SHARED MOBILITY ROCKS

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European Regional Development Fund
EUROPEAN UNION

autonomous driving – try some future today

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Warning:
You are attending a "Shared Mobility Rocks" event – which might be different from your existing conference experience.
This session requires your active involvement
This session may lead to new insights
- but maybe not.
Photos and videos will be taken.

What is ART Forum?

Automated Road Transport – Forum for the North Sea Region

North Sea Region Interreg project (2019 - 2021):

- debating ground for local/regional authorities
- Capacity building
- risks and opportunities of ART
- help guide policy development

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https://asunow.asu.edu/20180330-discoveries-flying-cars-are-coming-and-theyll-be-autonomous

https://www.thefutureoftransportconference.com/en/

http://daslissblog.blogspot.com/2011/02/espaco-para-pousar.html

Sao Paulo today: air transport –does it solve traffic problems on the ground?

Bonne route

Active Session

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Red = autonomous cars

Blue = manually steered cars

Green = pedestrian / cyclist

SAE-Levels

Level 0: No automation
Level 1: Driver Assistance
Level 2: Partial Automation

Level 3: Conditional Automation: driver can safely turn their attention away from driving tasks

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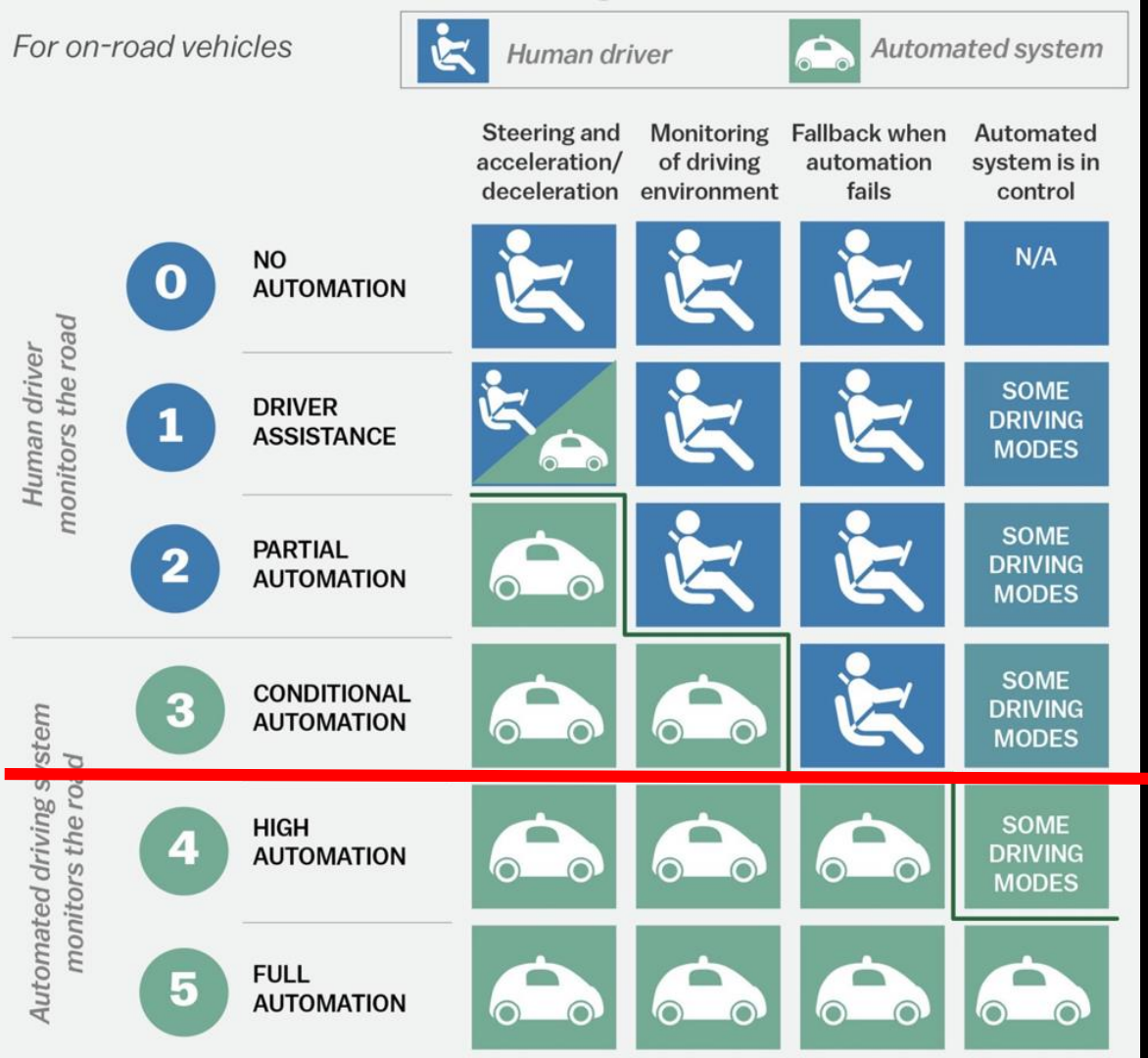
Level 4: High Automation: When enabled, driver attention is not required, driverless operation in certain areas

