@rmchase

Fear & Optimism about Our Future

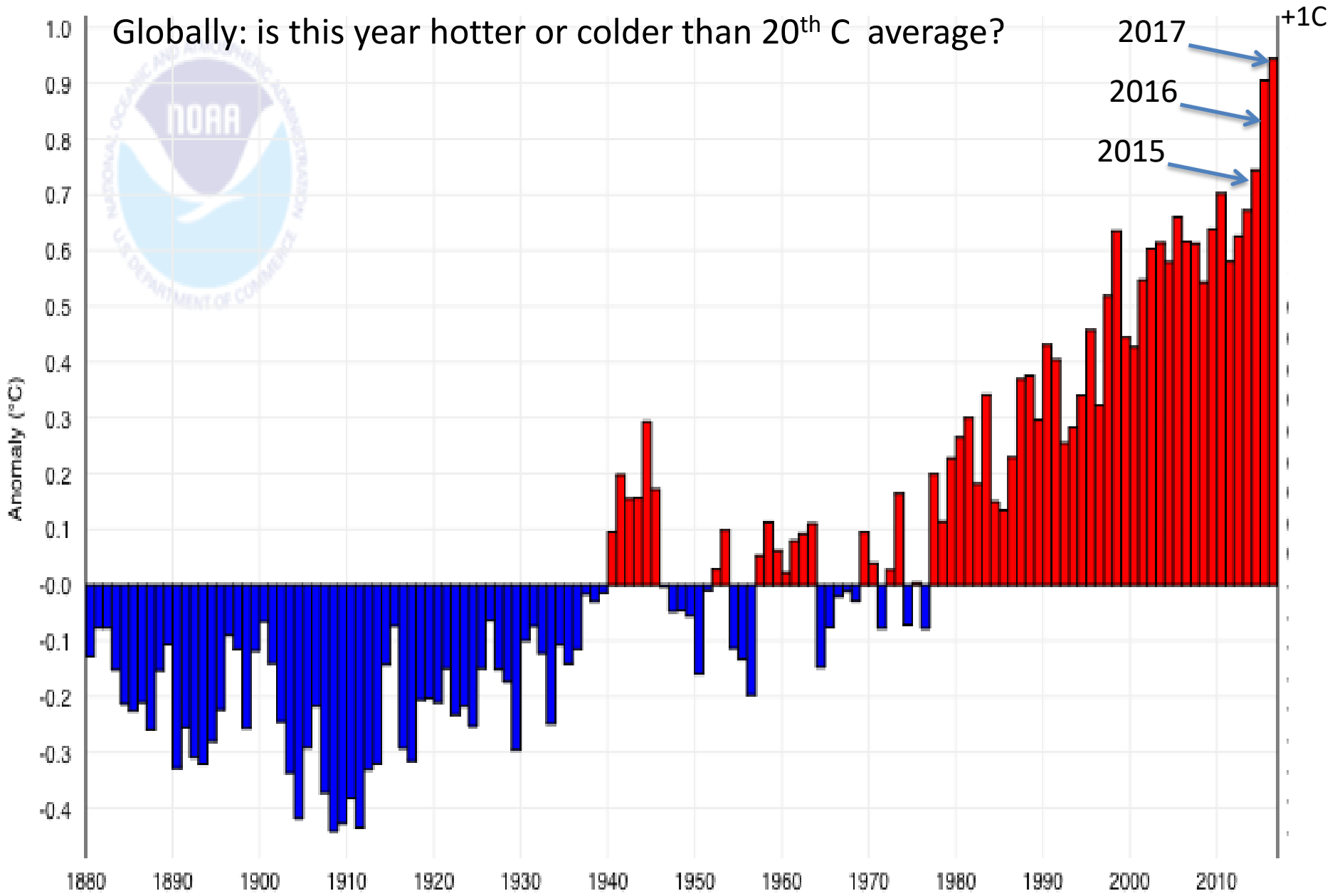
I've been deeply worried about the implications of CLIMATE CHANGE

