GPS, Wireless Tech & Internet make **CARSHARING** possible

Smart phones & standard data make **TRANSIT APPS** possible

GPS, smart phones & AI
make **E-HAILING & RIDESHARING** possible

UBER, LYFT, CHARIOT

Technology makes sharing easy

&

sharing is good!

CARsharing
12 personal cars = 1 shared car
Greatly reduced demand for parking

RIDEsharing
1.2 people/personal car → more!
Reduces congestion

SHARING

SUM4All

Equitable

Efficient

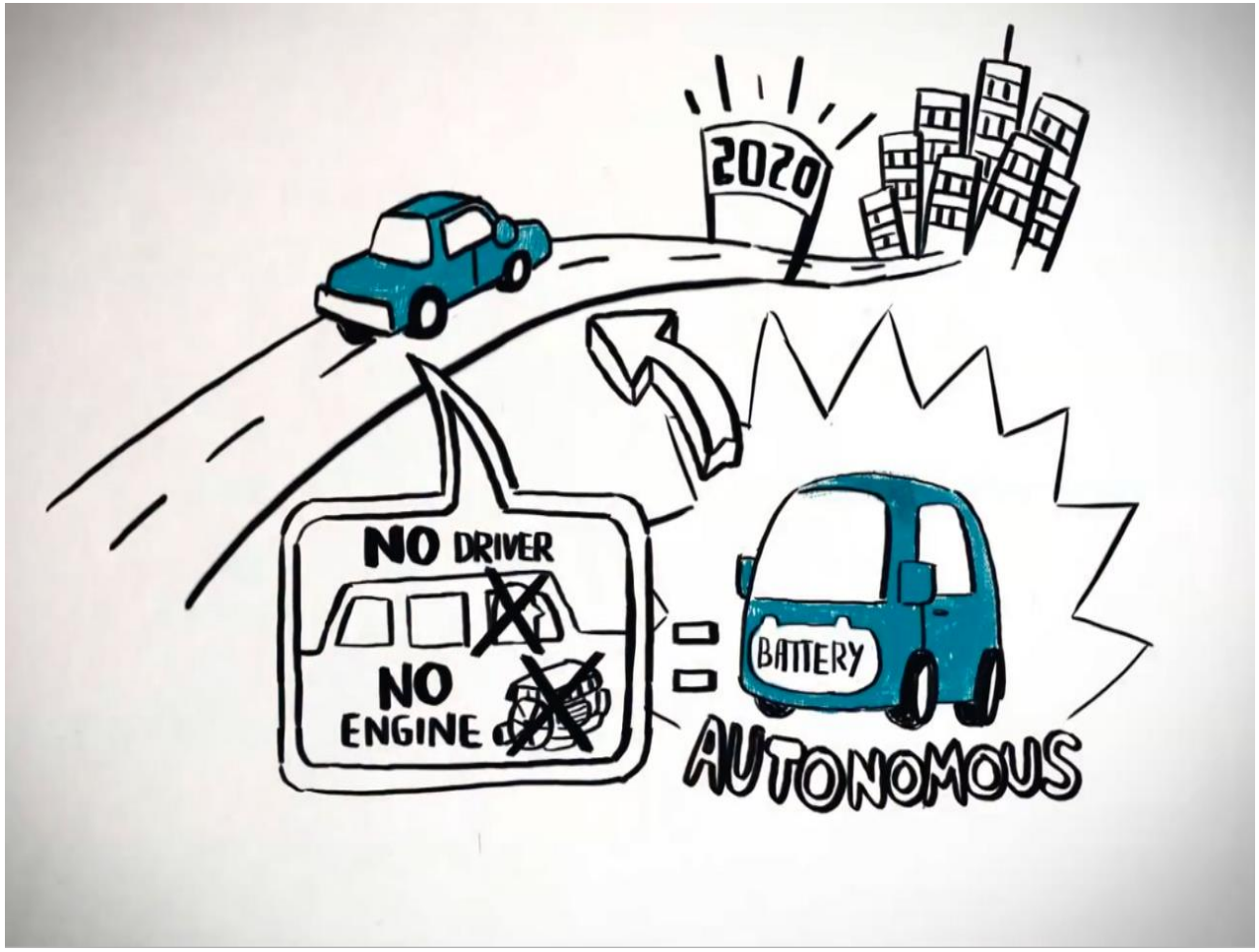
Clean

Safe

We are getting a chance to

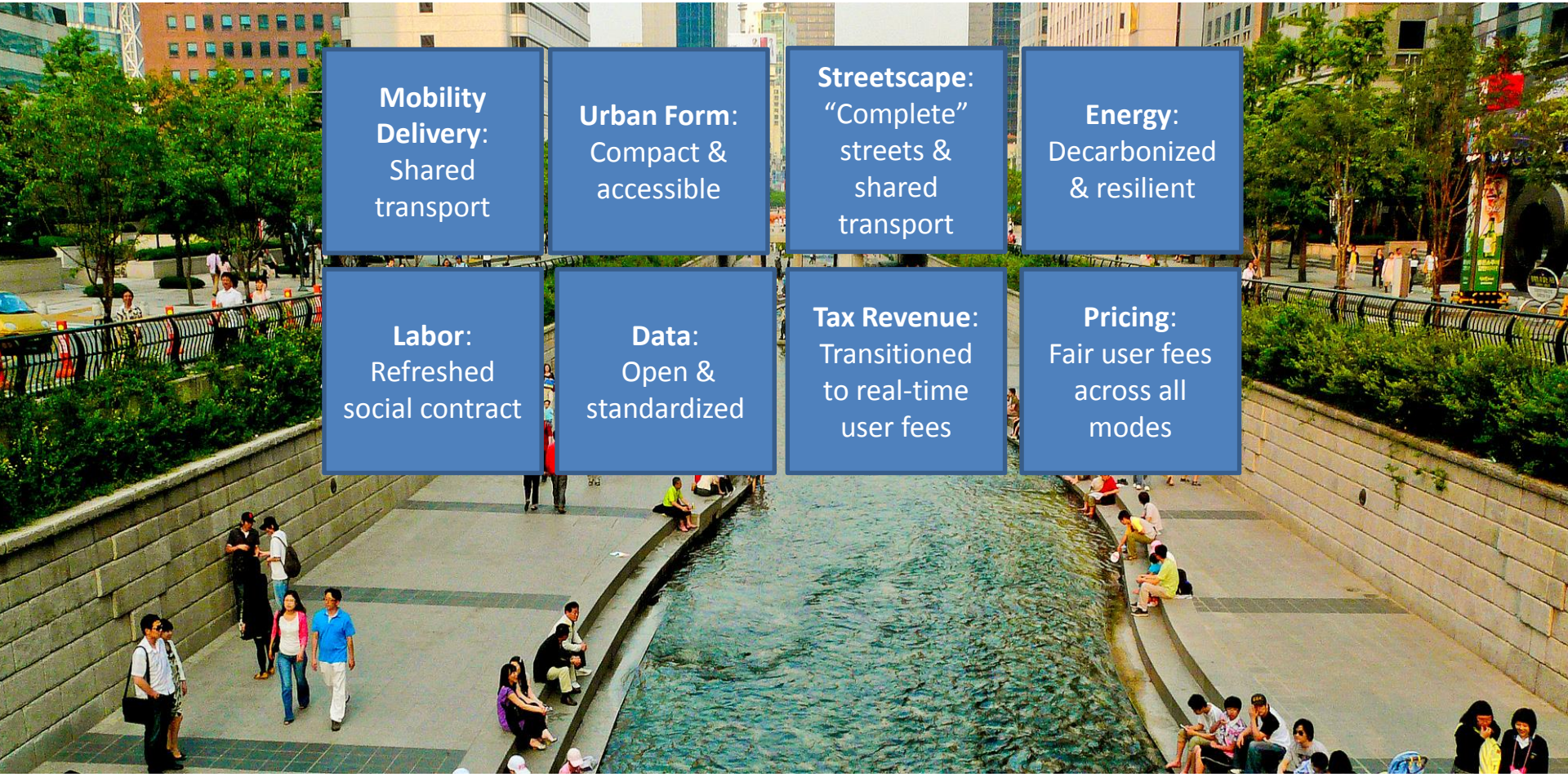
DO-OVER

Cities



https://www.youtube.com/watch?v=DeUE4kHRpEk&t=2s

DONE RIGHT, CITIES COULD EXPERIENCE THIS:



SKEPTICISM

We already live in transport HELL

Underpricing

is the root of most of the problems
we experience today in transportation.

AVs – free of the cost (or personal time) of drivers –
will **MAGNIFY** current problems
by making car travel even cheaper.

What is my cost for this trip?

Free pollution of our air

Delhi 2016

Free or almost free on-street parking

Free travel during peak times

Free access to curbs for pickup, dropoff, and delivery.