Level 5: Full Automation
driverless operation from A to B

https://cdn-images-1.medium.com/max/1600/1*I5vwQqqViZI3QAJ0Dry_cQ.png



driverless operation

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Rules for autonomous cars:

- You **communicate** with each other to optimize your movements
- You can **connect** to each other (platooning)
- You have **obstacle detection** and slow down/**stop** in case of obstacles

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Rules for conventional cars:

- You have doors to open (for parking)
- You might be testosterone-fuelled
- You may follow traffic rules
- with some individual understanding

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Rules for pedestrians / cyclists:

- You are the vulnerable ones
- You are learning ones = smart (e.g. in relation to behaviour of autonomous cars)
- You communicate conventionally (indicate, ring the bell, shout,…)

scene:
Platooning (only AVs)

TRUCKS DRIVE CLOSE BEHIND ONE ANOTHER TO
UTILIZE THE ROAD BETTER AND SAVE TIME, FUEL
AND EMISSIONS.
THE EMISSIONS CAN BE REDUCED BY 20%

scene:
Platooning (AVs +*N*AVs)

THE DISTANCE IS ADJUSTED WHEN A CAR DRIVES
IN BETWEEN

scene:
Platooning and traffic light
(*N*AVs only)

scene:
Platooning and traffic light (only AVs)

scene:
Platooning and traffic light
(AVs +*N*AVs)

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Lessons:

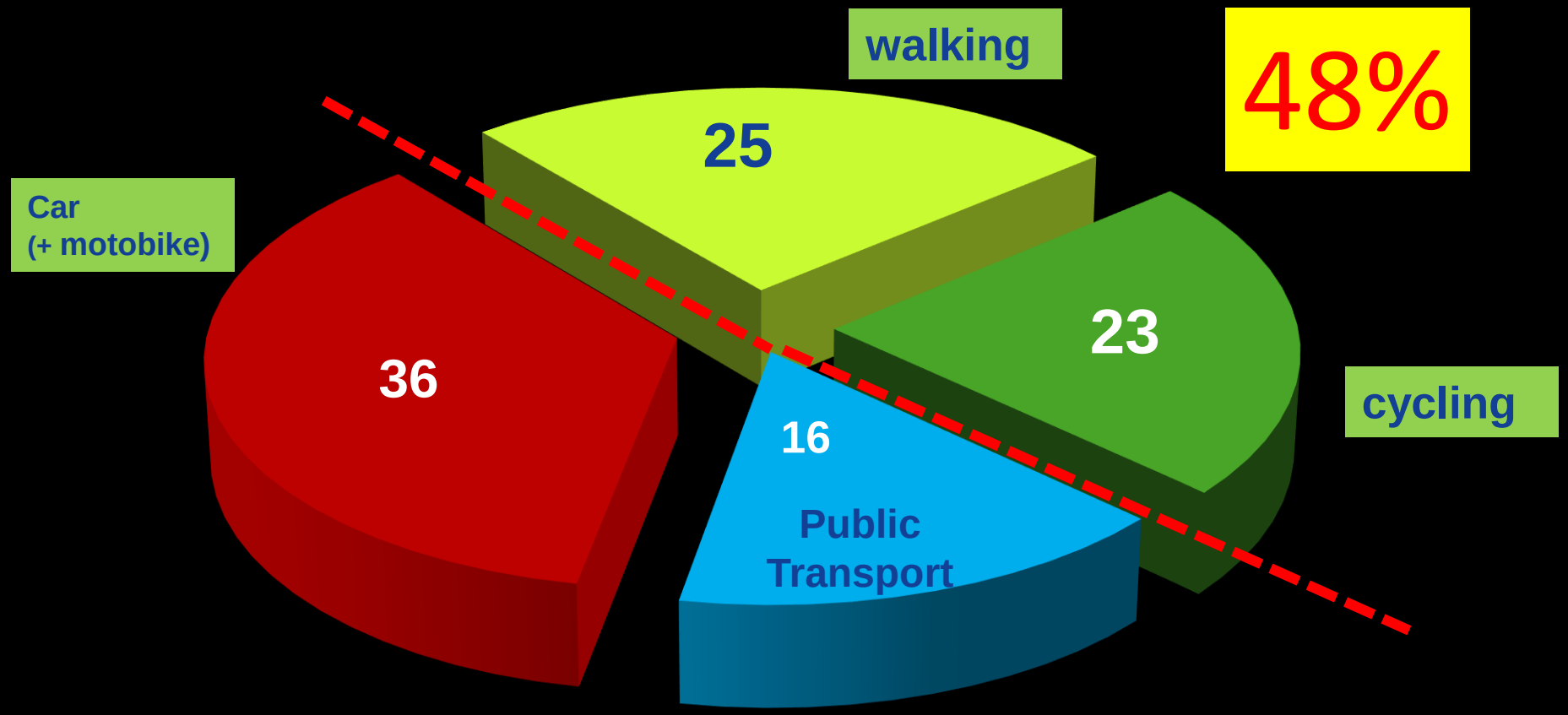
AV-only would increase capacity and efficiency