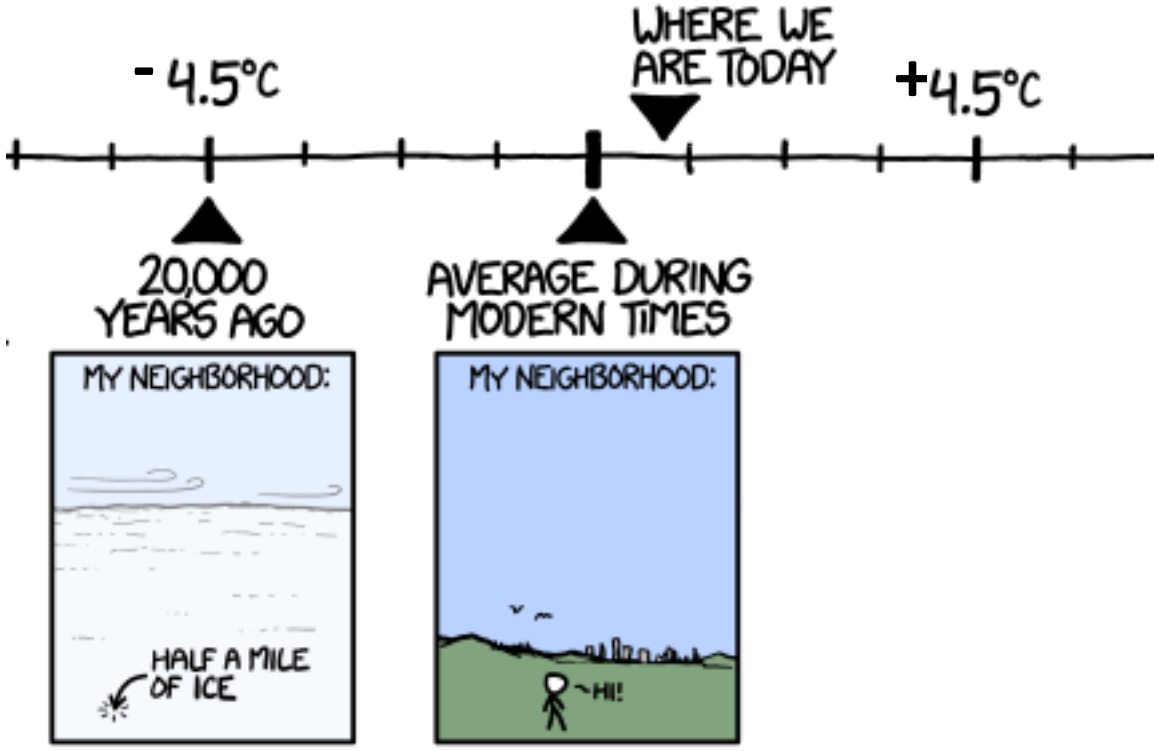
and

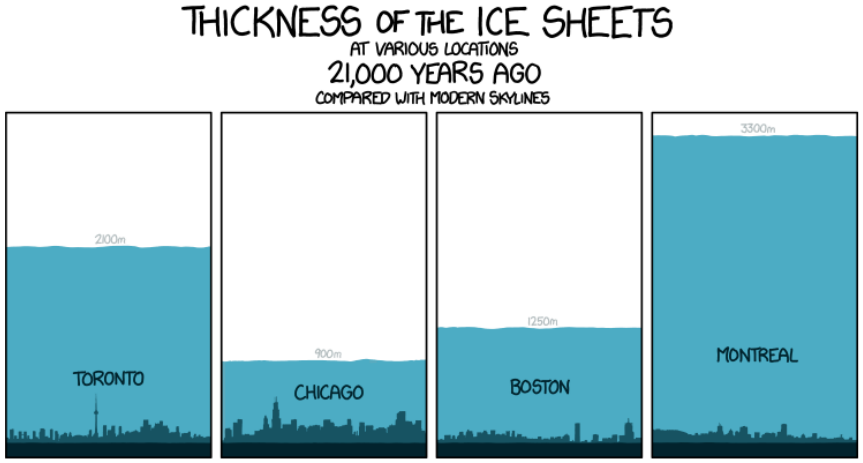
AUTONOMOUS VEHICLES

Globally: is this year hotter or colder than 20th C average?

Scientists predict +5-6C by 2100 under BAU



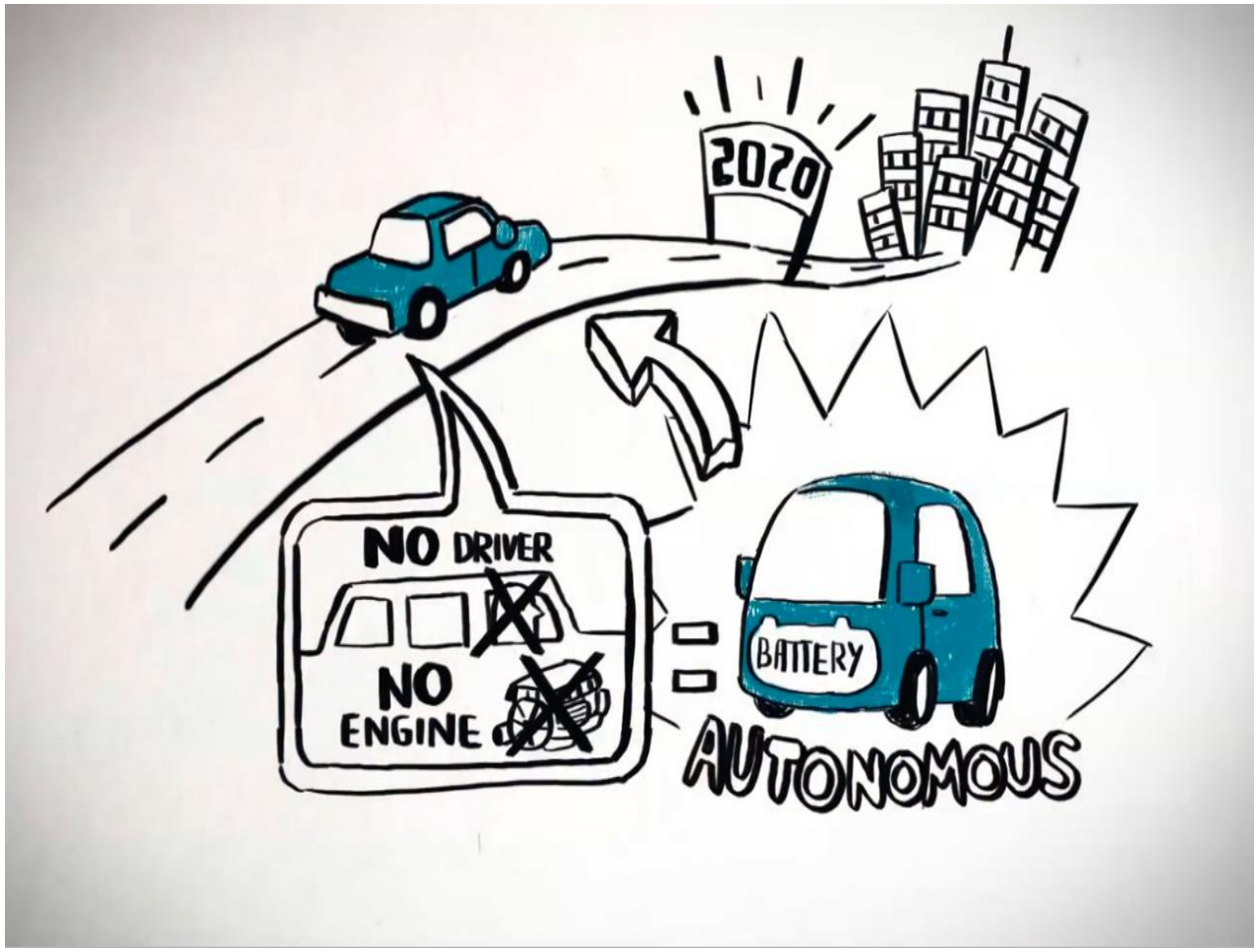




Credit: Randall Monroe

“The infrastructure we build over the next 3 years will determine the fate of humanity.”

--Christiana Figueres



https://www.youtube.com/watch?v=UcCD3lXYlTk

“It’s irrelevant to my city”

“It won’t happen in my city for decades.”