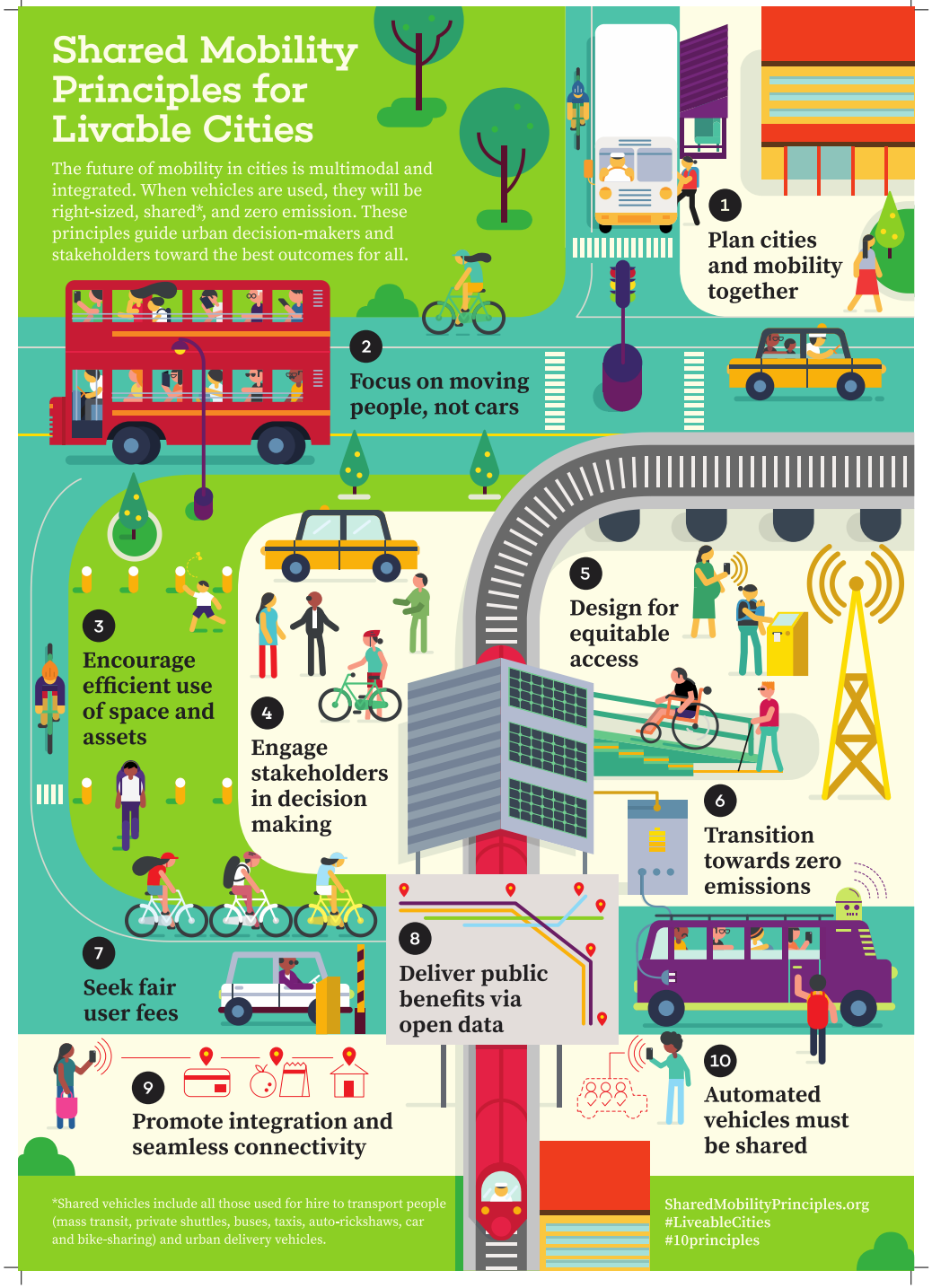
What if we had

#7 Fair User Fees Across All Modes

?

Shared Mobility Principles for Livable 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 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 and bike-sharing) and urban delivery vehicles.

SharedMobilityPrinciples.org
#LiveableCities
#10principles

C40 CITIES

ICLEI Local Governments for Sustainability

ITDP Institute for Transportation & Development Policy

Partnership on Sustainable Low Carbon Transport

ROCKY MOUNTAIN INSTITUTE

NRDC NATURAL RESOURCES DEFENSE COUNCIL

SHARED-USE MOBILITY CENTER

WORLD RESOURCES INSTITUTE | ROSS CENTER

Shared Mobility Principles for Livable Cities

Multimodal, integrated.

Vehicles are right-size, shared, zero emission.

1. Plan cities and mobility together
2. Focus on moving people, not cars
3. Encourage efficient use of space and assets
4. Engage stakeholders in decision making
5. Design for equitable access
6. Transition towards zero emissions
7. Seek fair user fees across all modes
8. Deliver public benefits via open data
9. Promote integration and seamless connectivity
10. Automated vehicles must be shared

SharedMobilityPrinciples.org

Shared Mobility Principles for Livable Cities

Multimodal, integrated.

Vehicles are right-size, shared, zero emission.

1. Plan cities and mobility together
2. Focus on moving people, not cars
3. Encourage efficient use of space and assets
4. Engage stakeholders in decision making
5. Design for equitable access
6. Transition towards zero emissions
7. **Seek fair user fees across all modes**
8. Deliver public benefits via open data
9. Promote integration and seamless connectivity
10. Automated vehicles must be shared

SharedMobilityPrinciples.org

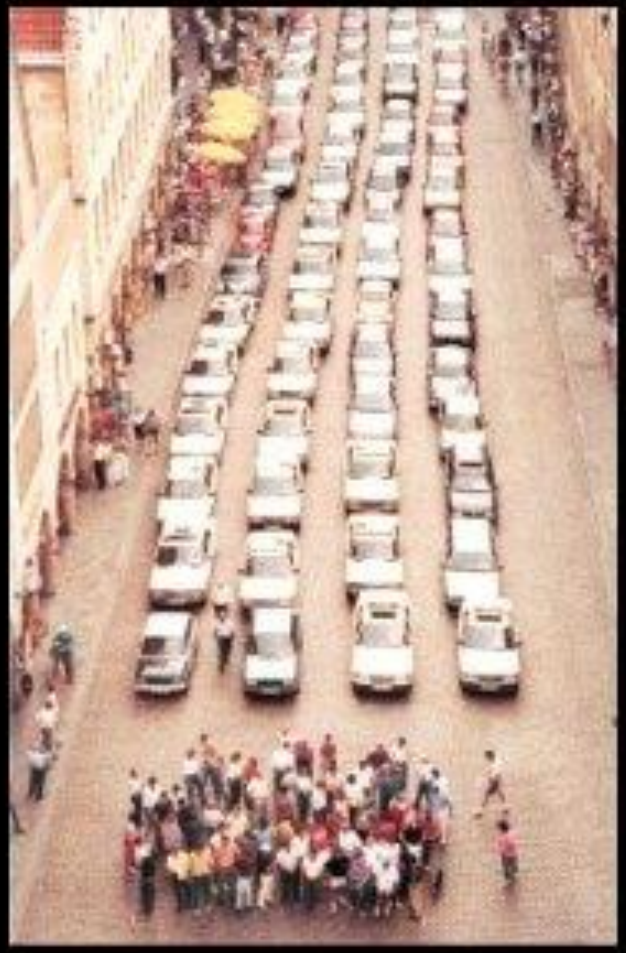
SMPLC#6 Transition to Zero Emission & Renewable

What if we had

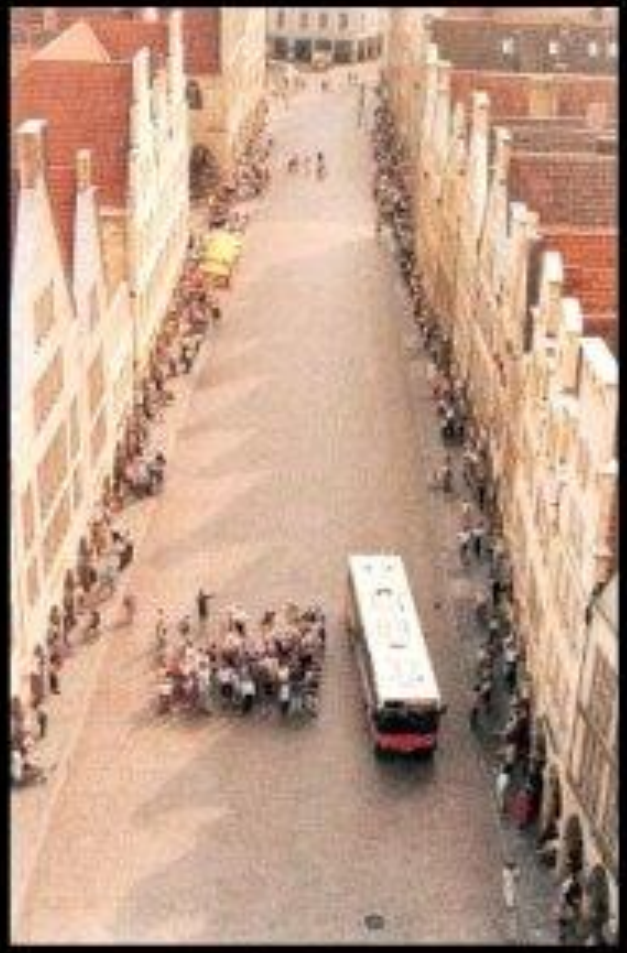
#3 Encourage efficient use of space and assets

?

