



Big Data for Better Cycling

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June 28, 2019

Agenda

01 How we got here and where we are headed

02 How We Use Data to Better Cycling:

- Bikesharing
- Safety
- Infrastructure
- MaaS

03 How Cyclists Can Make Data Better for Cycling:

- Data Standards for Bike Share
- Privacy
- Data Standards for Policy & Infrastructure
- Vision

How we got here.

1965

First Bike Share

1996

Digital Bike Share

2007

iPhone

2010

Dockless Prototype!

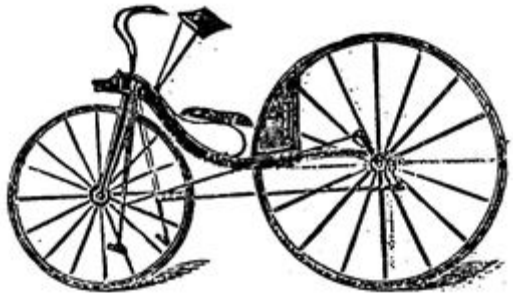
2017

E-Assist Dockless



1839

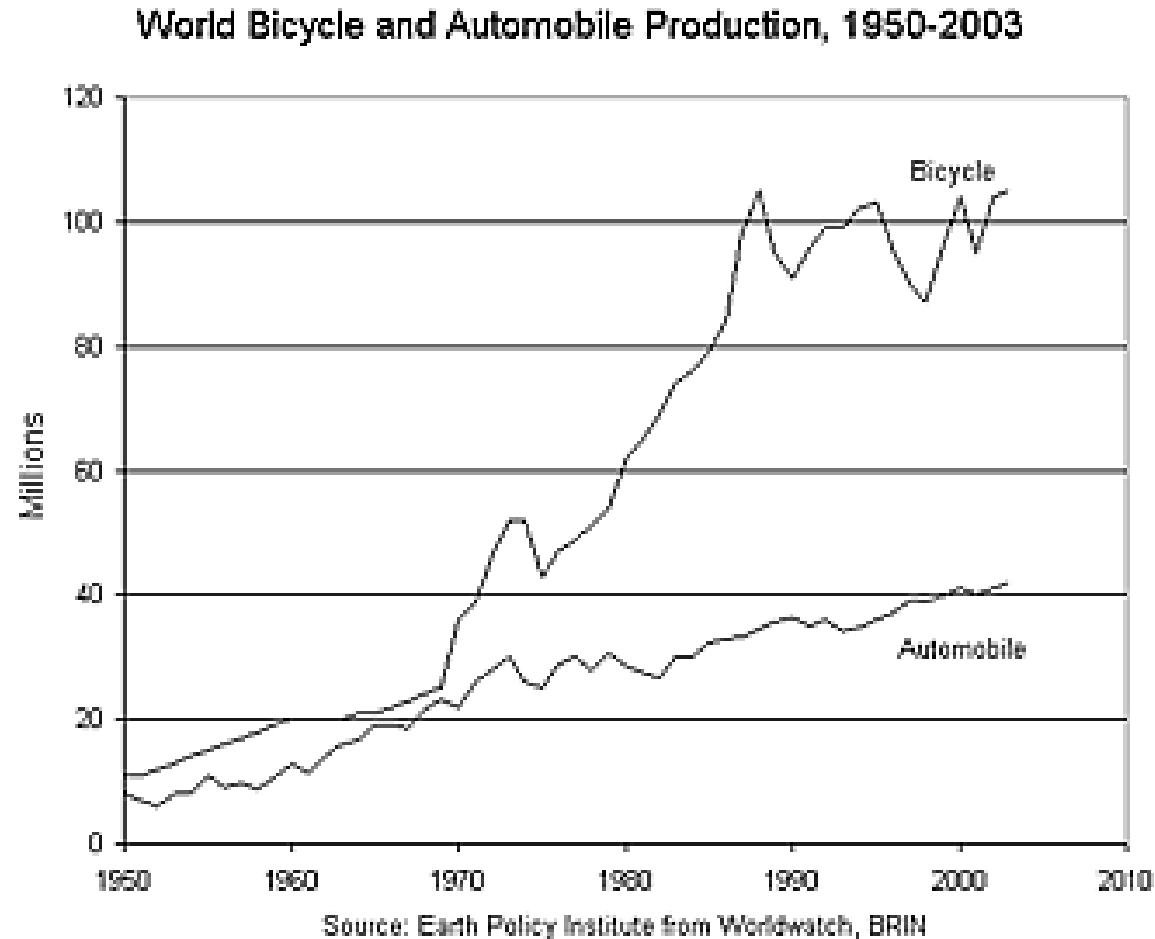
First pedal-driven bicycle



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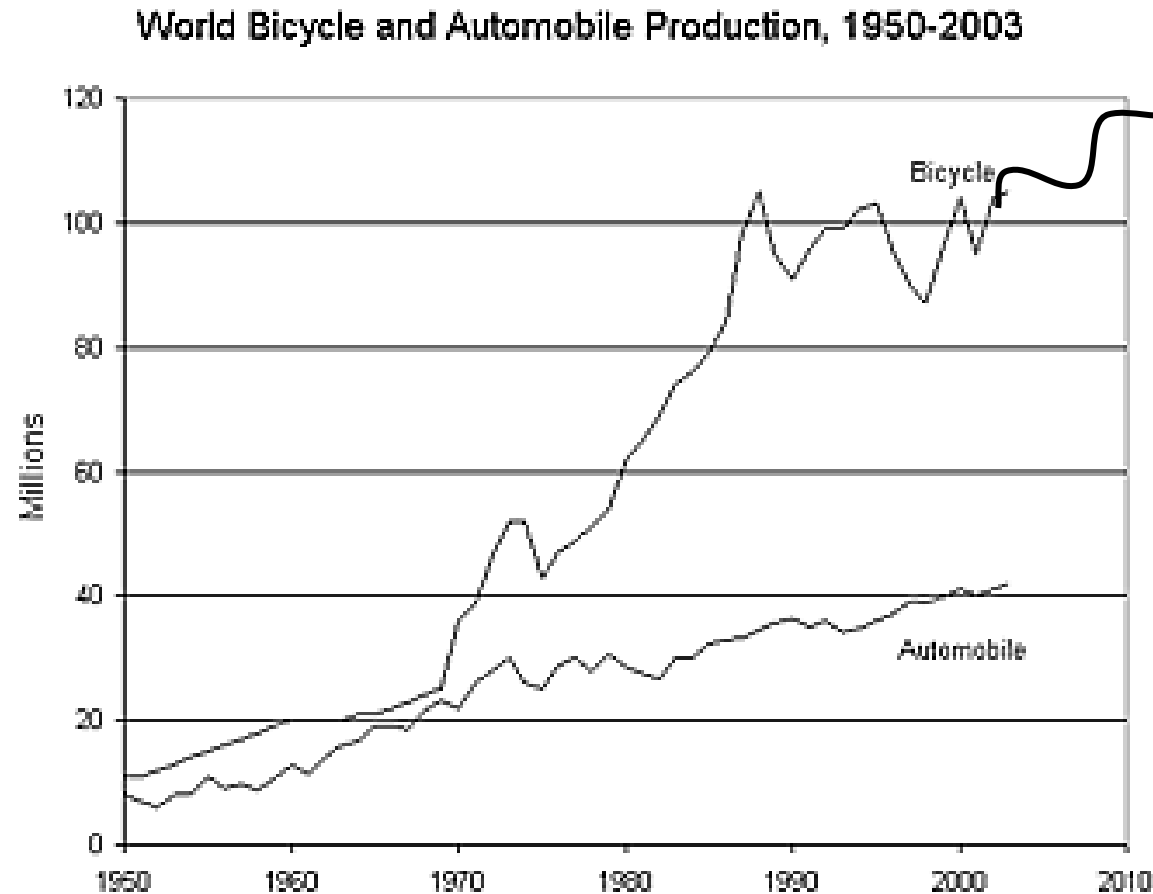