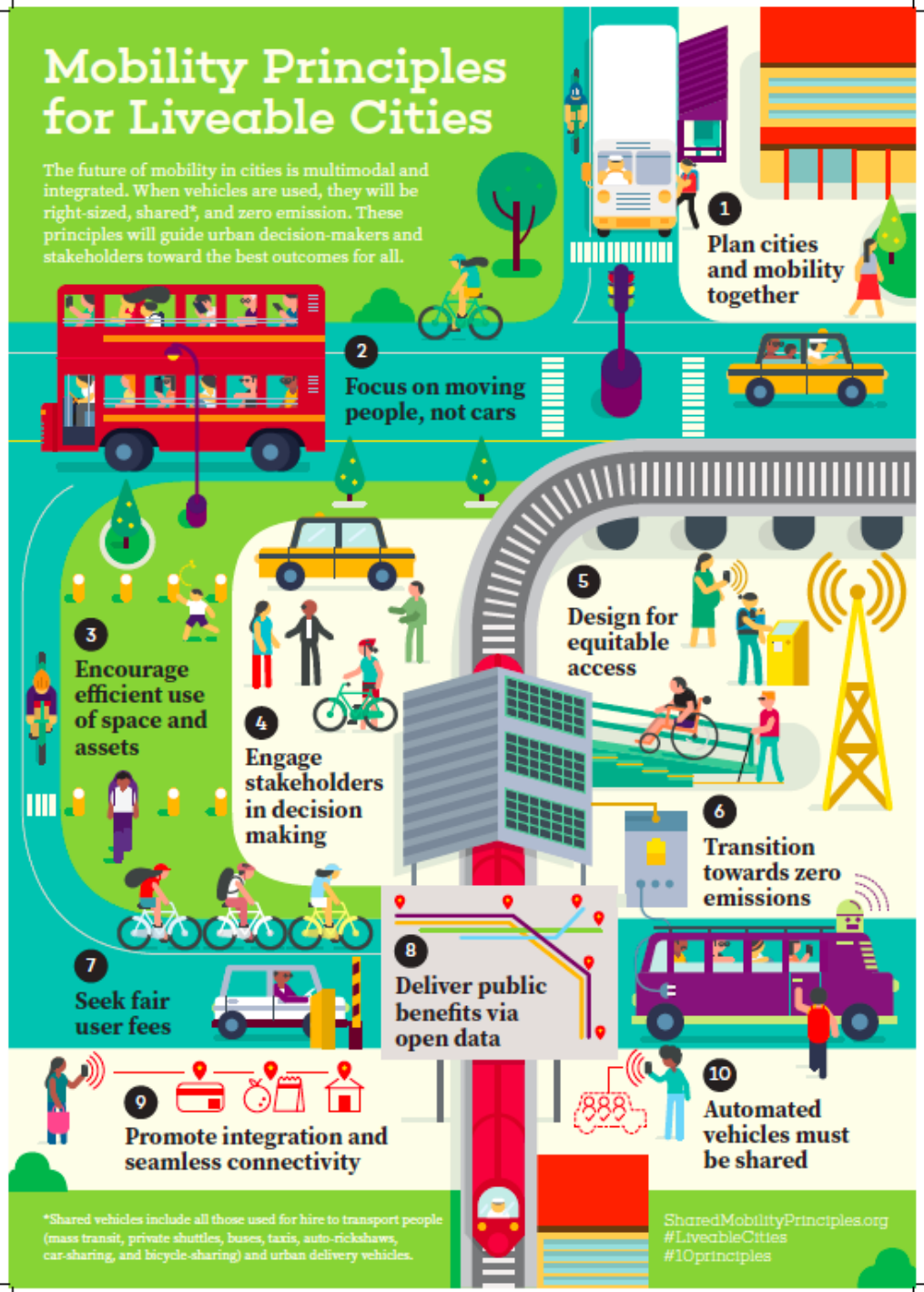
“Pilots are happening in my city right now”

We get to
AV HEAVEN

By fixing NOW the problems that have us currently living in transport HELL

Mobility Principles for Liveable Cities

The future of mobility in cities is multimodal and integrated. When vehicles are used, they will be right-sized, shared*, and zero emission. These principles will guide urban decision-makers and stakeholders toward the best outcomes for all.



*Shared vehicles include all those used for hire to transport people (mass transit, private shuttles, buses, taxis, auto-rickshaws, car-sharing, and bicycle-sharing) and urban delivery vehicles.