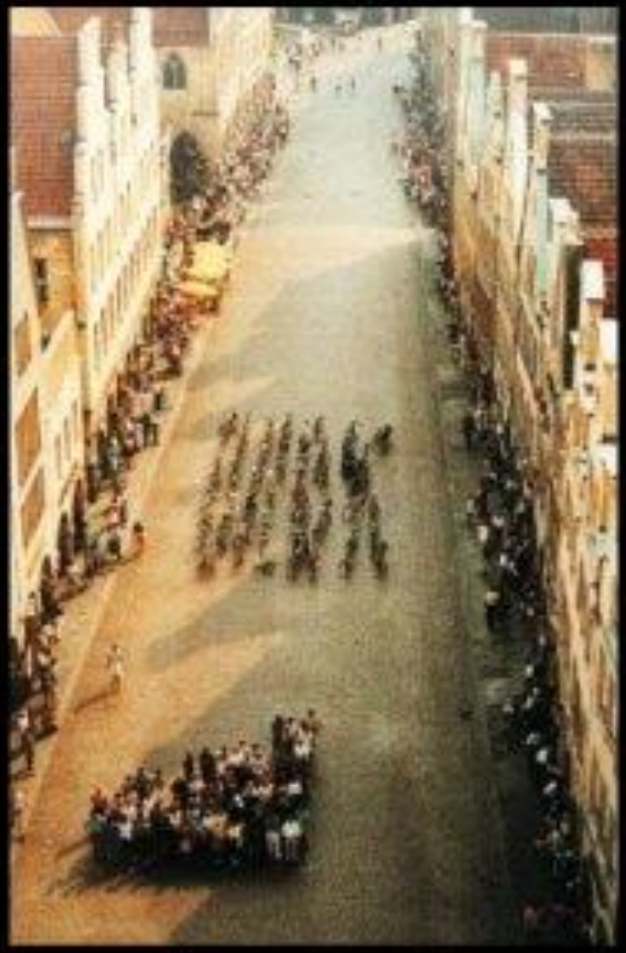
space required
to transport **60 people**



car

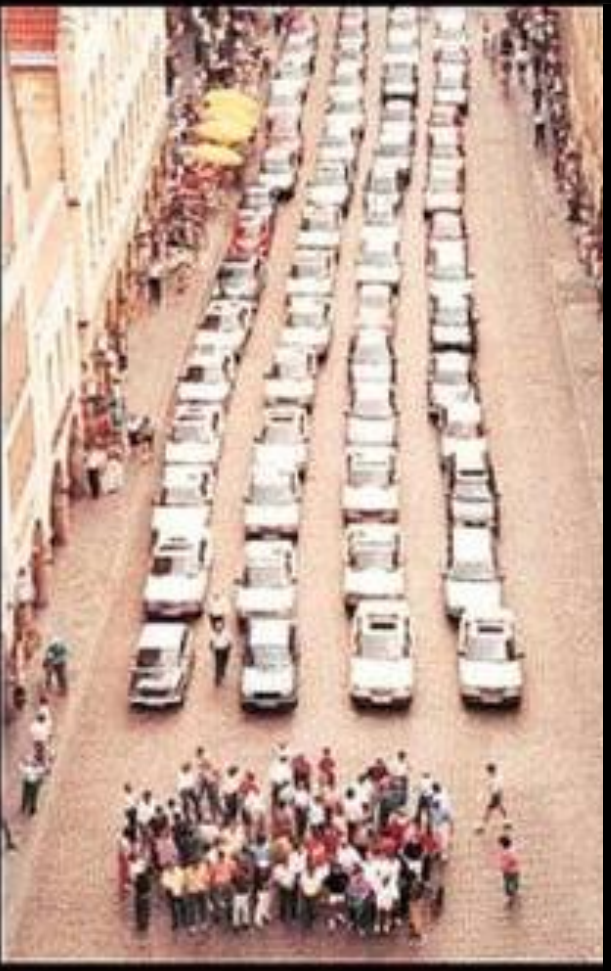


bus



bicycle

space required
to transport **60 people**



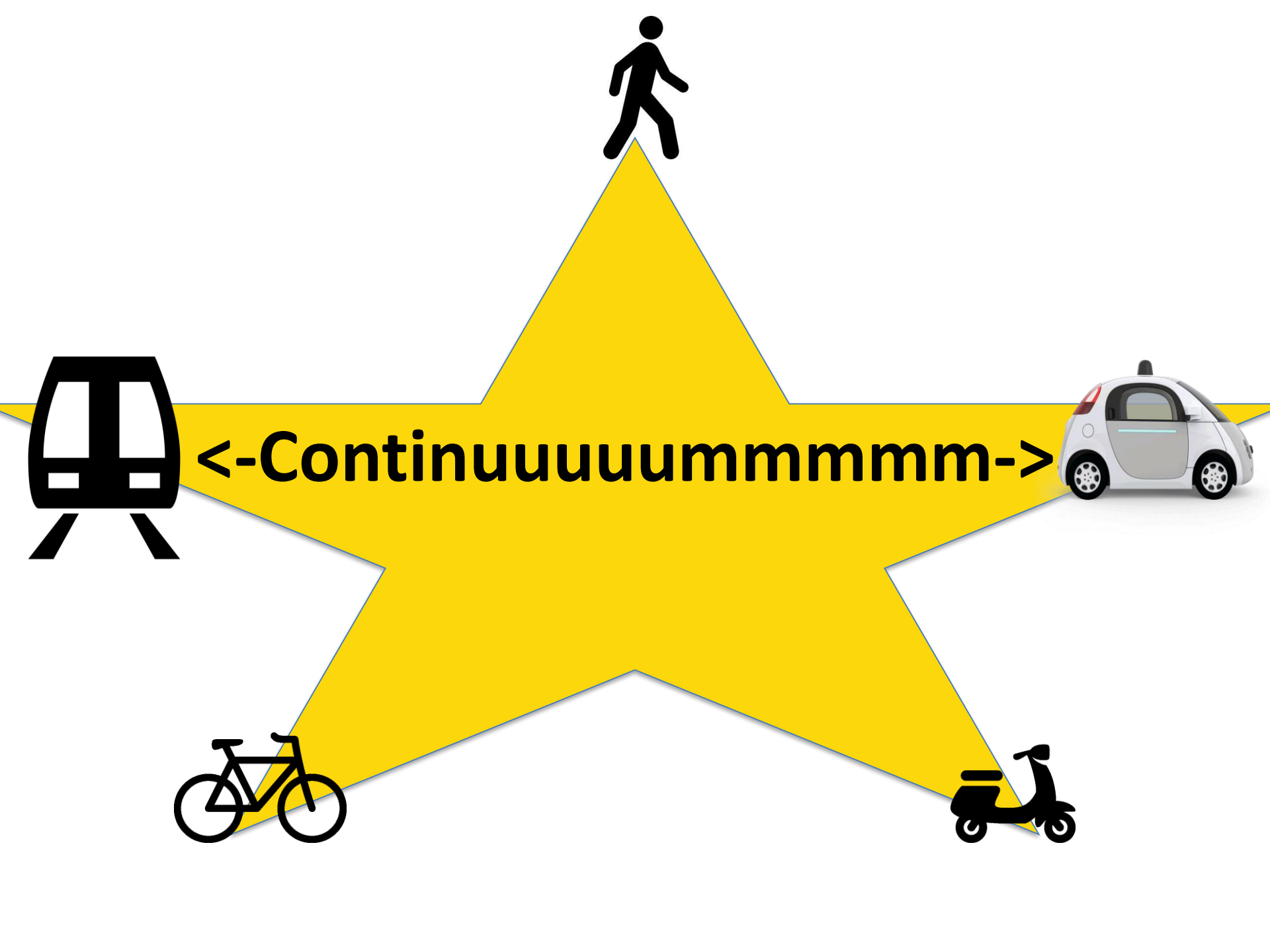
car

Here are 200 people in 177 cars

-- vehicles
-- roads
-- lanes
-- curbs

More SHARING

Origem
3643-3998
20233
830 CENTRO DIRETA
830 DIRETA
10750
Santa Ines
Mus. H. Natural
20618


<-Continuuuuummmmmm->

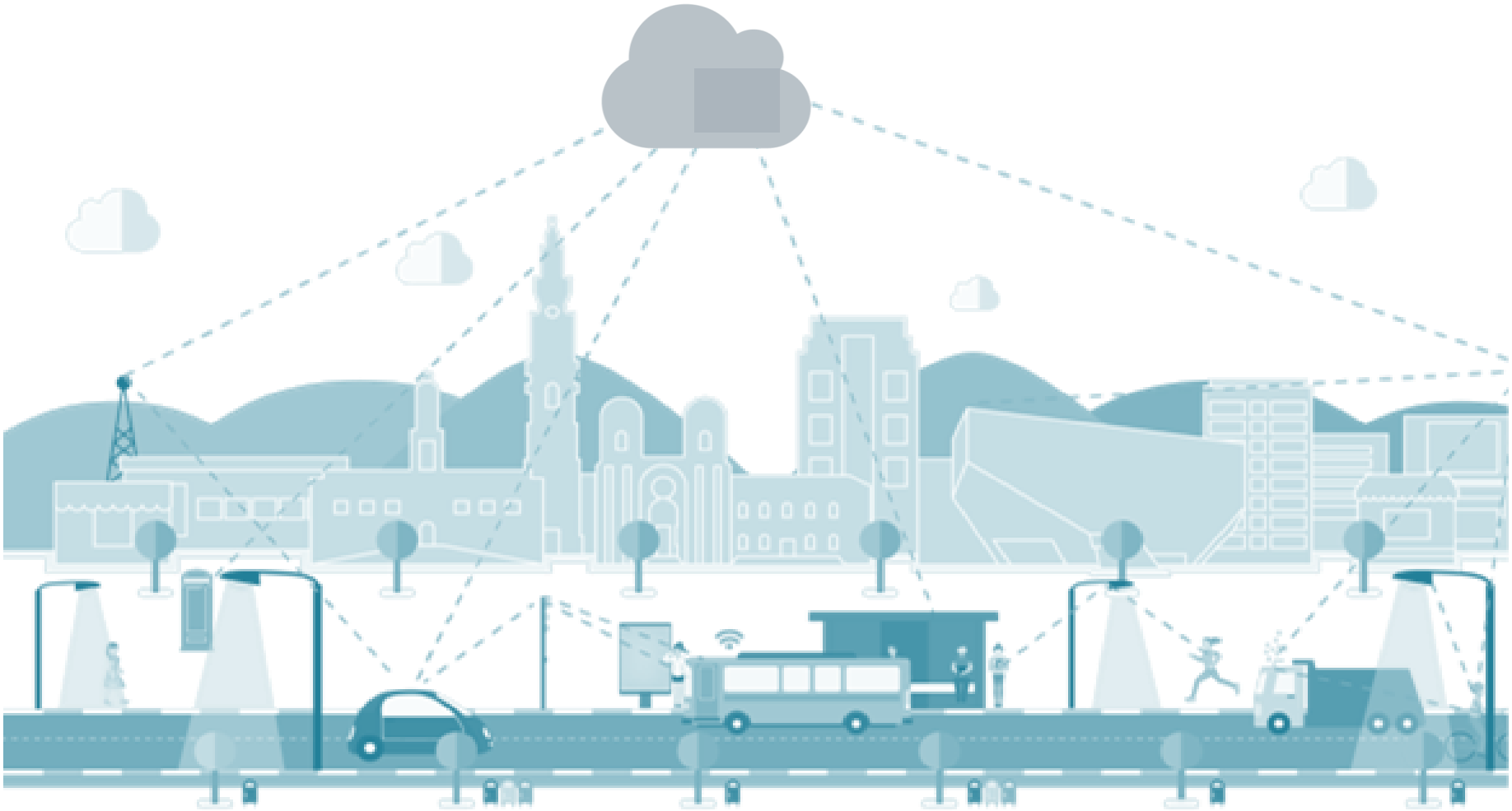
Inadequate data standards
to support this new pricing
&
#8 Public benefits via open data