Where we are headed



2010 - 120 million bicycles

Where we are headed

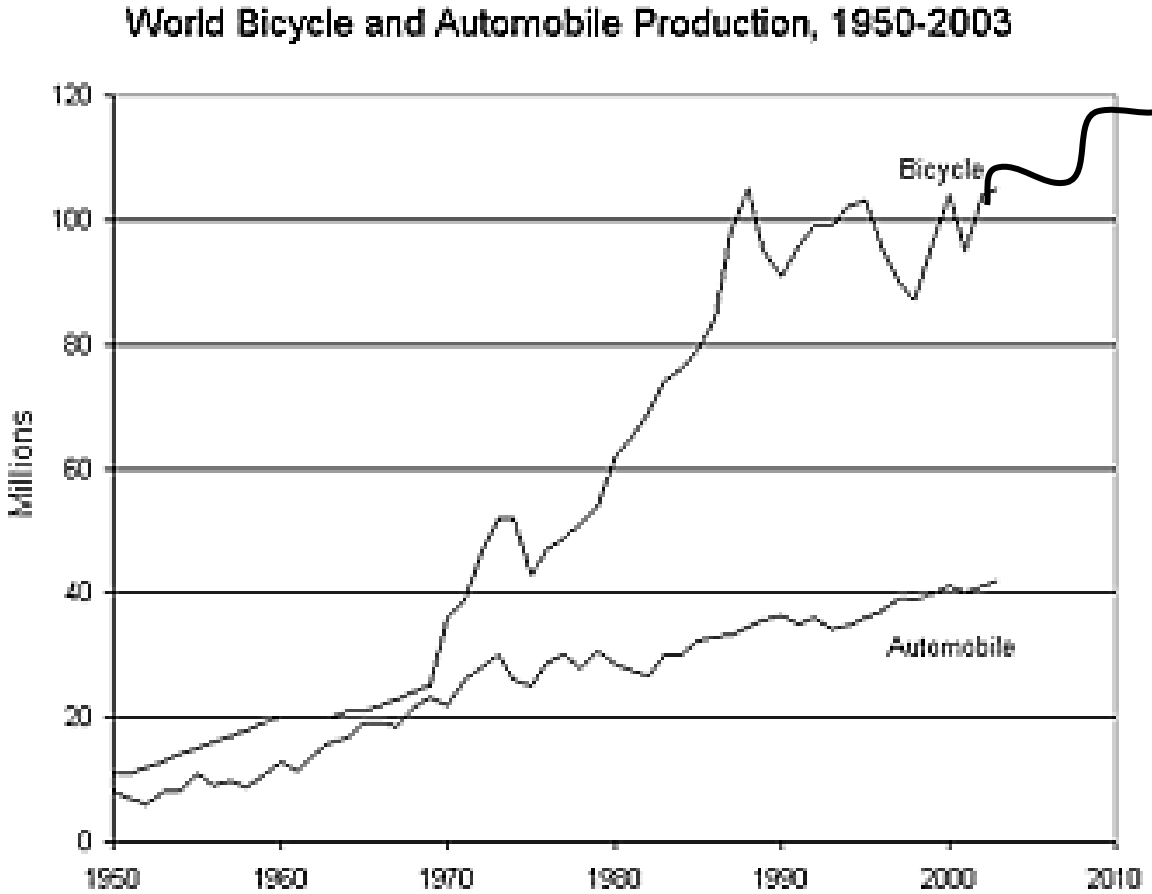


Source: Earth Policy Institute from Worldwatch, BRIN

2010 - 120 million bicycles

2020 - 2 billion bicycles

Where we are headed



Source: Earth Policy Institute from Worldwatch, BRIN

2010 - 120 million bicycles
2020 - 2 billion bicycles
2050 - 5 billion bicycles!

How We Use Data for Better Cycling

Using Big Data for

Better Bike Sharing

Our data comes from the sensors on our bike. It enables:

- Easy location of bikes, and convenient locking
- Reservations for reliability
- Virtual infrastructure
- Extraordinarily rich data



Using Big Data for

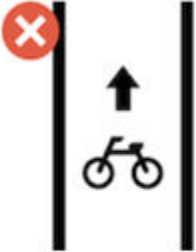
Better Bike Infrastructure



Using Big Data for

Safer Cycling

Uber is taking a holistic approach to bike safety by integrating bike infrastructure data into its platform to raise awareness with Uber passengers about the risk of dooring and to remind Uber drivers never to block bike lanes.