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#10principles

C40 CITIES

ICLEI Local Governments for Sustainability

ITDP Institute for Transportation & Development Policy

Partnership on Sustainable Low Carbon Transport

ROCKY MOUNTAIN INSTITUTE

SHARED-USE MOBILITY CENTER

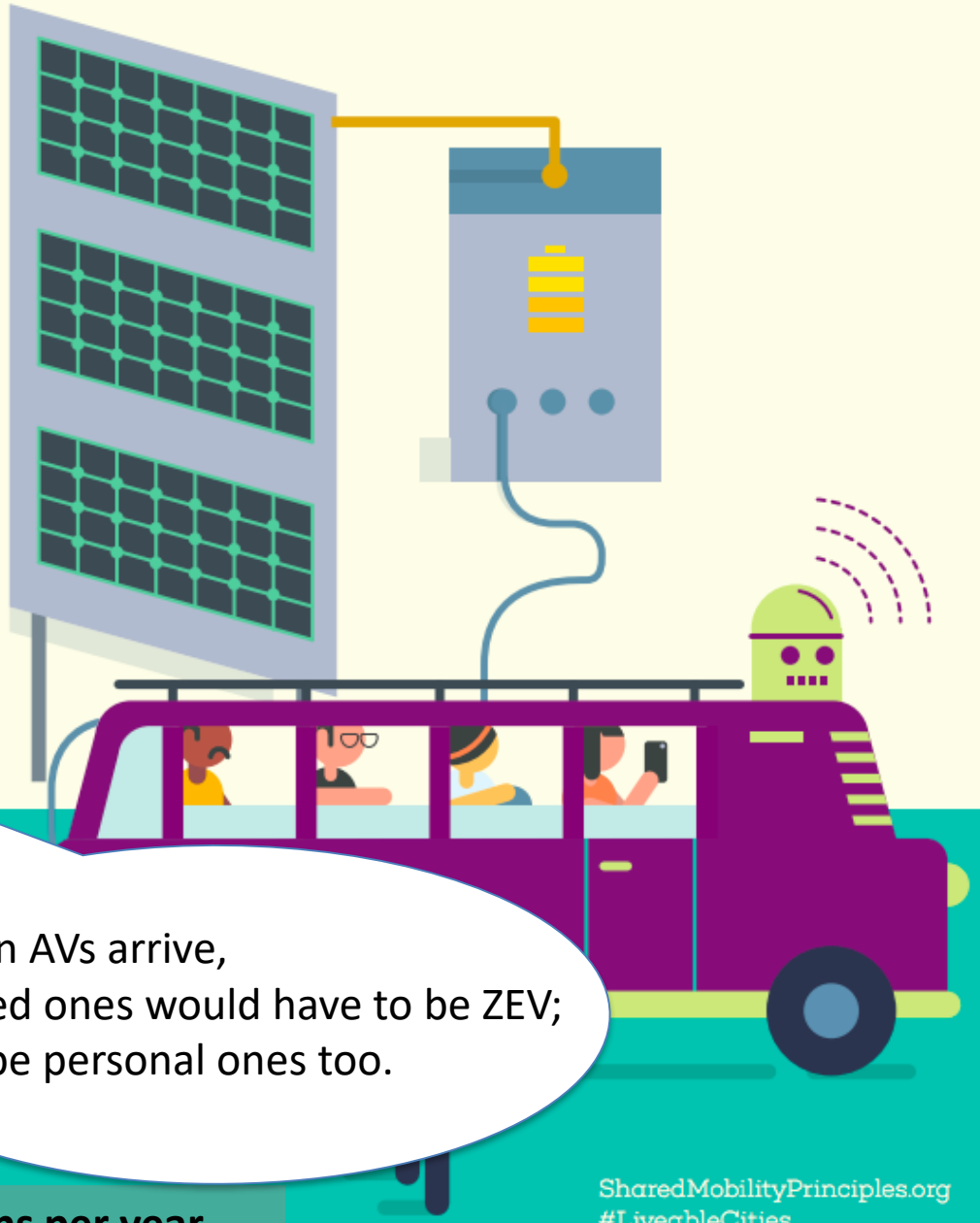
WORLD RESOURCES INSTITUTE | ROSS CENTER

- **Transition to zero emission**
- **Encourage efficient use of space and assets**
- **Seek fair user fees across all modes**
- **Deliver public benefits via open data**

Start with intensively used vehicles!

Buses
Taxis
Utility
Delivery

Have goals for all vehicles



When AVs arrive,
shared ones would have to be ZEV;
maybe personal ones too.