No mapping standards for curb and lane use

Open Transport Partnership

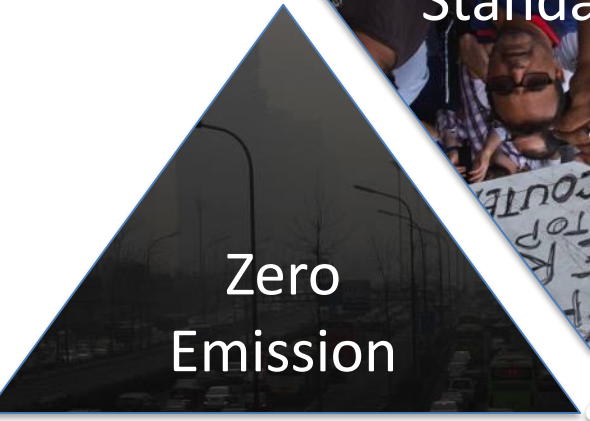
#4 Engage stakeholders in decision making

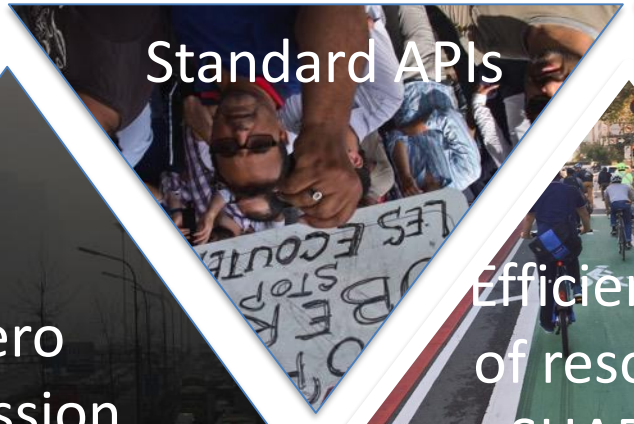
#9 Work toward integration and seamless connectivity



SHARED MOBILITY PRINCIPLES FOR LIVABLE CITIES

#6 Transition to Zero Emission & Renewable
#3 Efficient Use of Resources
#7 Fair User Fees across all modes
#8 Public benefits via open data
#9 Work toward integration & seamless connectivity
#10 AVs in dense metros must be electric & shared





Transformed economics mean that Where AVs drive matters (fix pricing!)

Self driving or not

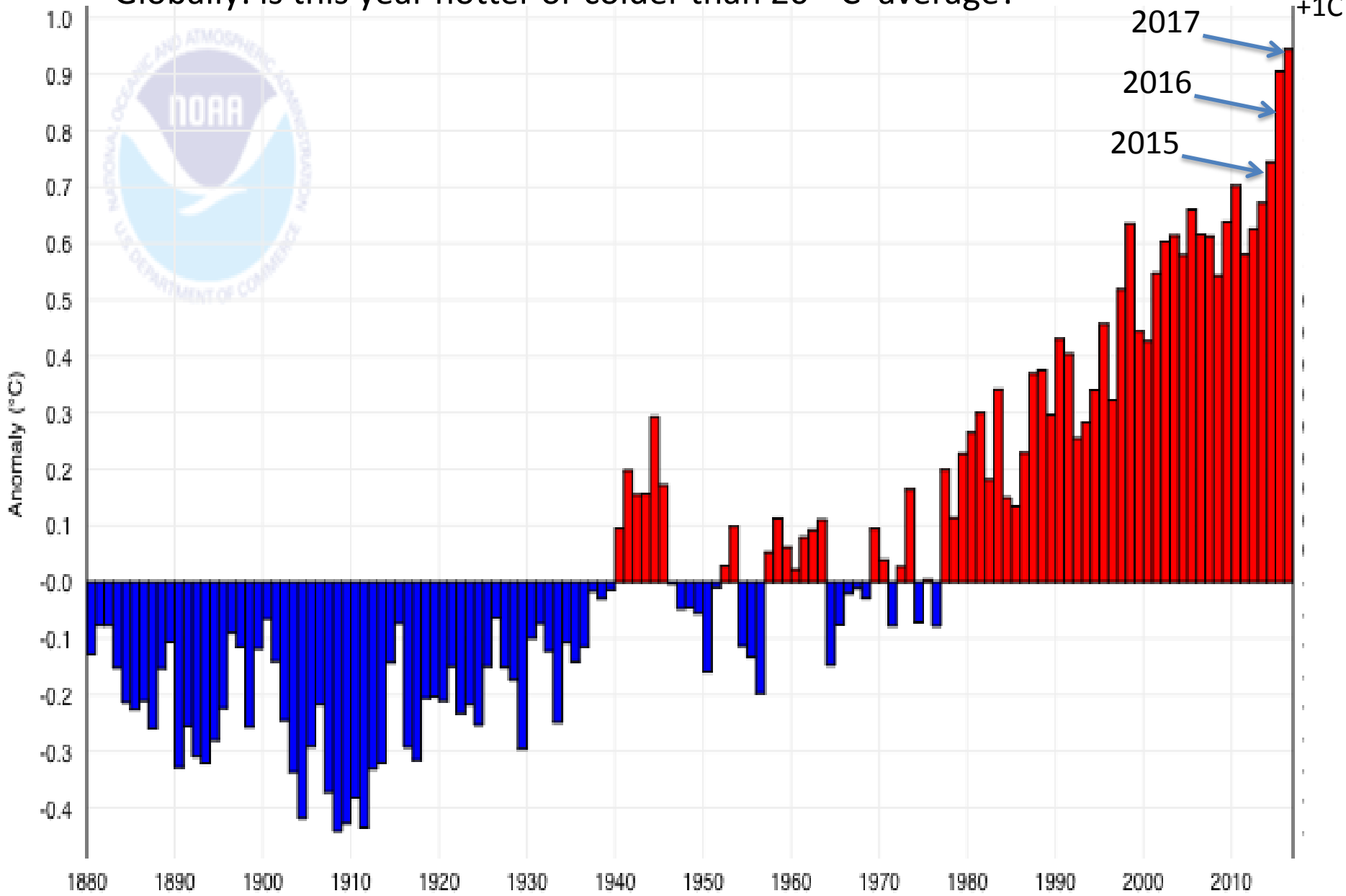
same problems

METAL BOXES ON SCARCE STREETS

We don’t have time for delay

Scientists predict +5-6C by 2100 under BAU

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

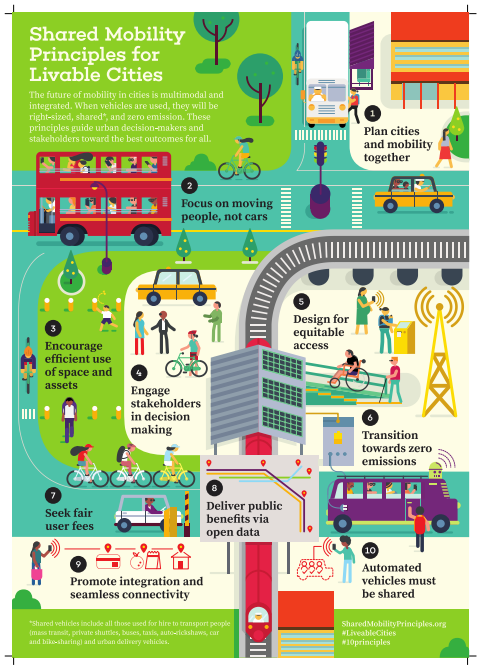


Mission: Channel the tech-driven disruption in the mobility sector to (re)build cities that are sustainable, livable, and just.

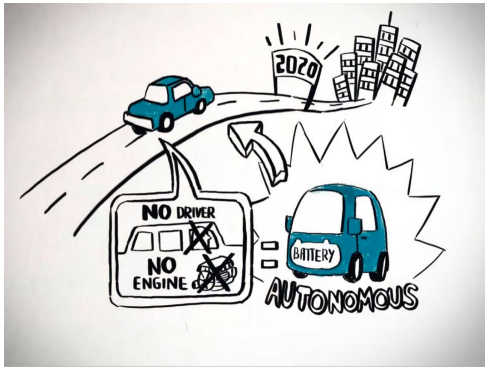
INFRASTRUCTURE IS DESTINY

We have to get this transition right.

Resources



SharedMobilityPrinciples.org



bit.ly/avheaven

OPEN TRANSPORT PARTNERSHIP

Sharedstreets.io

robin@osmosys.org

THREE CONVERGING GLOBAL PROVOCATIONS

Personal car ownership at its limits

Single occupancy vehicles are clogging streets, arteries, atmosphere

Urbanization of humanity

Imperative to make more efficient use of space in cities and make them more livable.