NAVs are disruptive

30

Role of non-motorised modes

Bremen



Source: SrV 2013

12. Mai 2017, 18:54 Uhr Mobilität der Zukunft

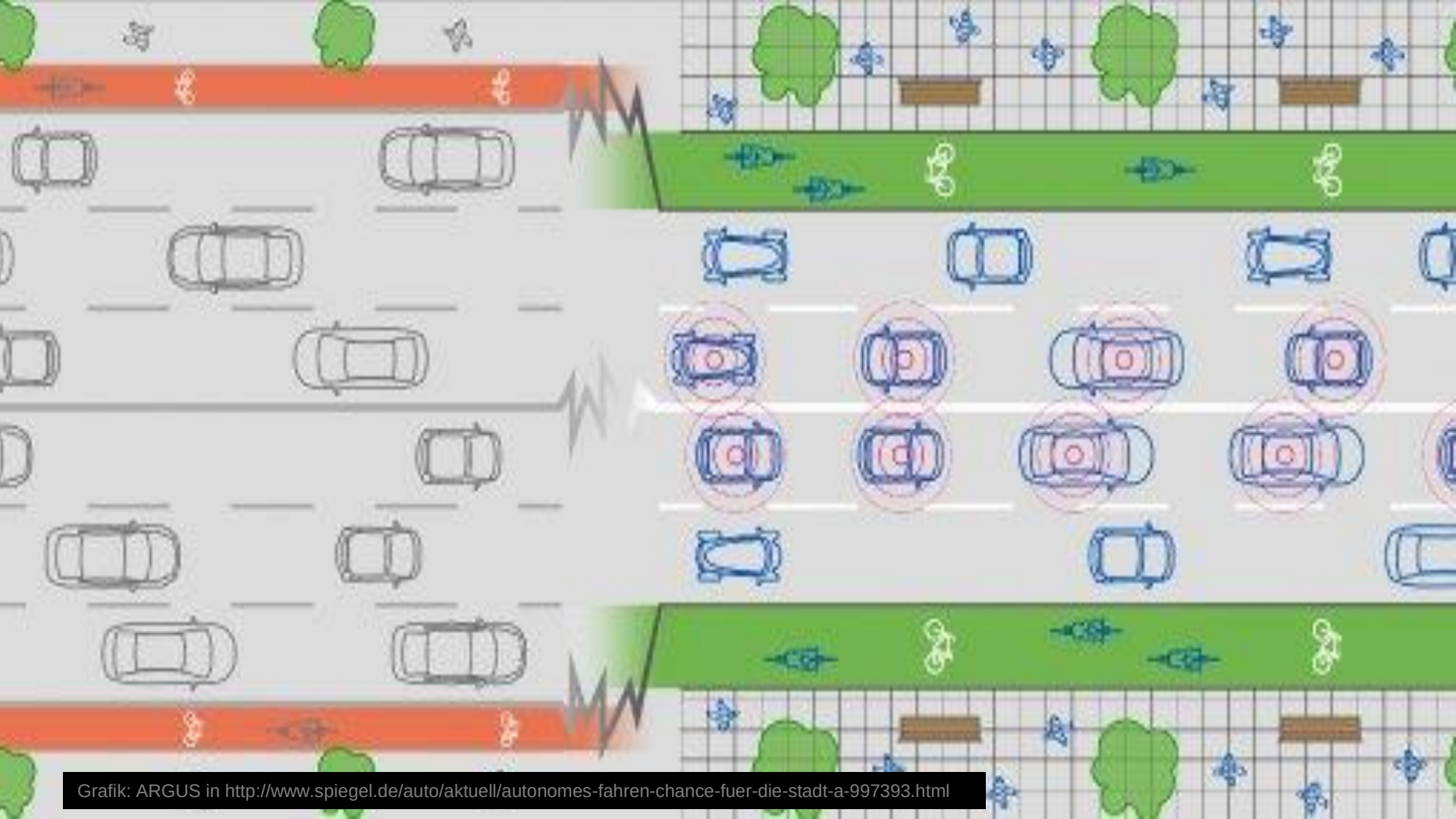
Wie selbstfahrende Autos die Verkehrsprobleme lösen sollen

„How self-driving cars shall solve the transport problems“

Stadtvision fast ohne Parkplätze: Lediglich im Vordergrund stehen autonome Carsharing-Fahrzeuge zum Einsteigen bereit. (Foto: Daimler AG)

- Selbständig fahrende Taxis könnten viele der großen Verkehrsprobleme in den Innenstädten lösen.
- Für die Nutzer wäre das vergleichsweise günstig. Eine aktuelle Studie geht für München von monatlichen Kosten von 99 Euro aus.
- In Joint Ventures arbeiten die Autohersteller derzeit daran, dass diese Vision schon bald Wirklichkeit wird - vielleicht schon zu Beginn des nächsten Jahrzehnts?