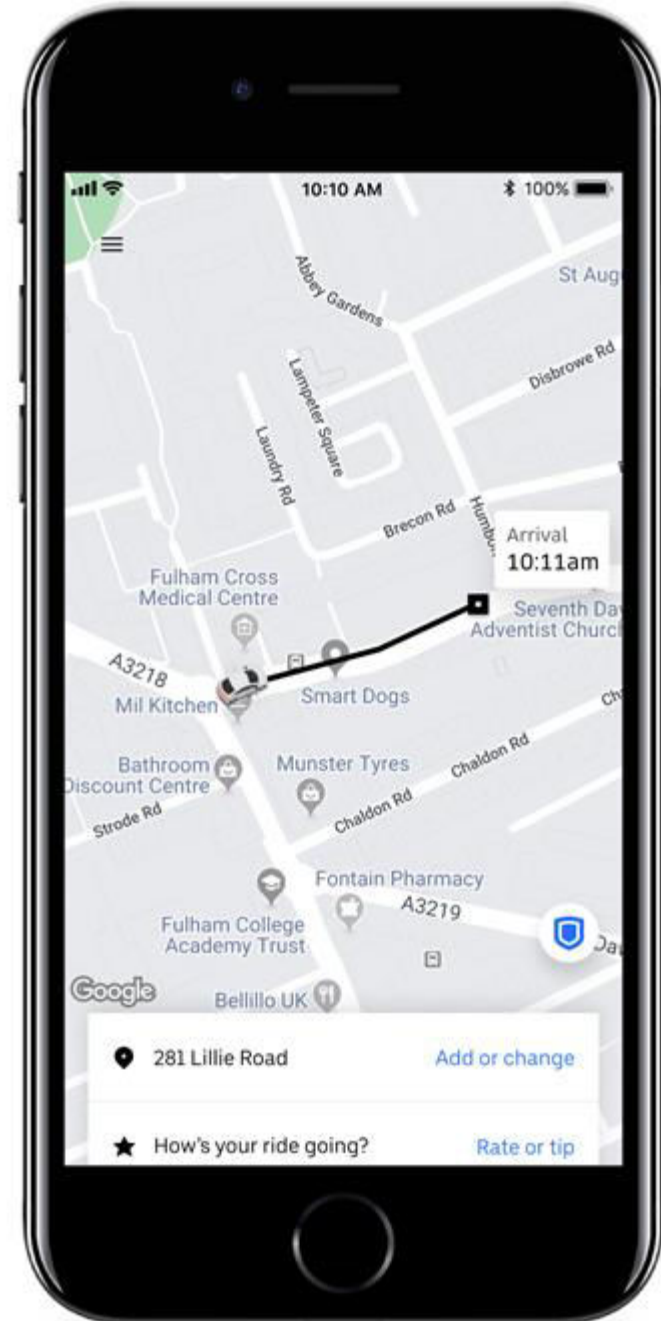


Uber is committed to making bike and scooter safety a top priority

In many cities it's illegal to stop in a bike lane.

Be respectful of people riding bikes or scooters, and help keep them safe by following the law and dropping riders off in safe, legal locations.