Climate stabilization window closing

Car ownership projections make it impossible to keep temperature rise below 2 degrees

AND…A FOURTH PROVOCATION AFFORDS US AN HISTORIC OPPORTUNITY FOR AN URBAN "DO-OVER"…

AVs are Inevitable

Available for sale by 2020 say Audi, BMW, Ford, GM, Toyota

Per BCG's study, by 2035, the world will own **12M** fully autonomous vehicles and **18M** partially autonomous vehicles

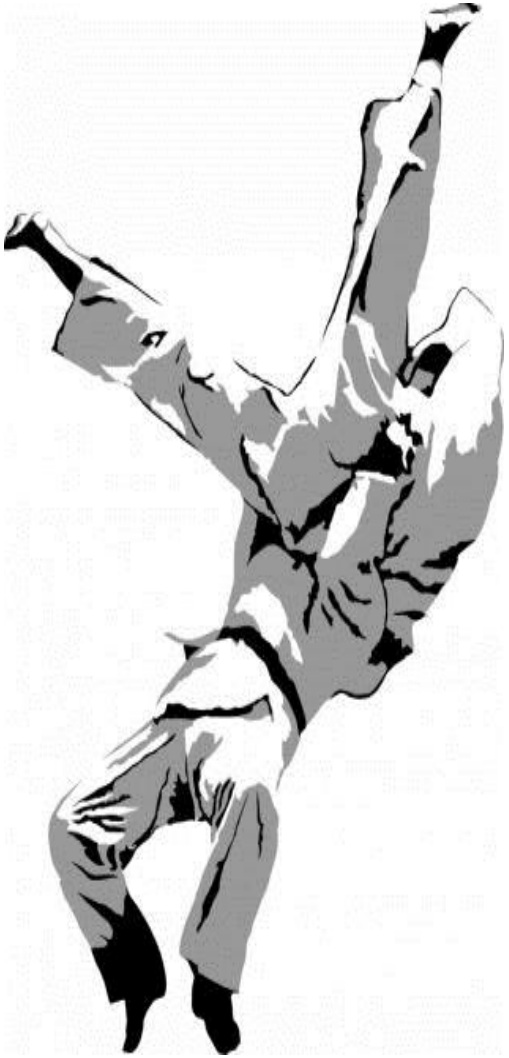
…and will profoundly disrupt:

- Mobility Delivery Models
- Urban Form
- Labor
- Tax Revenues
- Streetscapes
- Social norms about car ownership

http://www.driverless-future.com/?page_id=384
https://www.bcg.com/en-us/industries/automotive/autonomous-vehicle-adoption-study.aspx

…SO WE MUST USE “JIU-JITSU”

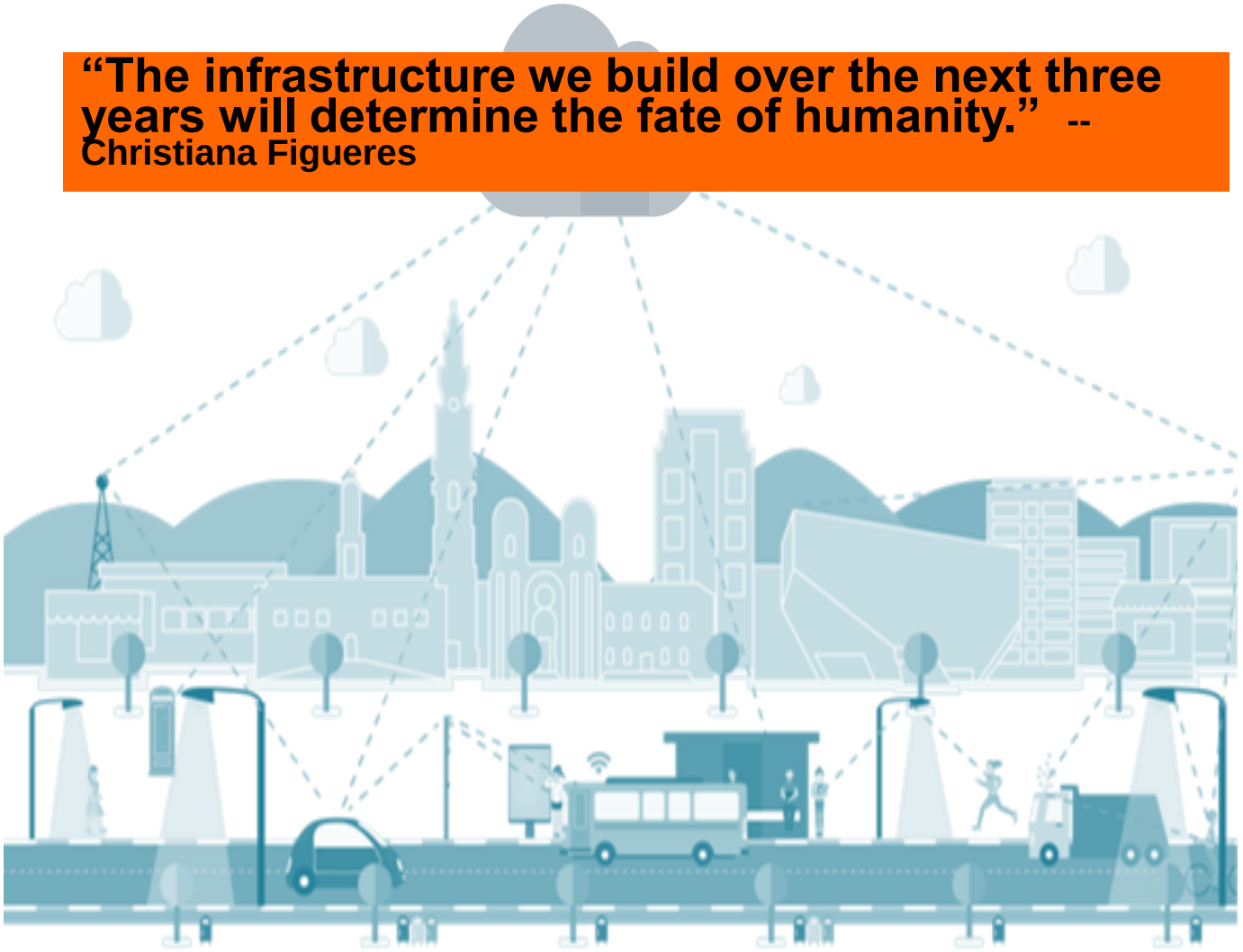
Like Jiu-jitsu, rather than resisting this technological disruption, it uses the *momentum* of these provocations to rally existing efforts…



Behind **one common vision**:
clean, shared, multimodal **transport**
creating livable, sustainable, just **cities.**

THANK YOU

“The infrastructure we build over the next three years will determine the fate of humanity.” -- Christiana Figueres



(2) Underpricing

is the root of most of the problems
we experience today in transportation.

AVs – minus the cost (or personal time) of drivers – make using a car cheaper still, and

MAGNIFY current problems

associated with underpricing.

We over consume
poorly priced resources.

Right pricing is a way to allocated
scarce resources

Right pricing is a way to allocated scarce resources (streets, curbs)

maybe per square meter of street space? “geometric pricing”

regardless of whether you are
a personal car, a taxi, a bus, a delivery truck, or AV

(4) A chaotic unplanned jobs transition

Will result in a lot of suffering

Cities need to engage with the stakeholders to create a transition plan.

Some first steps

Lack of vision.

Make the vision clear with more shareable content in video, print, the arts. We need to create awareness and demand pull for this future.

Underpricing is root problem & AVs will magnify these problems

Connect existing solutions to the impending AV revolution & impacts.

No data standards to support elements that need to be priced

Open Transport Partnership.

Developing standards and partnerships between cities & service providers.