6

Transition towards zero emissions

POLLUTED AIR: 7 million premature deaths per year, 50% linked to transport

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3

Encourage efficient use of space and assets

ROAD CRASHES: 1.2 million deaths per year

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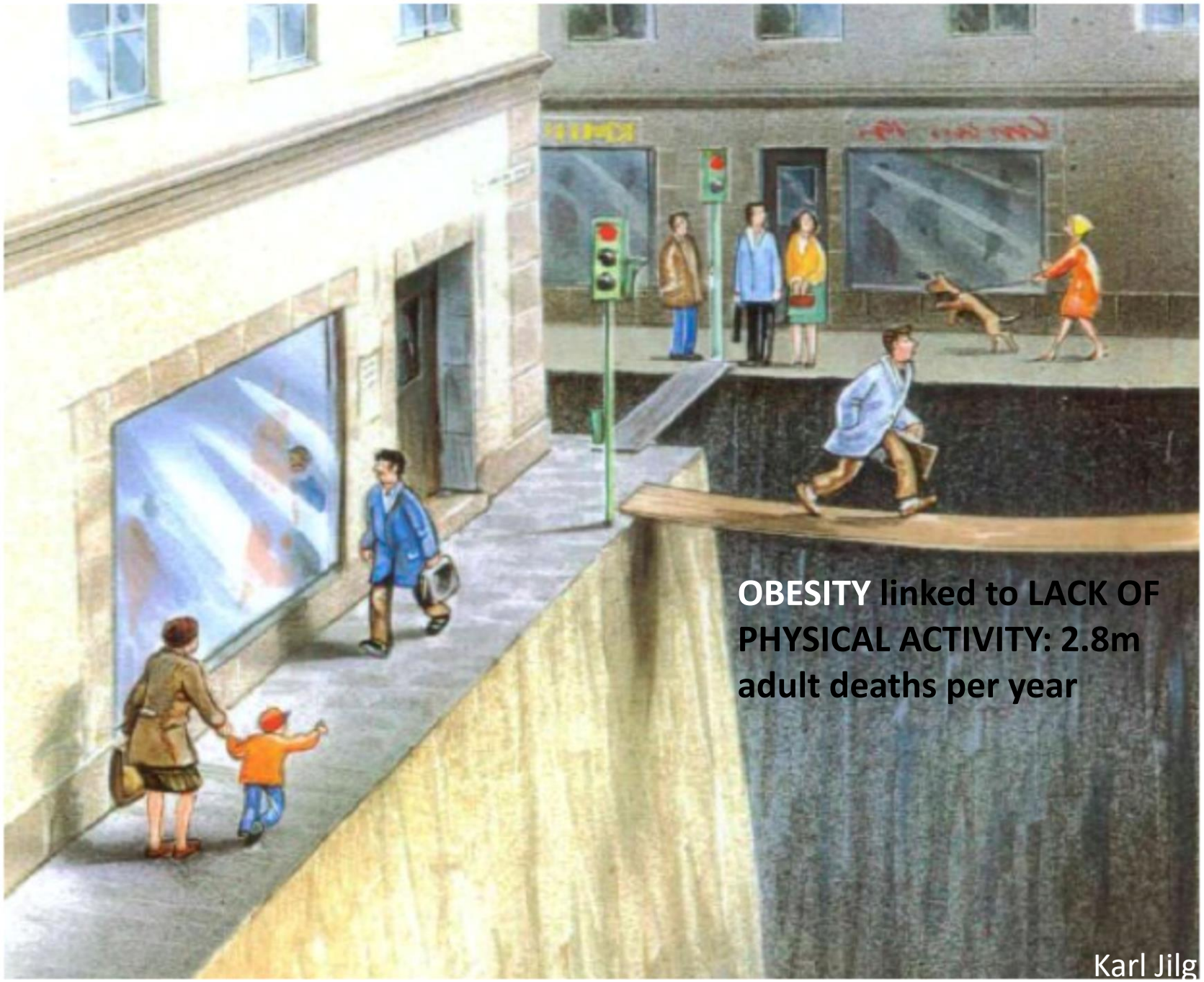
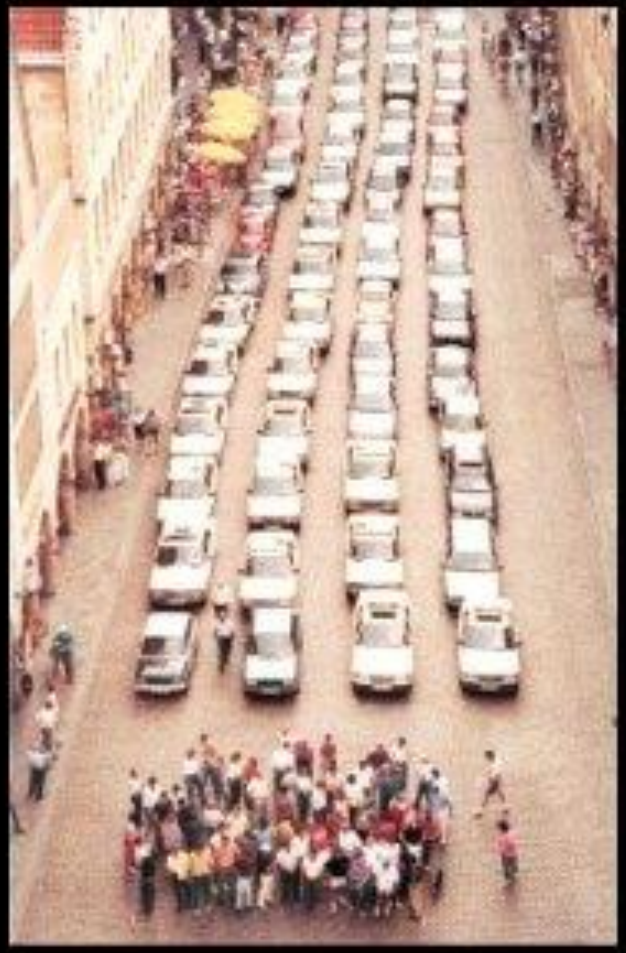
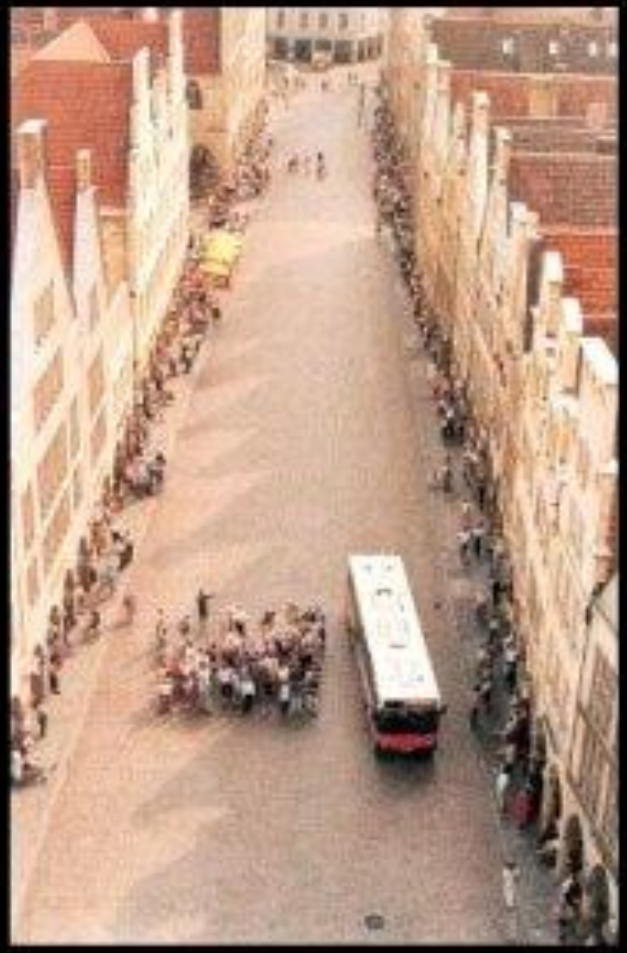

OBESITY linked to LACK OF PHYSICAL ACTIVITY: 2.8m adult deaths per year
Karl Jilg

Here are 200 people in 177 cars

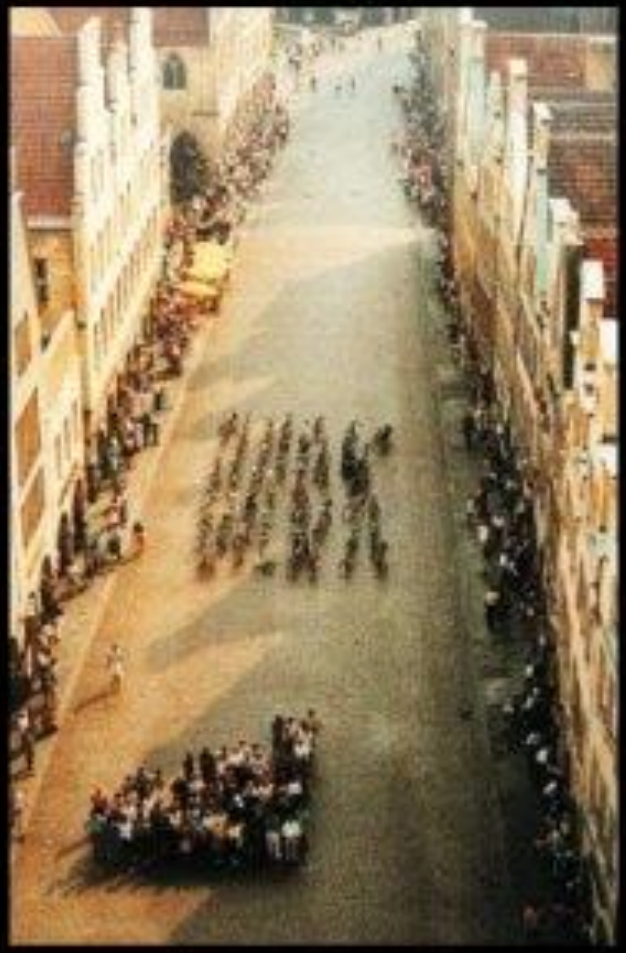
space required
to transport **60 people**