METRO

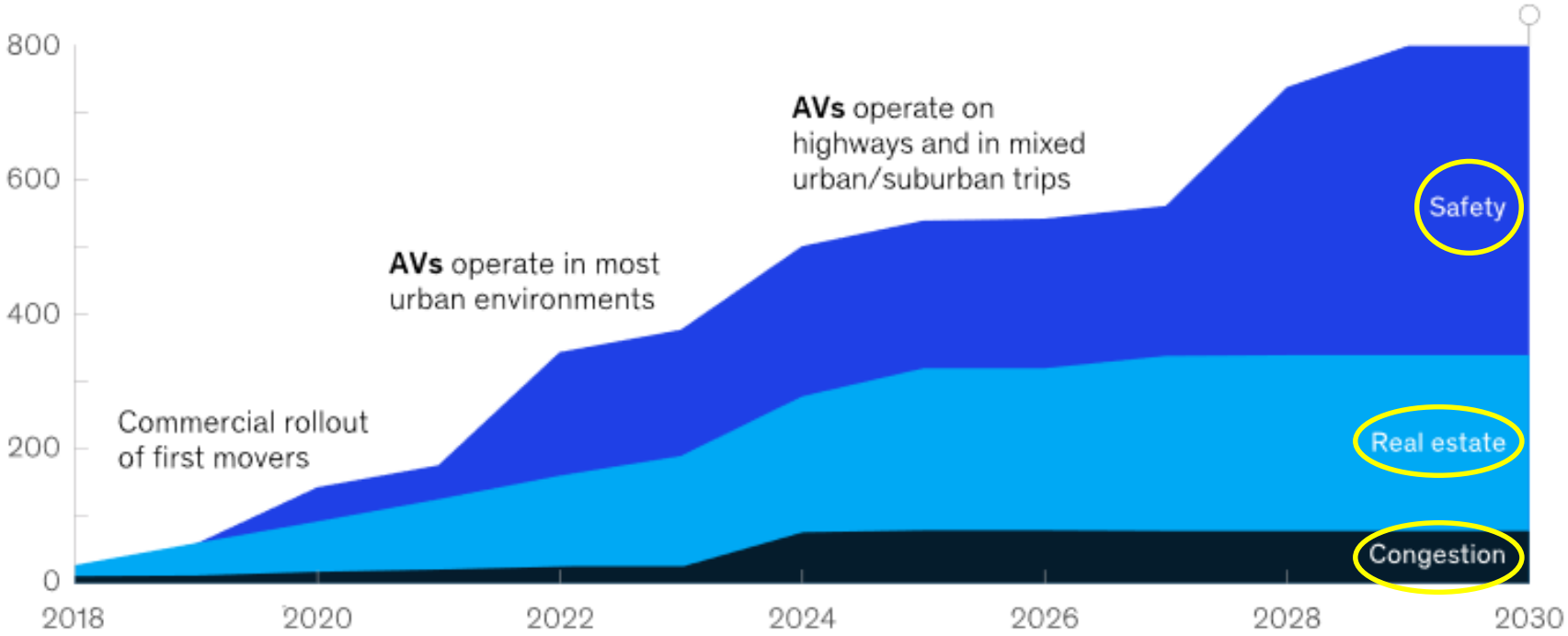


Grafik: ARGUS in http://www.spiegel.de/auto/aktuell/autonomes-fahren-chance-fuer-die-stadt-a-997393.html

In the United States alone, if autonomous vehicles were fully adopted, the benefit to the public would exceed $800 billion a year in 2030.

800 Milliarden US $ = 710 Mrd €

Estimated public benefits[1] of autonomous vehicles (AVs),
$ billion



[1]Environmental benefits are proportionately small (<$4 billion) and barely visible in the chart.
Source: US Federal Highway Administration; McKinsey analysis

https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-trends-transforming-mobilitys-future?reload

Source: Volvo cars

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scene:
Urban environment with mixed operation of AVs, *N*AVs, Peds

The human

is the disruptive element

of autonomous transport

Segregation ?

Benefits in road safety…

…when speedlimits are kept automatically…

(‚adaptive speed-limitation‘)

Benefits in road safety…(?)