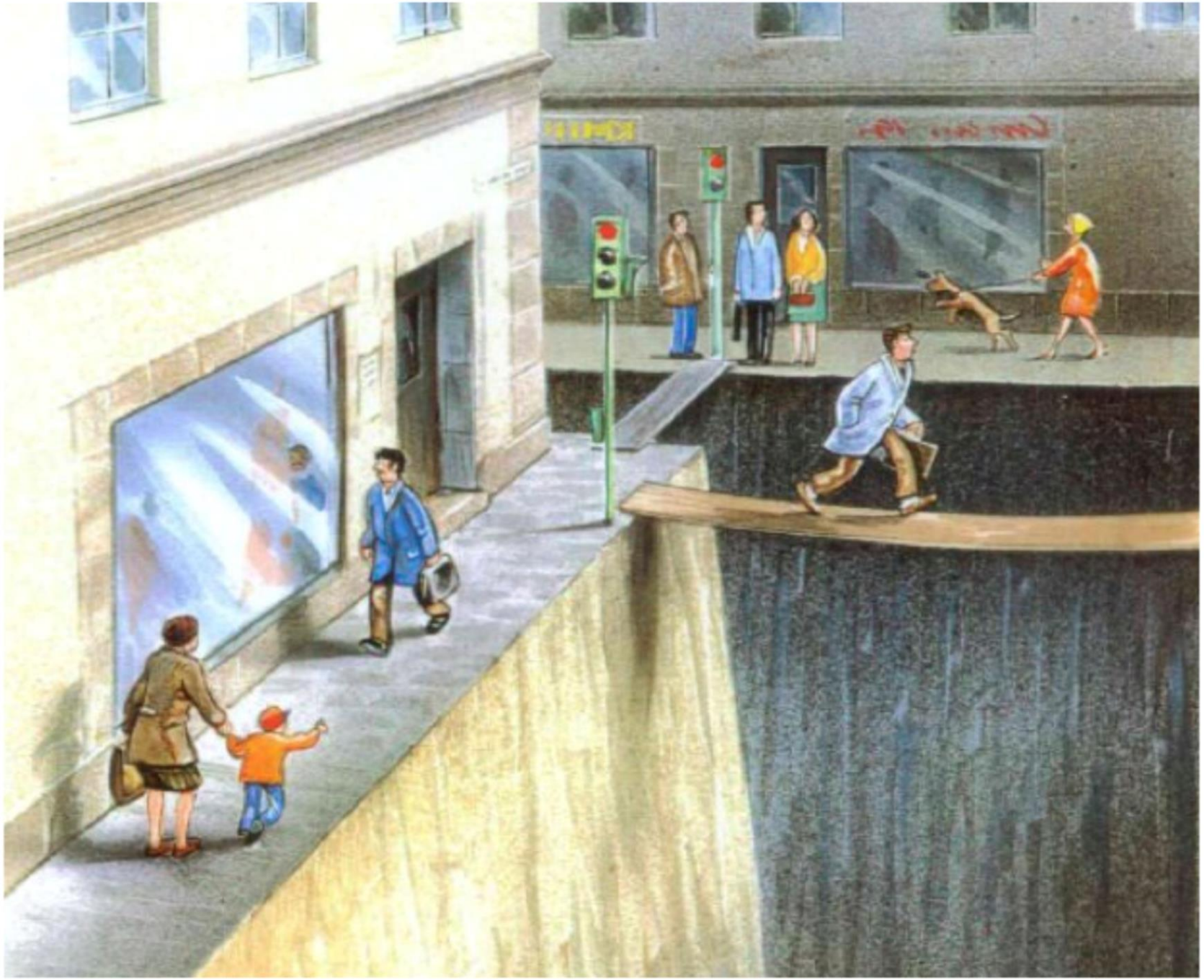
A chaotic unplanned jobs transition

Start talking with stakeholders about a transition plan.

Focus on solving for efficient use of scarce streets:
throughput of people per square meter
(right pricing; right allocation of street space)

We can leverage this transition to build **LIVABLE CITIES**

Eliminate 1.25m traffic fatalities world wide (95% caused by human error)
40,000 in US, 4.6 m seriously injured in 2016

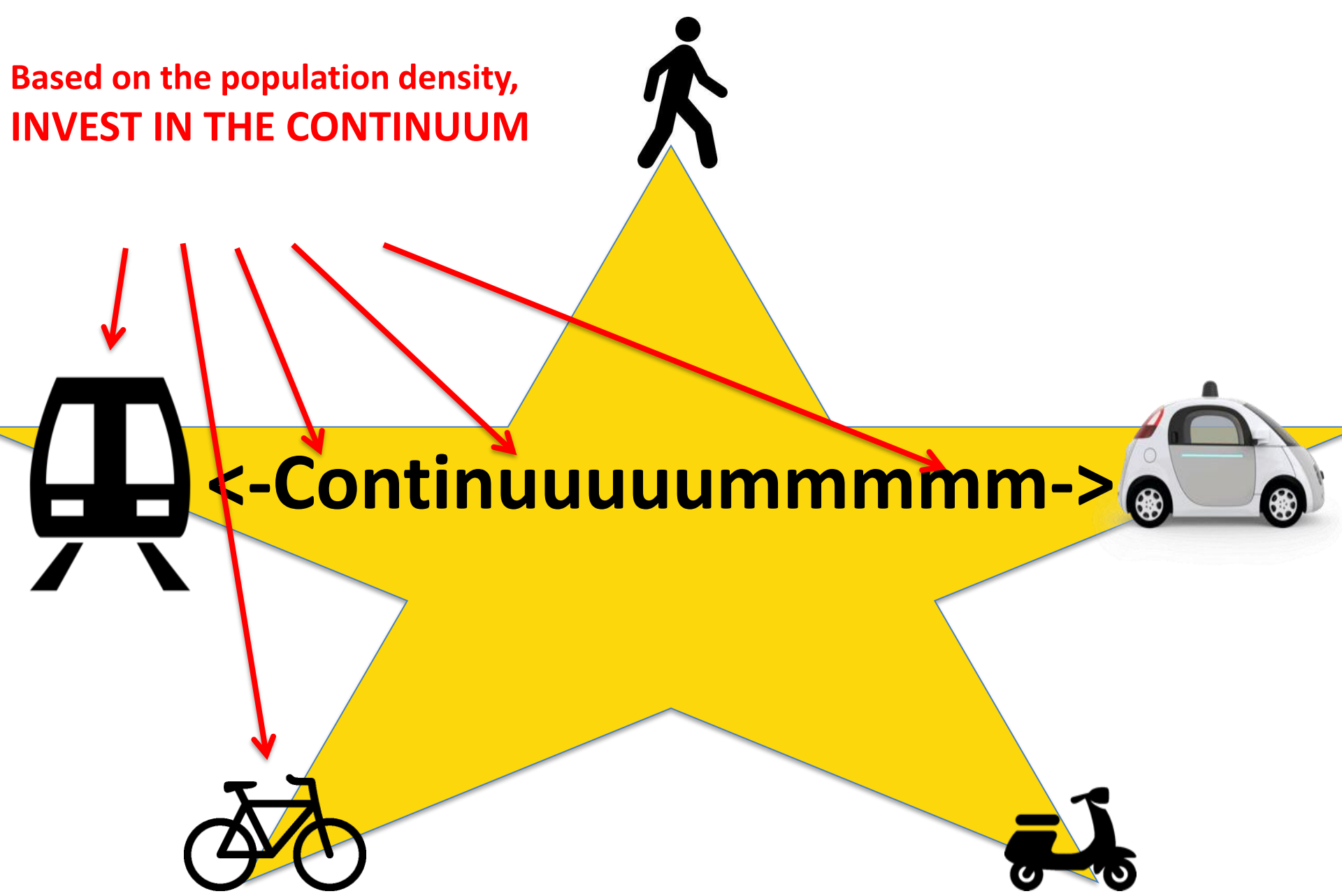


Cheonggyecheon River in Seoul

BEFORE

AFTER

Based on the population density,
INVEST IN THE CONTINUUM



NEW MOBILITY PROTOCOL FOR LIVABLE CITIES

PHASED

1) Standard and pooled data for competitive & quality shared transport services
2) Zero emission fleets
3) Congestion sticks (pricing) & carrots (land use)
4) AVs only in shared fleets

Cities are in a ONE TIME position of POWER

They need to align on shared principles

CLEAN CONNECTED EFFICIENT SHARED

INFRASTRUCTURE IS DESTINY

CLEAN CONNECTED EFFICIENT SHARED

INFRASTRUCTURE IS DESTINY

BUILDING THE WORLD WE WANT TO LIVE IN

CAN

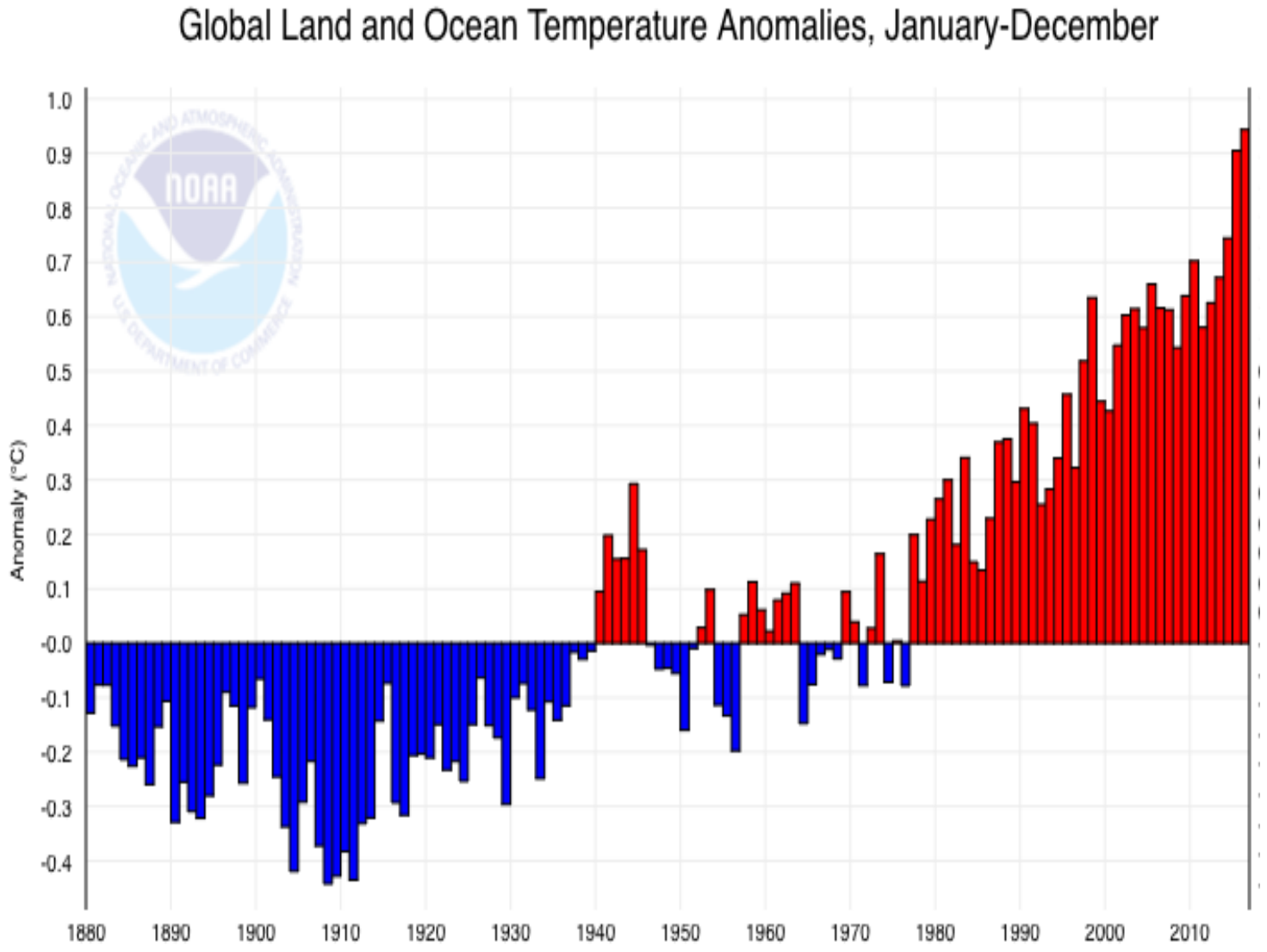
rchase@alum.mit.edu

We get to
AV HEAVEN

(1) A chaotic unplanned jobs transition

Will result in a lot of suffering, and
slow the pace of transition to
clean, shared mobility & more livable cities

We don’t have time for delay



Cities need to engage with the stakeholders to create a transition plan.