car

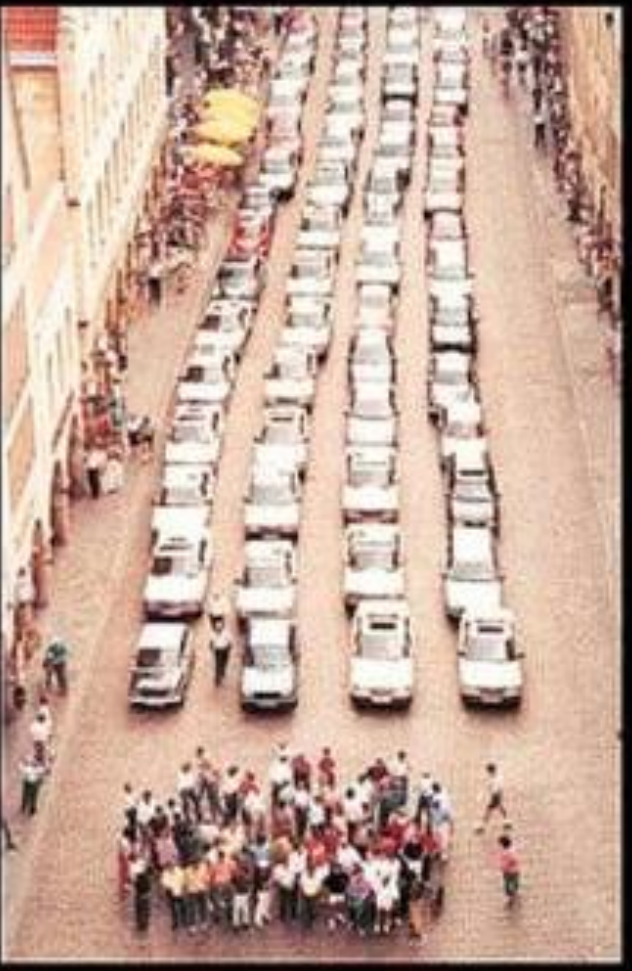


bus



bicycle

space required
to transport **60 people**



car

(inefficient) USE OF SPACE TODAY

MAKING SPACE FOR EFFICIENT MODES WITH LANE ALLOCATION

SHARED TRANSPORT
50 people by 🚌

CYCLE
20 people by 🚲

PRIVATE CARS
6 people by 🚗.

(inefficient) USE OF CARS

Zipcar's breakthrough:

undeniable proof that SHARING WORKS

- Is welcomed by mainstream city dwellers
- A viable business model
- Produces real CO2 reductions (& other city benefits)
- Is simple thanks to tech

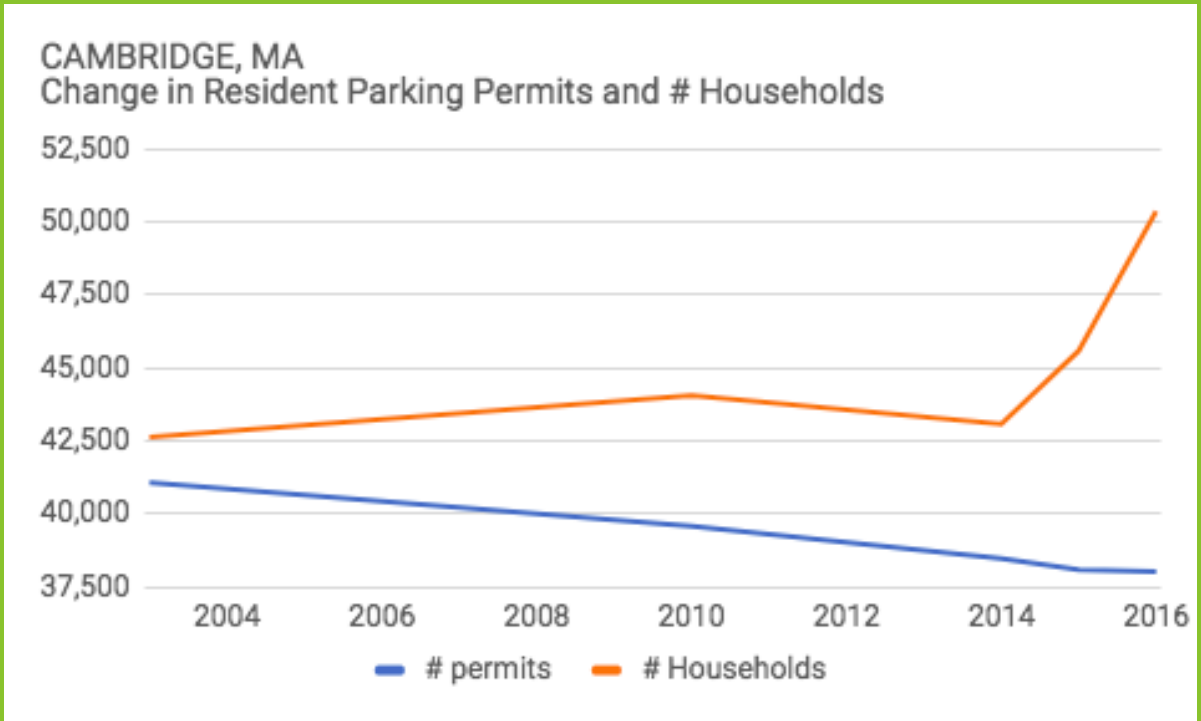
Zipcar: 1 million people sharing 13,000 cars around the world,

Each car replaces 13 personally owned cars
(Removing 1 729 000 cars from cities!)

In Cambridge MA:

25% of Cambridge residents are members!
~200 zipcars
~2600 fewer cars!