JUMP

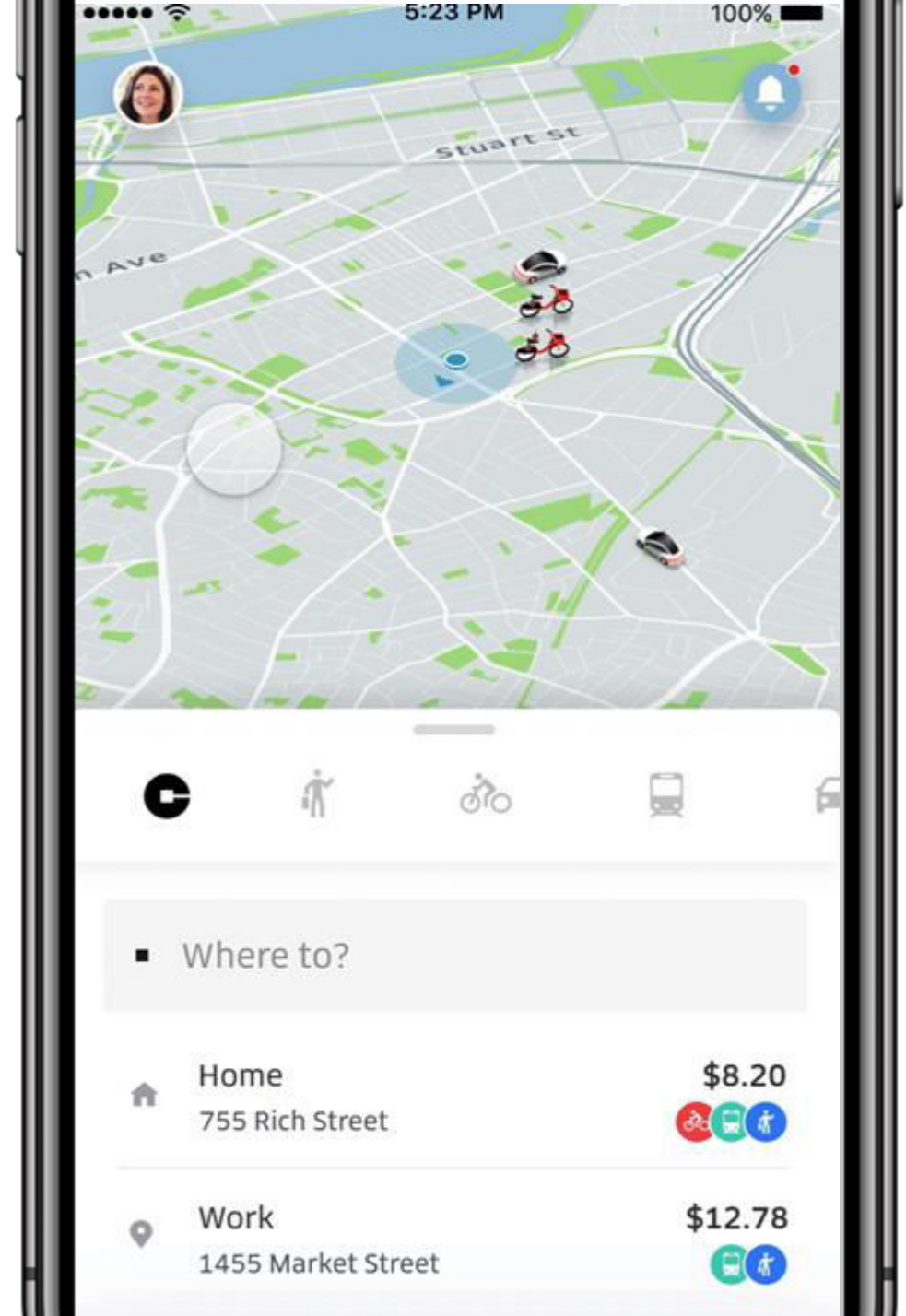


Using Big Data for

Multi-Modal Mobility Platforms

A super-convenient multi-modal platform may be the world's most compelling shot to compete with the model of car ownership.

If fewer people own cars, they are less invested financially, behaviorally, and politically in supporting car-dominant policies.