(2) Underpricing

is the root of most of the problems
we experience today in transportation.

AVs – free of the cost (or personal time) of drivers –

will **MAGNIFY** current problems

by making car travel even cheaper.

Free pollution of our air

We must transition to zero emission vehicles

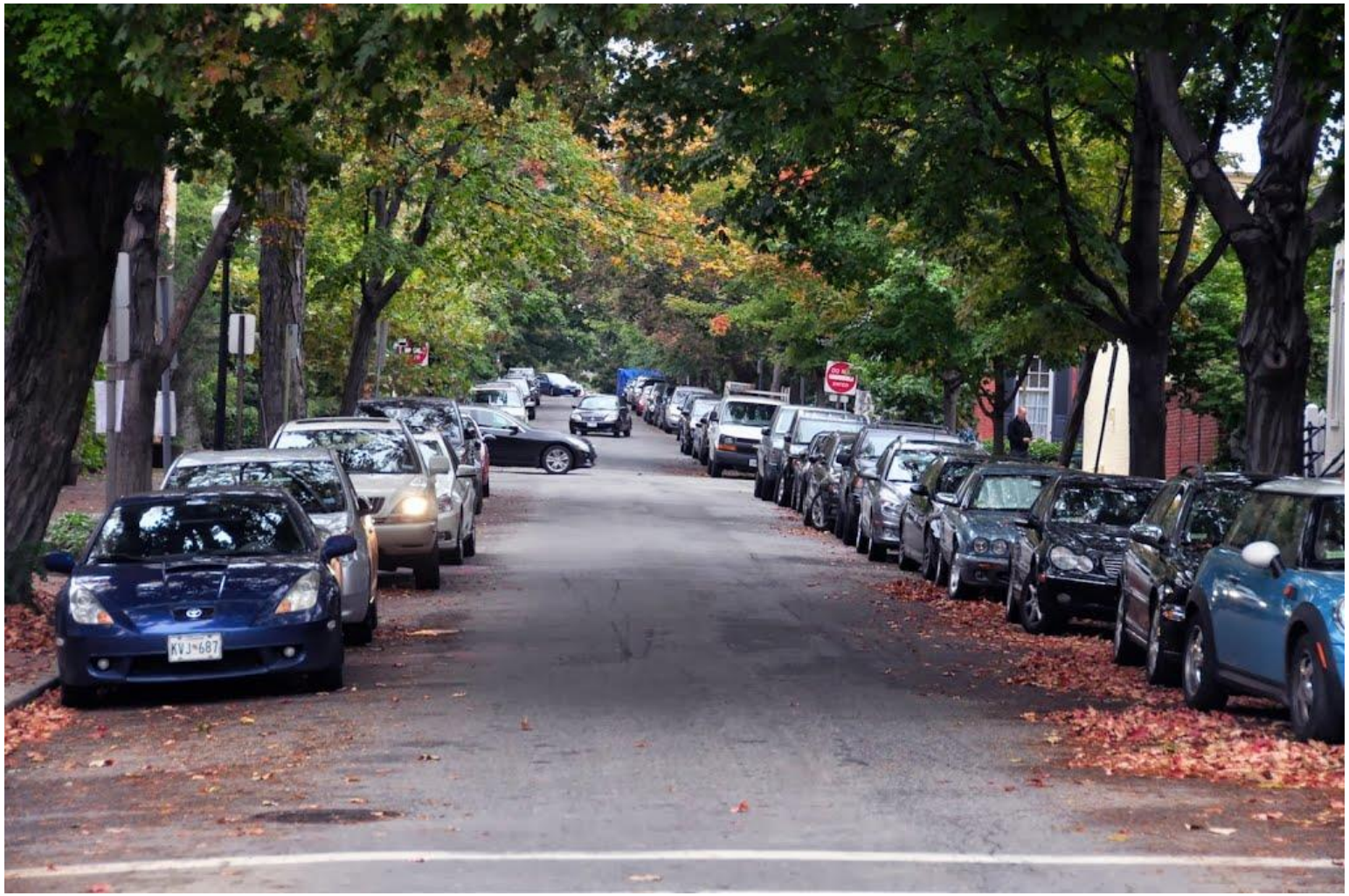
Delhi 2016

Free travel during peak times

We must start congestion pricing

Free or almost free on-street parking

Parking policy is no longer be a useful policy tool when most trips are made with 1) paid drivers or 2) self driving vehicles.



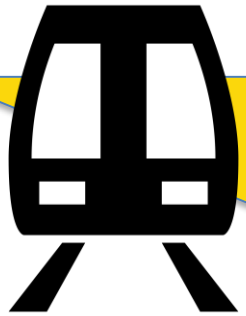
We must start charging for access to curbs

Free access to curbs for pickup, dropoff, and delivery.

(3) Inadequate data standards to support this new pricing

No mapping standards for curb and lane use

No uniform data requirements for multimodal shared transport mobility.



<-Continuuuuummmmmm->

Coalition of cities is working with
the OPEN TRANSPORT PARTNERSHIP
to create uniform shared data standards for
passenger transport & the street scape.
Sharedstreets.io