2003-2016 a 22% decrease in parking registrations per household



TODAY: Weak wrong unfair pricing

- Road User Fees that cover costs!
- Honest Parking (curb access) fees
- Pollution/Air Quality fees
- Congestion Pricing
  - Per square meter?!

7

Seek fair user fees

*Shared vehicles include all those used for hire to transport people (mass transit, private shuttles, buses, taxis, auto-rickshaws, car and bike-sharing) and urban delivery vehicles.

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An analysis of New York City e-hailing (TNC) data

- net increases of 31 million trips and 52 million passengers over the past 3 years

 the addition of 600 million miles of vehicular travel over the past 3 years (+7%!)

- increased congestion

Figure 11. Changes in ridership by mode, 2014 to 2015

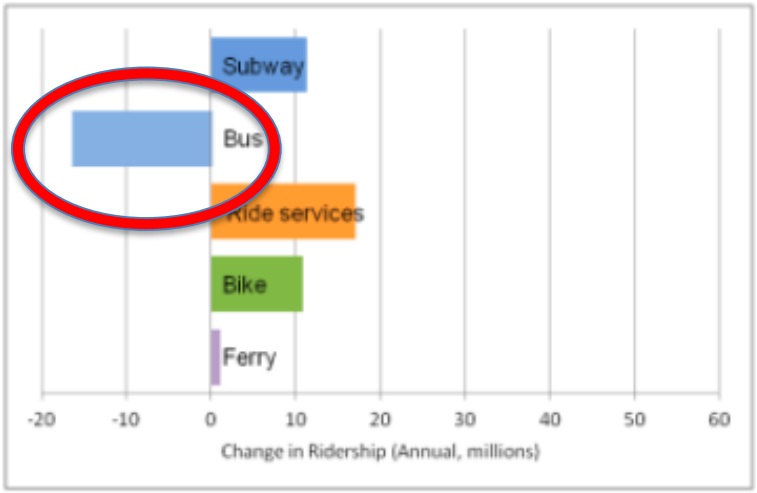
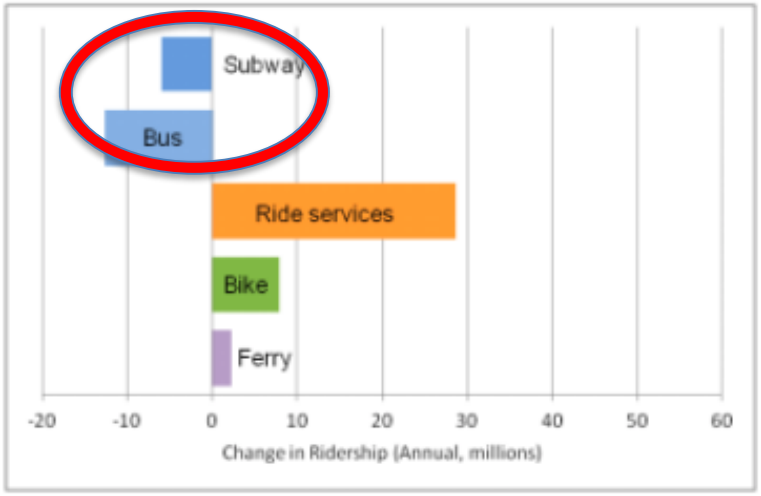


Figure 12. Changes in ridership by mode, 2015 to 2016



Solution is NOT
to tax or ban
e-hailing or taxis

surge pricing IS congestion pricing
With revenues going to company
rather than government!

FAIR USER FEES
ACROSS ALL MODES

And to use congestion pricing revenue
to improve sustainable transit modes

HOV lanes with
dynamic pricing (Lexus) lanes (!) → Urban HOV3+ lanes & paid

- Road User Fees that cover costs!
- Honest Parking (curb access) fees
- Pollution/Air Quality fees
- Congestion Pricing
  - Per square meter?!

When AVs come,
We will already be getting revenue from pickup, dropoff, delivery curb management fees, so loss of parking fees won't bankrupt us.

When AVs come,
Well-priced congestion pricing will disincentivise Zombie cars (zero occupancy)

7

Seek fair user fees

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8

Deliver public benefits via open data

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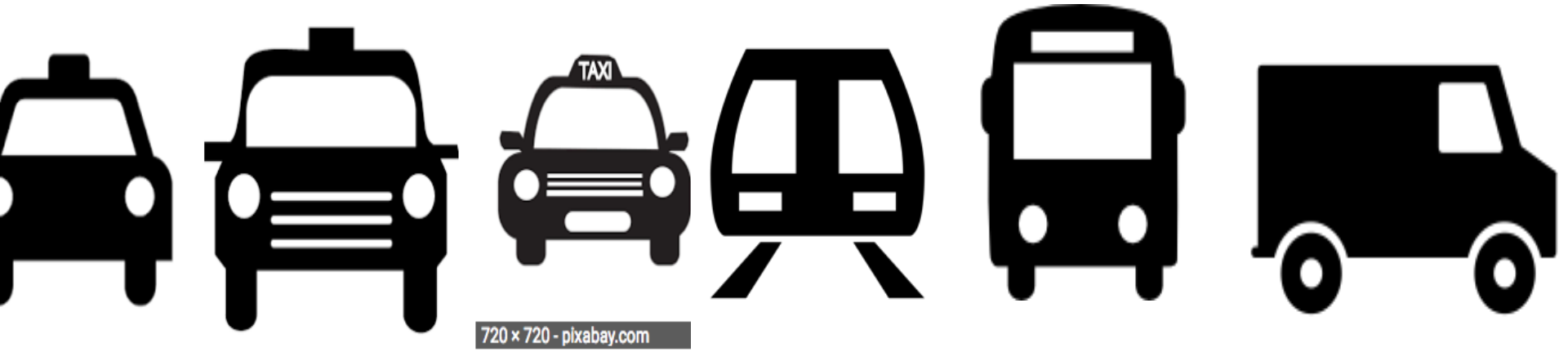
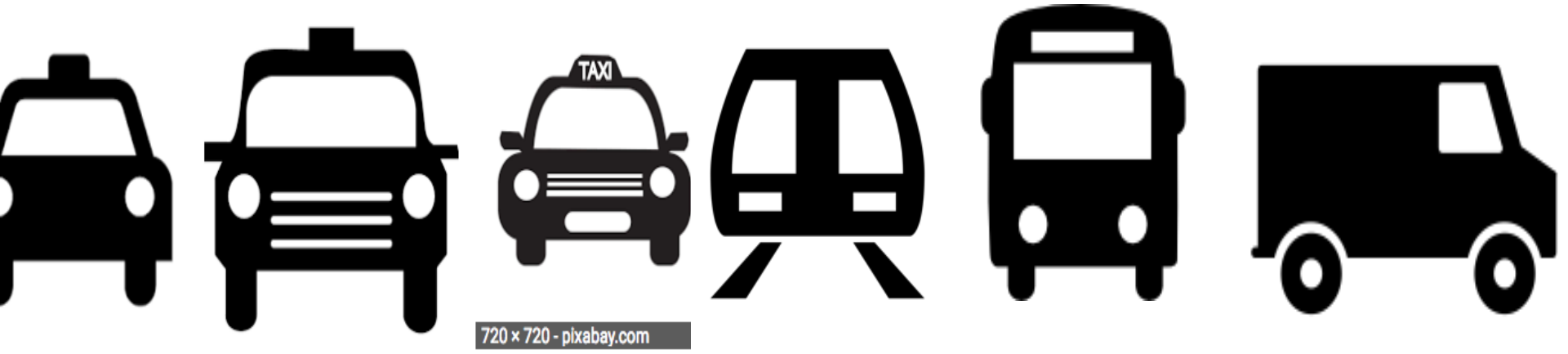
Transportation networks tend toward monopoly