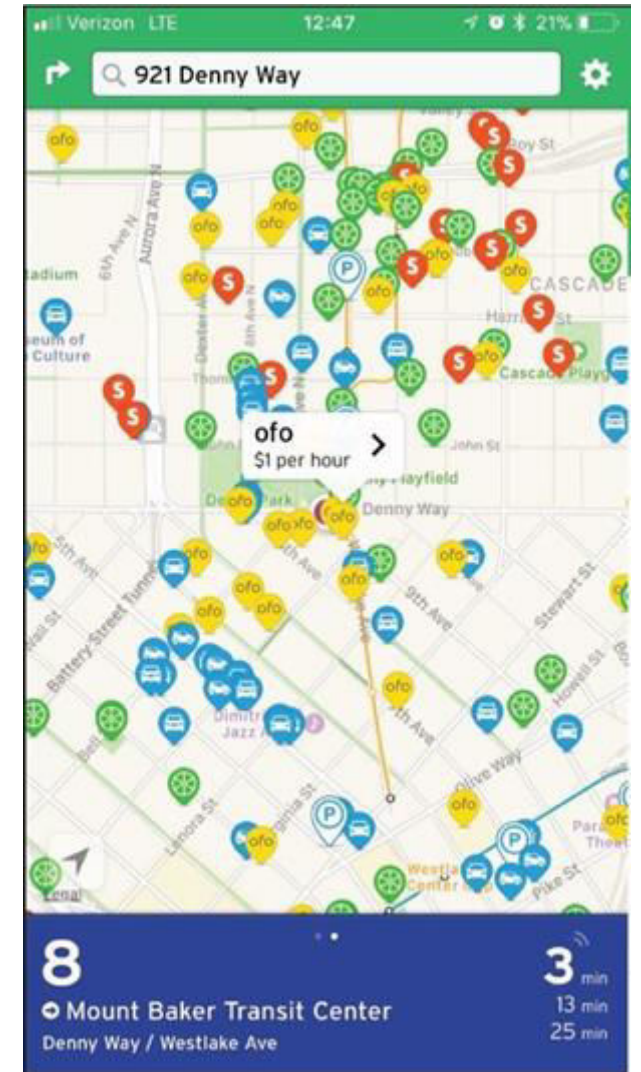
How Data
Must Improve
for Better Cycling

Making Big Data Better

Bike Share Data Standard

The world needs a single standard by which it can share data with cities that can convey all the rich data collected for planning and research also protect the privacy of individual trips. Current standards:

- Google Bikeshare Feed Specification (GBFS)
- AD Hoc CSV
- Mobility Data Specification (MDS)
- SAE International



