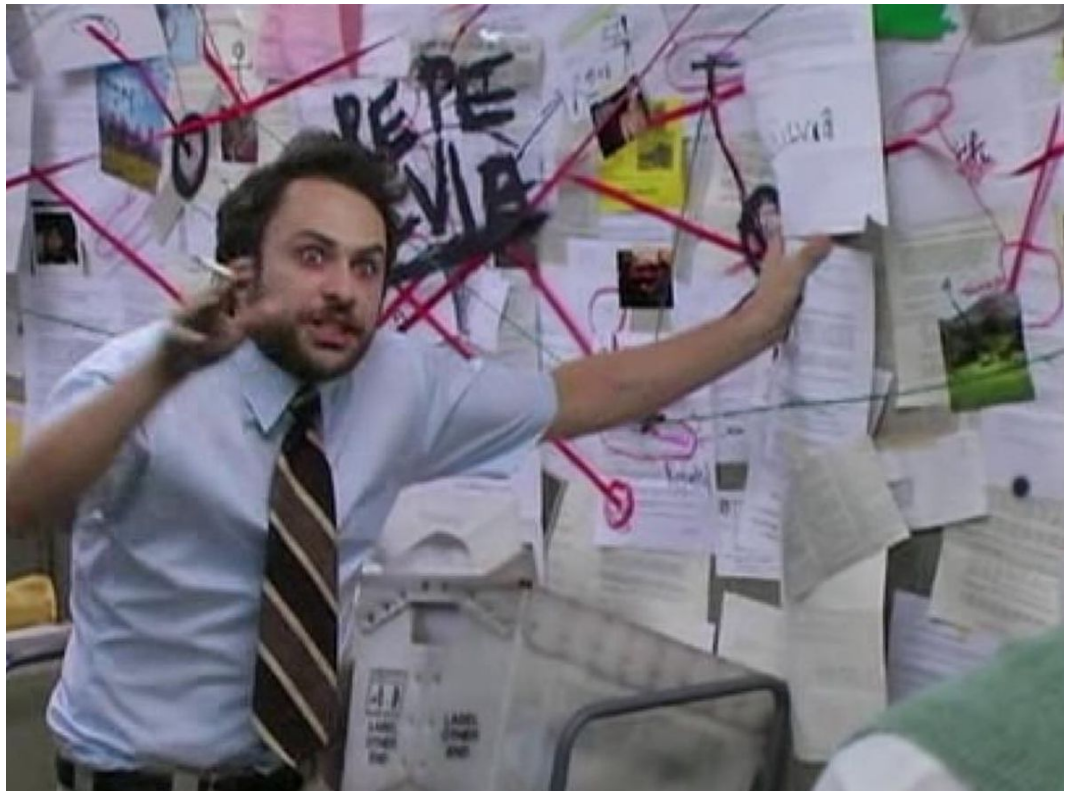
Gap in Funding Flows from Culture: National Highway Traffic Safety Administration

- *”The NHTSA really looks to the automobile industry for direction.”*
- *“There’s an idea is that autonomous cars* will solve a lot of these problems, so there may not be much of an appetite for this type of research.”*



** They are already lying about pedestrian safety and do not address any other externalities of cars.*

Gaps in Research

Literature Review

- Almost all publications are either reports or abstracts.
- This is related to funding. Almost all funding for road safety is through the NHTSA.
  - Research is frequently *prohibited*.
  - In the case "research" is permitted a frequent provision is the *prohibition of publication* in academic journals.
  - *"DOTs are terrified of health data."*

Good:

- We can make a strong argument that there is no funding for public health research on this important topic.

Bad:

- There is no funding to research the #1 cause of child injury and death

Gaps in Research

Noise pollution
- Very sparse

Blunt force trauma
- Nothing describing injury type, severity and long term consequences.
- Almost all publications are reports.
- Almost all publications rely on FARS (police) data

Particulates (tailpipe emissions, tire and brake particles)
- Very active area of research
- High impact papers
- Gap in CVD injury data.

Hostile environment/Displacement of active transportation (walking) and transit
- Very sparse literature.
- Literature on the benefits of active transport, but not displacement.

Other Areas for Study

Enforcement

1. Biased enforcement
2. Bias against active transportation (intersects with race/age/sex)
3. 2A for cars: Rise in vehicular assault (w/out consequences)
4. Police effort in investigating vehicular deaths/injuries vs other incidents.

Advertising and willful misconduct

1. Violent, aggressive behavior advertised and in vehicle design.
2. 30 year high in pedestrian deaths. Vehicle size, weight and shape a known major factor and nothing is being done.

ProPublica

1. Complete abdication of responsibility by NHTSA.

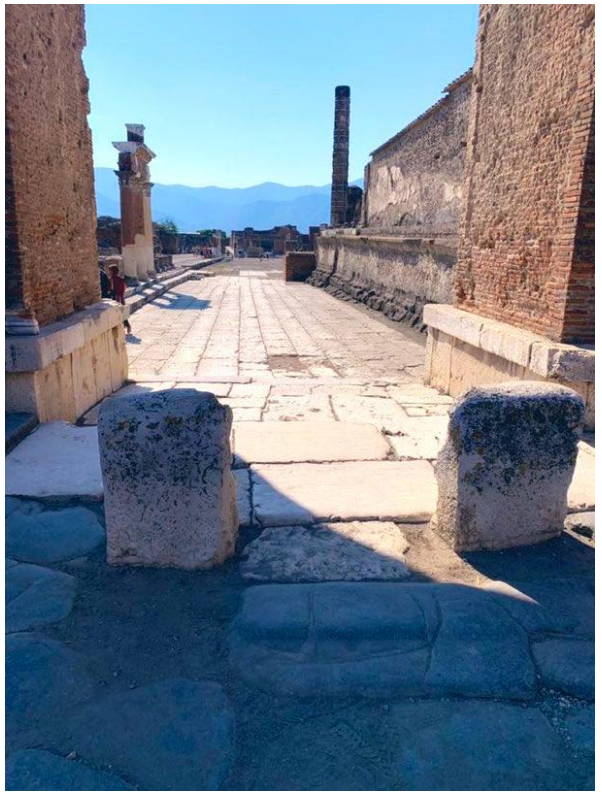
Challenges

1. Limited research funding.
2. Potentially adversarial relationship with data holders.
3. Powerful, organized, well funded adversaries: DOTs, asphalt, auto and oil, police.
4. Public perception:
   a. Cars provide comfort, convenience*, identity, status, power and anonymity
   b. Due to 70 years of subsidies and prioritization, cars are often the only viable or safe source of transportation.

* Sort of.

Solutions: WE are who we've been waiting for

1. Understand the magnitude of the problem.
2. Know the data especially local data.
3. Be vocal, polite and persistent. Our public processes are designed to reward loud cranks and squeaky wheels.
4. International best practices for safe streets are cheap, low tech and proven.
5. Think about how to reduce the **dose** of driving: price, parking, lane width, roundabouts, bollards, barriers, chicanes, rocks.
6. Understand you are taking on entrenched power.



"If you take on the wealthy and the powerful, you have to be careful and you have to be right." - Stan Glantz

"It is not your responsibility to finish the work of perfecting the world, but you are not free to desist from it either." Rabbi Tarfon

Thank you!

Questions?