Monopolies (even regulated ones) innovate little.
Global monopolies exclude local & startup companies



Ensure Competition *& Interoperability*

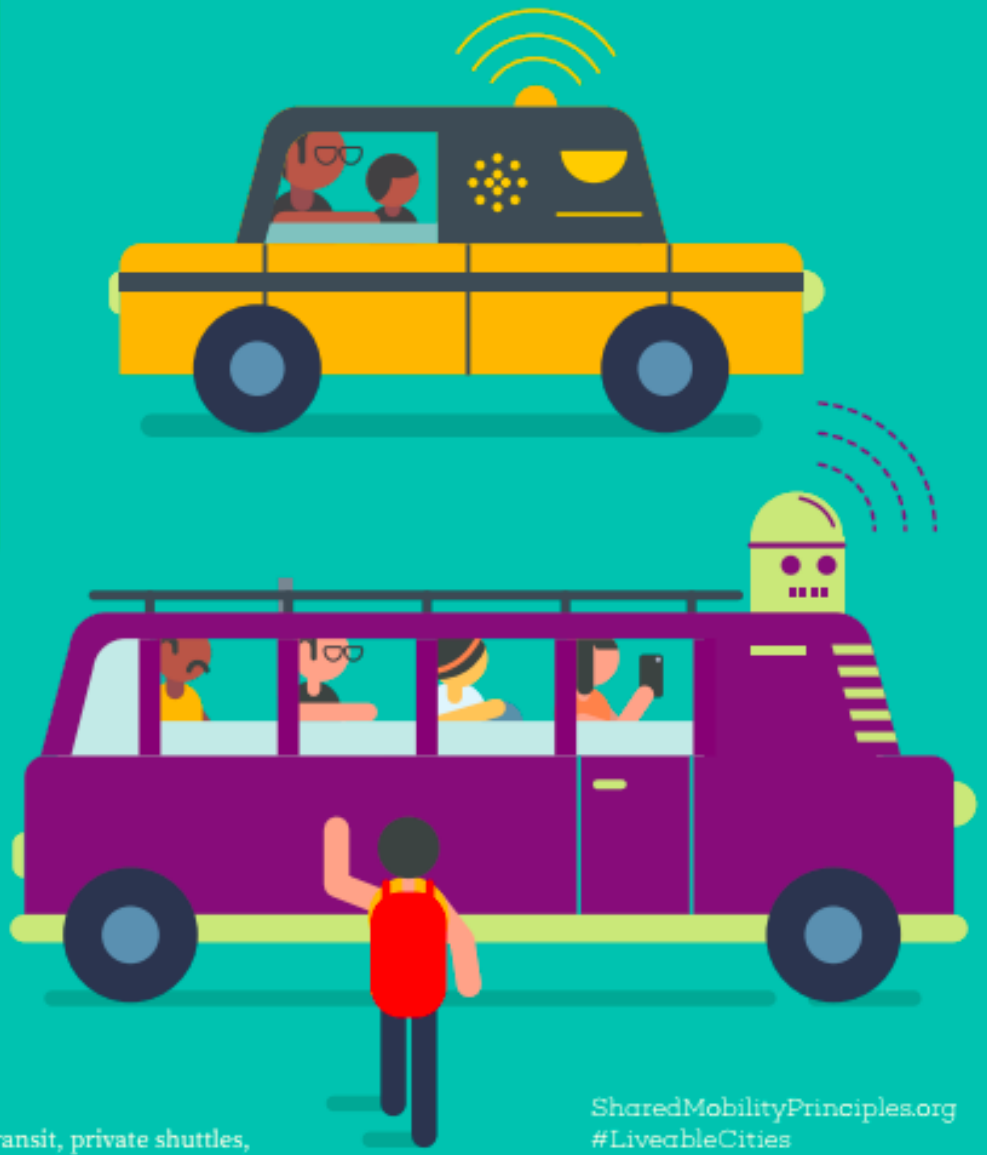
We must demand the use of **Standard Open Data**
for Shared Rides (**see OTP.org),**
and Metros & Buses (GTFS).



If we follow rules 1-9,
ELECTRIC + SHARED + AUTOMOUS will happen naturally.

If we fail to execute *perfectly* this rule #10 will still make it happen

No matter when AVs arrive, we will have made our cities better!



10

Automated vehicles must be shared

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INFRASTRUCTURE IS DESTINY

EXCLUSION: **roughly 1 in 6 people (1.3 billion) remain in extreme poverty**

LET'S CREATE THE WORLD WE WANT TO LIVE IN

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LET'S CREATE THE WORLD WE WANT TO LIVE IN

~~*can*~~

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