Transit App bike share aggregation

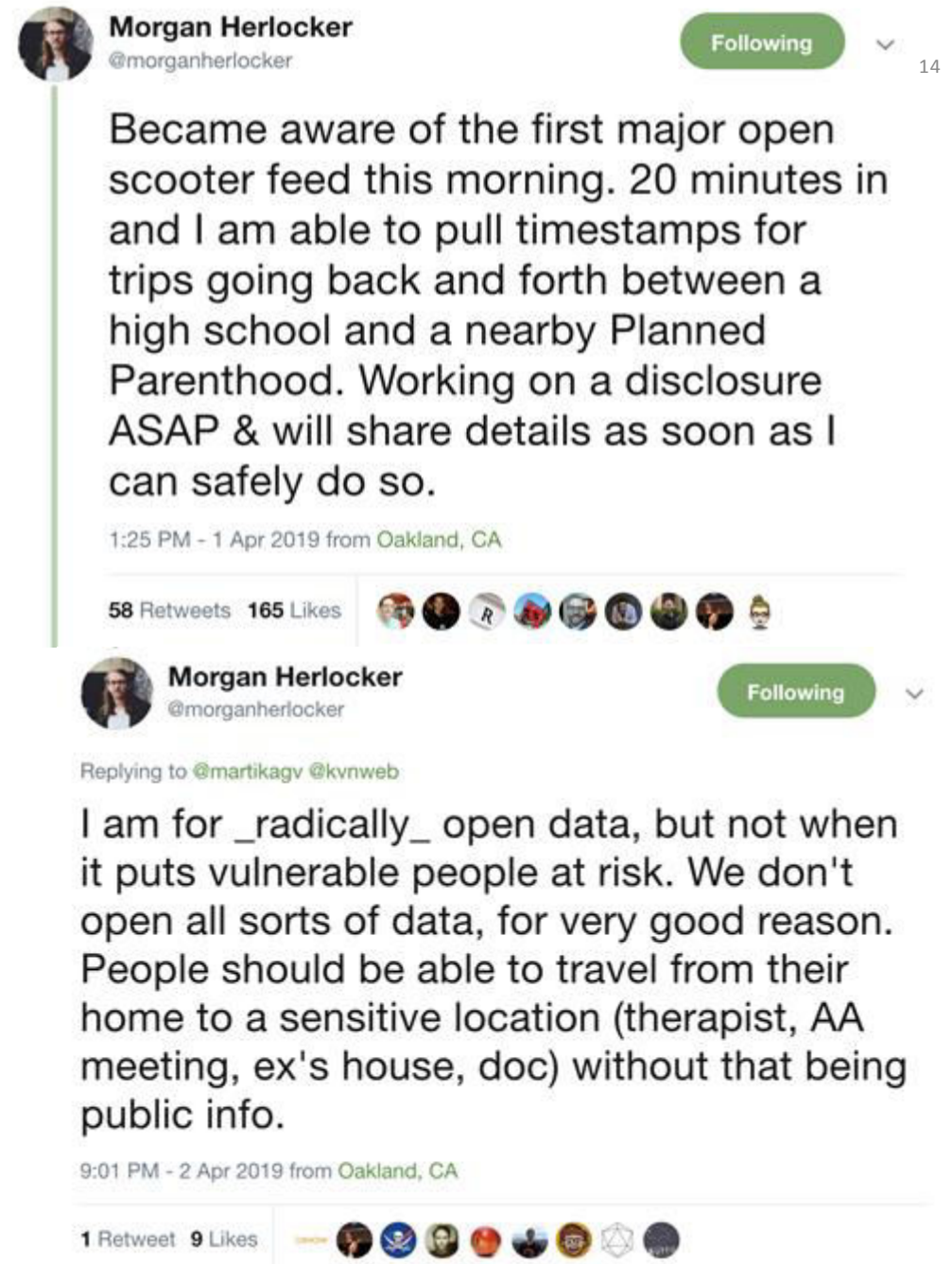
Making Big Data Better

Personal Data Privacy

Mobility data is some of our most personal data.

It can be used to describe our homes, jobs, friends, family, loves, politics - our intimate identities.

We must ensure privacy is protected and data cannot be misused.



The image shows a screenshot of two tweets from Morgan Herlocker (@morganherlocker). The top tweet, posted on April 1, 2019, at 1:25 PM from Oakland, CA, discusses her discovery of an open scooter feed and her work on a disclosure. The bottom tweet, posted on April 2, 2019, at 9:01 PM from Oakland, CA, is a reply to @martikagv and @kvnweb, expressing her stance on open data and privacy. Both tweets show engagement metrics like retweets and likes, and a 'Following' button.

Morgan Herlocker @morganherlocker Following

Became aware of the first major open scooter feed this morning. 20 minutes in and I am able to pull timestamps for trips going back and forth between a high school and a nearby Planned Parenthood. Working on a disclosure ASAP & will share details as soon as I can safely do so.

1:25 PM - 1 Apr 2019 from Oakland, CA

58 Retweets 165 Likes

Morgan Herlocker @morganherlocker Following

Replying to @martikagv @kvnweb

I am for radically open data, but not when it puts vulnerable people at risk. We don't open all sorts of data, for very good reason. People should be able to travel from their home to a sensitive location (therapist, AA meeting, ex's house, doc) without that being public info.

9:01 PM - 2 Apr 2019 from Oakland, CA

1 Retweet 9 Likes

Making Big Data Better

Personal Data Privacy

New tools like Shared Streets can offer high-level mobility data analysis while providing minimal trip threshold (aggregation) to ensure personal privacy.

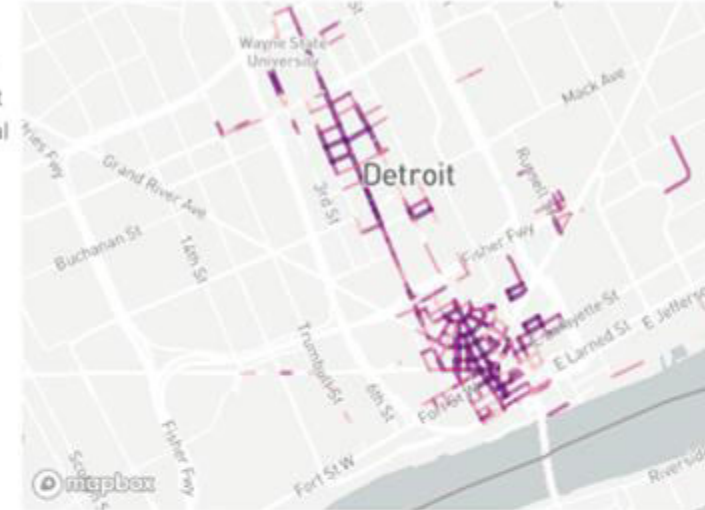
Check it out at www.sharedstreets.io

Trip Volume

Streets Bins

Trip Volume measures the number of vehicles that moved over a street or zone, filtered to protect individual privacy