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

Most of our problems stem from

***underpriced* pollution, congestion, parking, roads.**

Without drivers

– reducing trip costs by 35-60% --

AVs will amplify

poor market signals & resulting bad behaviors

Underpricing

Inadequate & Poor Quality Infrstructure

Congestion of streets & curbs

Poor **Air Quality**

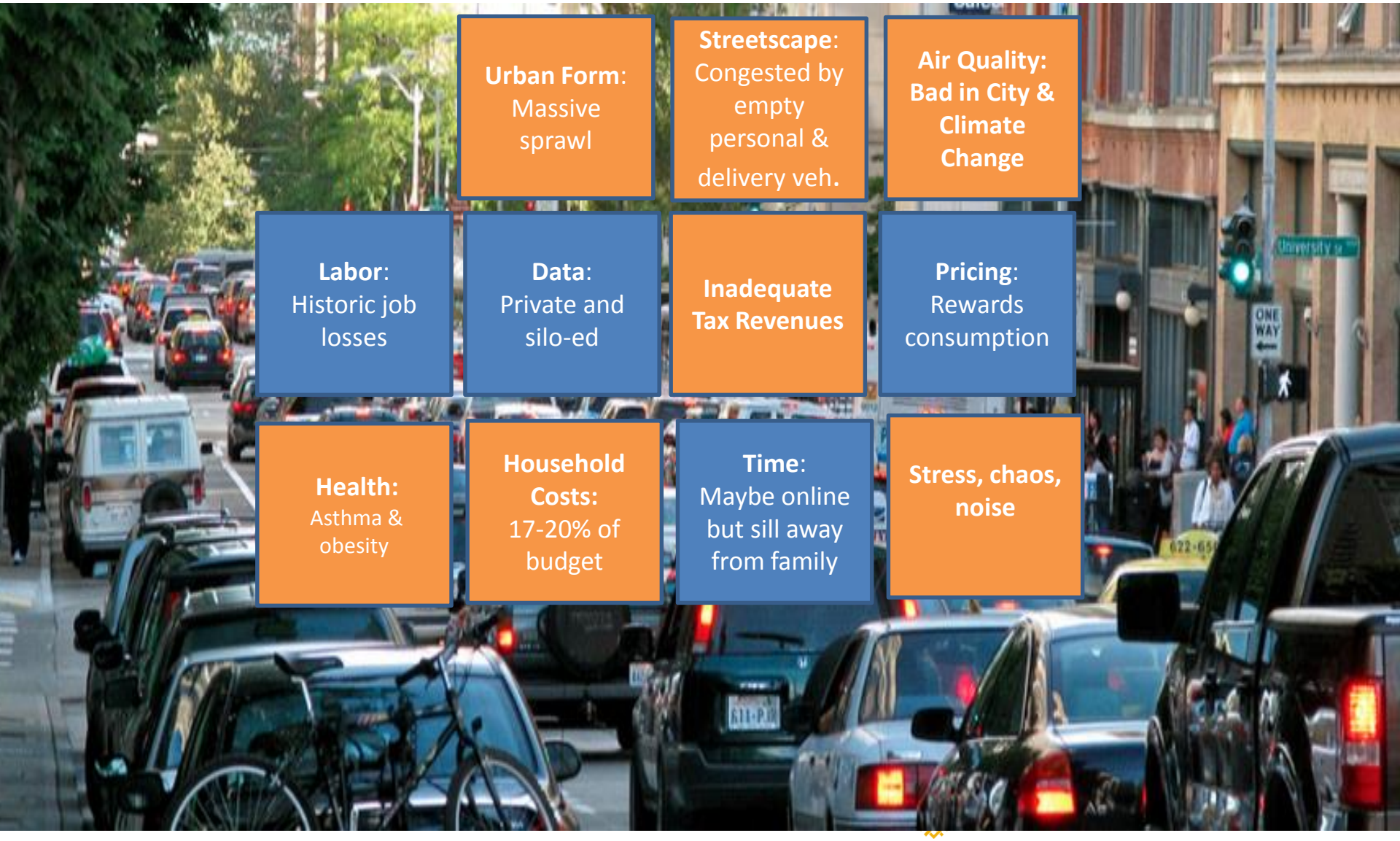
Without drivers

– reducing trip costs by 35-60% --

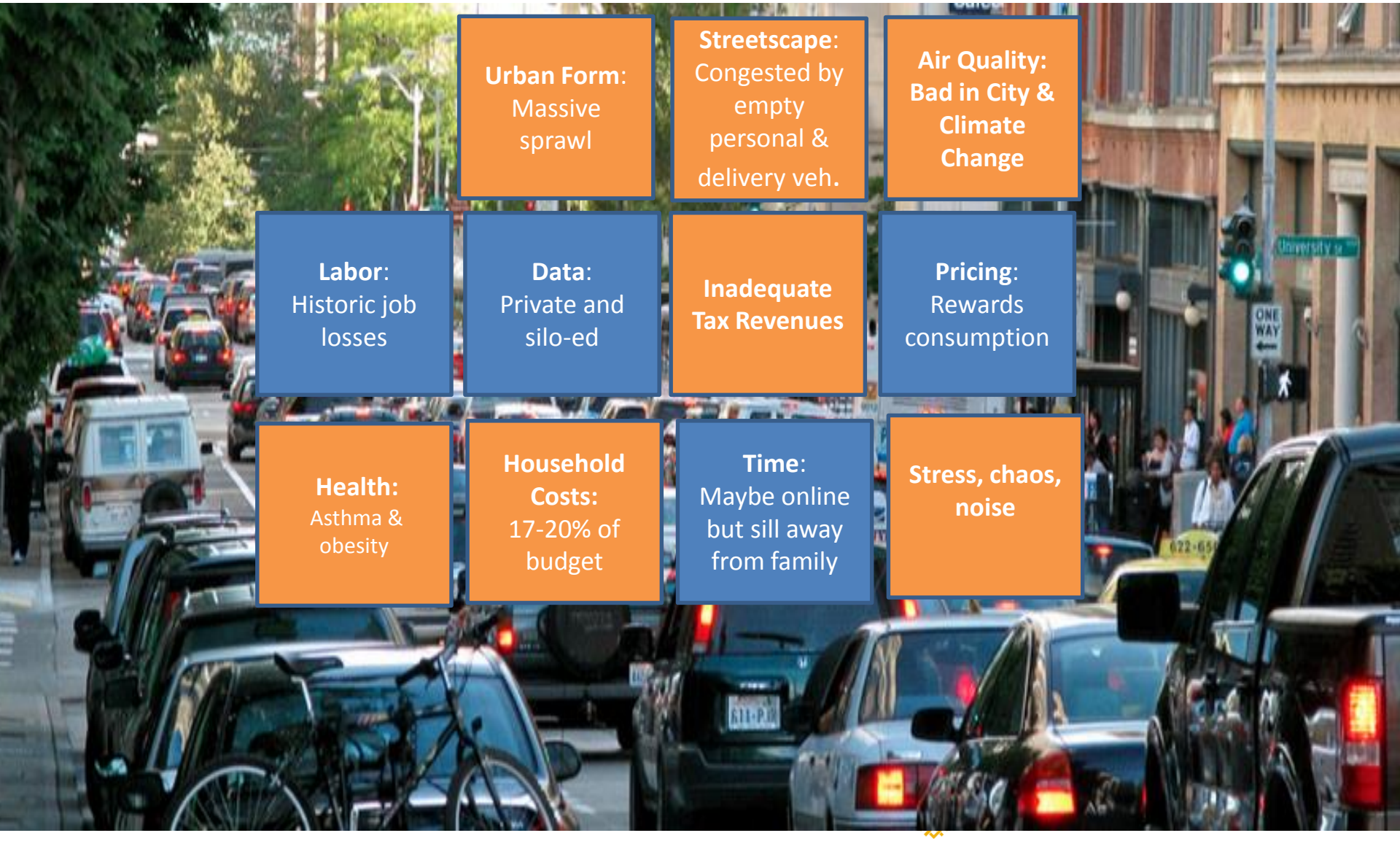
AVs will amplify

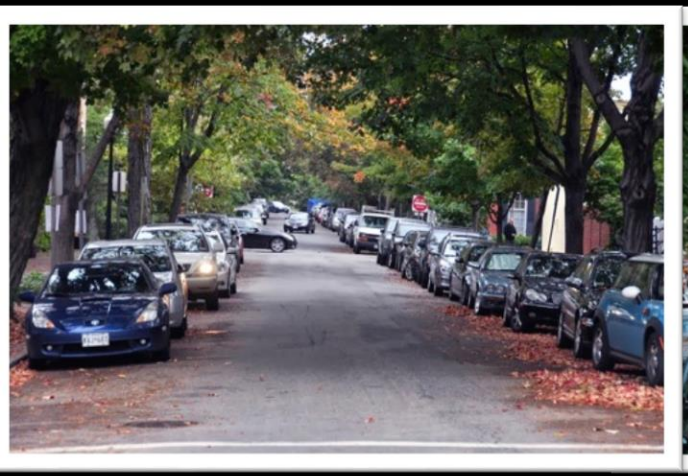
poor market signals & resulting bad behaviors

IF NOTHING IS DONE, STATUS QUO CONTINUES CITIES WILL EXPERIENCE THIS:



IF NOTHING IS DONE, STATUS QUO CONTINUES CITIES WILL EXPERIENCE THIS:





Today:

Lack of access for young, poor, elderly, us!

1.25m traffic fatalities world wide

(40,000 in US, 4.6 m seriously injured in 2016)

18% of household income on car

Increased cost of housing (to include parking)

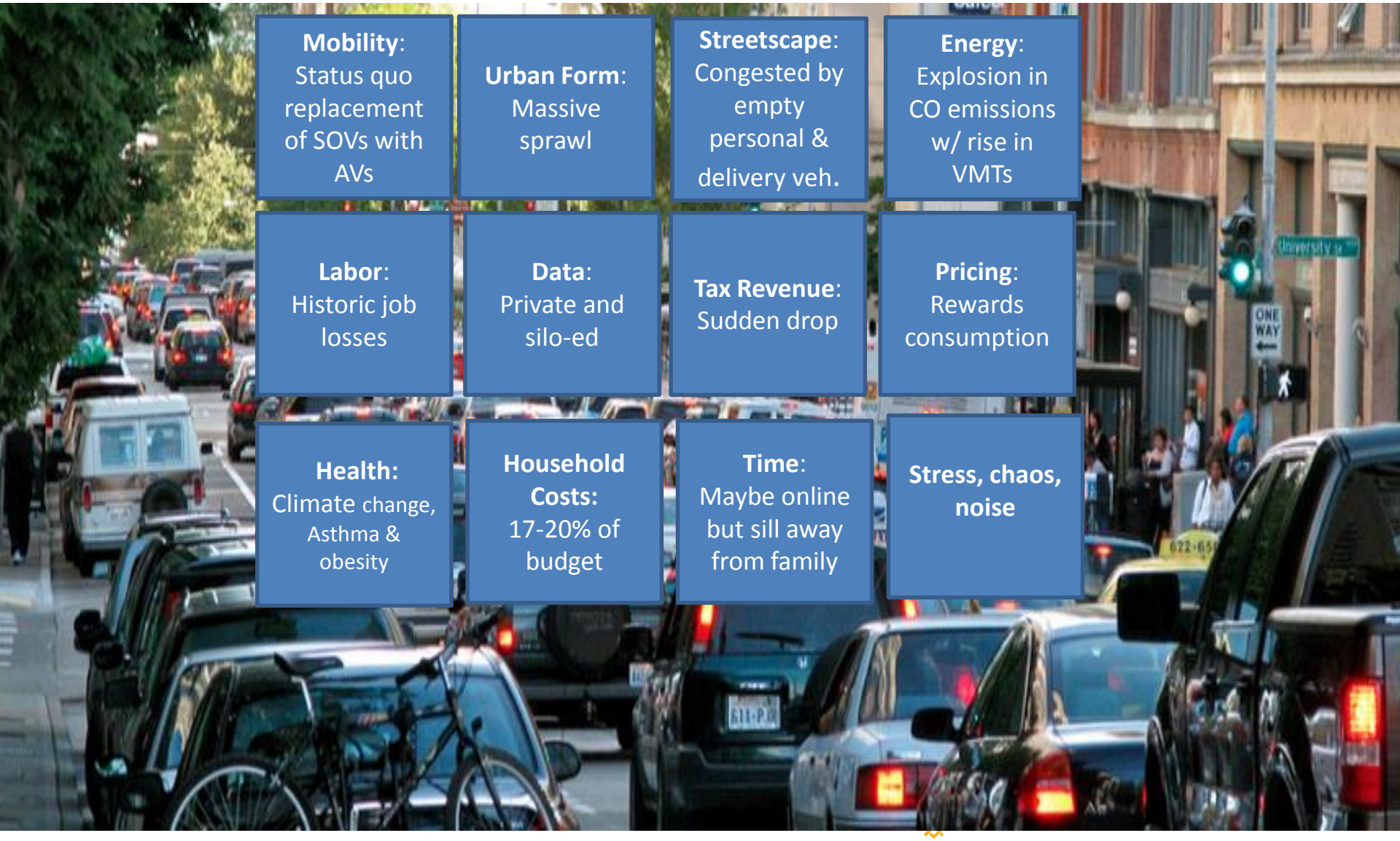
Poor air quality & CO_2 emissions

Hours wasted in congestion (productive?!)

Inadequate green space

Noise, chaos, stress

IF NOTHING IS DONE, STATUS QUO CONTINUES CITIES WILL EXPERIENCE THIS:



INADEQUATE FUNDING FOR TRANSIT AND TRANSPORTATION INFRASTRUCTURE

SMPLC#7 Fair User Fees across all modes

- Road user fees
- Congestion pricing
- Parking & Pickup/Dropoff/Delivery
- Pollution tax