Export



Availability

Streets Bins

Availability measures the max number of vehicles able to be picked up in a zone

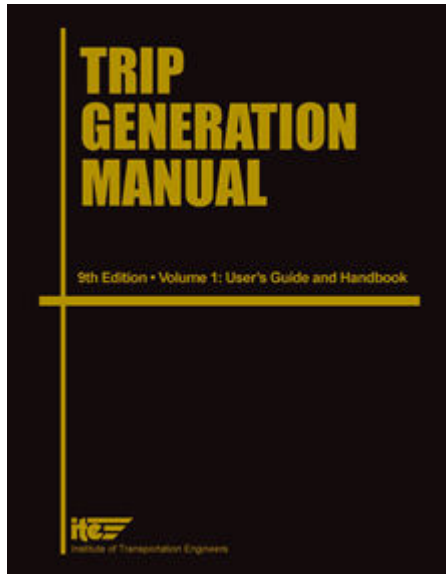
Export



Making Big Data Better

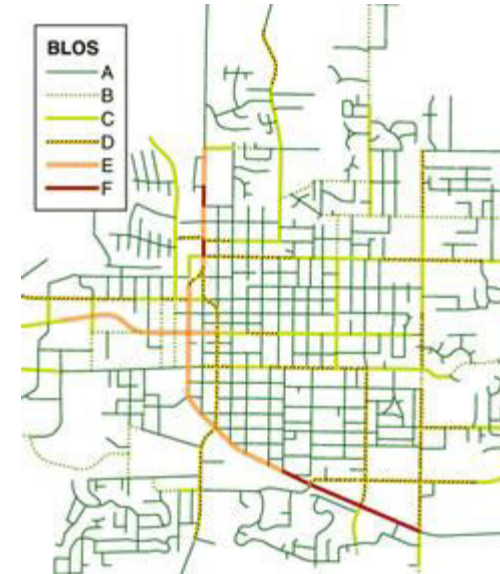
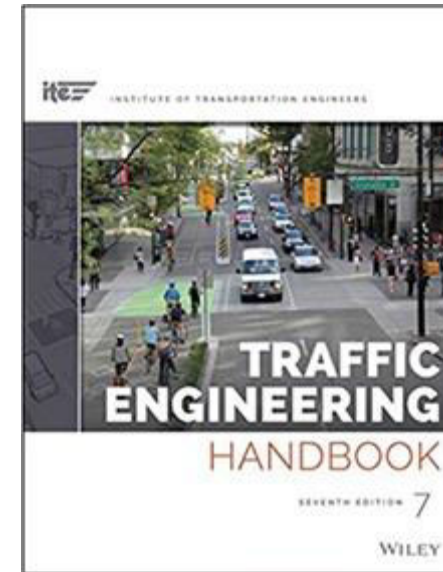
Leveraging Data For Better Bike Policy

Old rules codifying car dominance:



Level of service	Traffic lights	Stop signs /roundabout
	Delay (s/veh)	Delay (s/veh)
A	0-10	0-10
B	10-20	10-15
C	21-35	16-25
D	36-55	26-35
E	56-80	36-50
F	>80	>50

New rules codifying improved bike infrastructure:



Making Big Data Better

Data is great, but we still need vision.

Why cities with high bicycling rates are safer for all road users

Wesley E. Marshall ^a [✉], Nicholas N. Ferenchak ^b [✉]

Show more

<https://doi.org/10.1016/j.jth.2019.03.004>

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Highlights

- Cities with high bicycling mode shares have surprisingly good road safety records.
- Via negative binomial regression, we assess 13 years of data in 12 major US cities.
- Higher bicycling rates and 'safety in numbers' was not significant.
- Increased prevalence of protected bicycle facilities suggest safer cities for all.
- Variables representing gentrifying neighborhoods were also significant factors.



JUMP

Thank you.

@colinkhughes