CARS

Image Source: Tesla

Tesla removes Autopilot speed limit after users whine on Twitter

http://bgr.com/2017/01/13/tesla-autopilot-speed-limit-update/

scene:
Parking -1-
(*NAVs*)

scene:
Parking -2-
(AVs)

Next steps of car sharing:

the car comes to you

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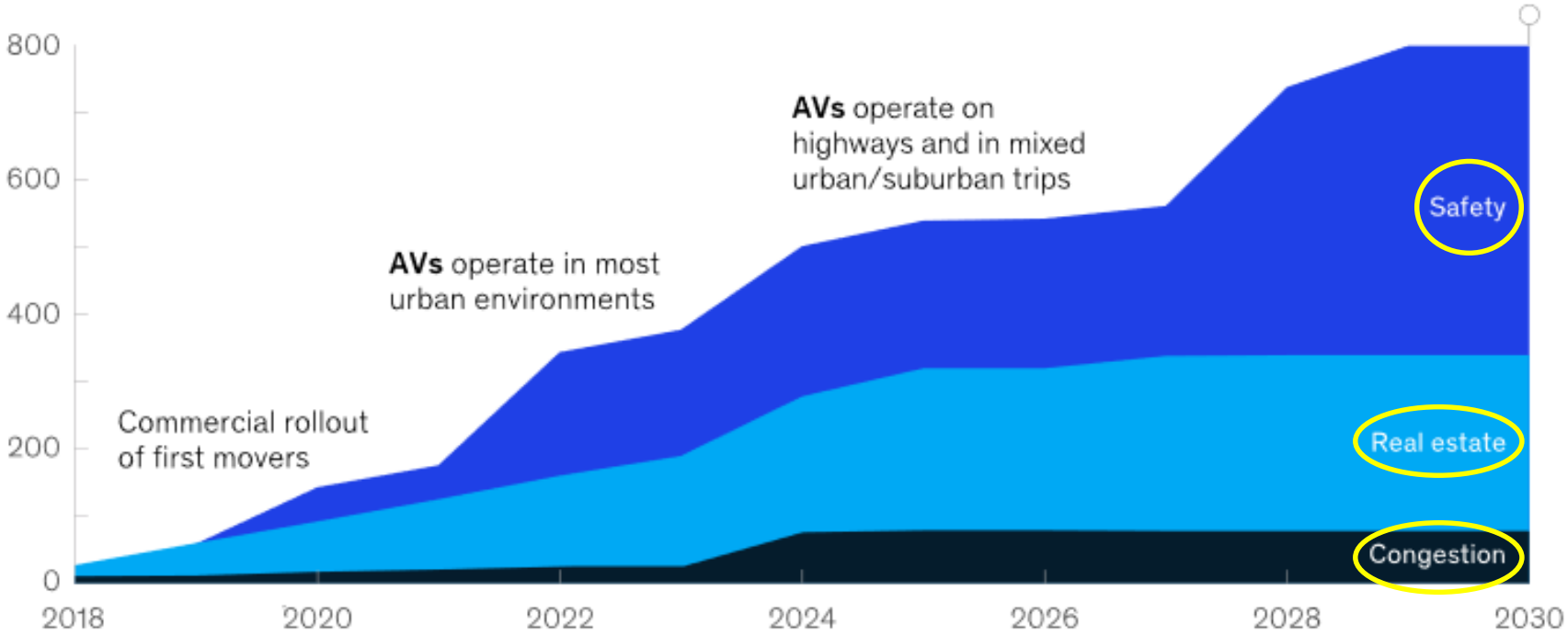

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International Transport Forum | CPB Corporate Partnership Board

Urban Mobility System Upgrade

How shared self-driving cars could change city traffic

Corporate Partnership Board Report

OECD

- Up to 90% of road vehicles can be replaced
- Study Lisbon: streetspace equiv to 170 football pitches to be reclaimed

- High-volume collective transport (e.g. metro, light rail) furtheron necessary
- Low volume (bus) services to be replaced

We don‘t have to wait

for autonomous cars

Car-Sharing is available today

… as alternative to car ownership!

Washington Post

https://www.washingtonpost.com/graphics/2019/business/how-does-an-autonomous-car-work/

4

reasons

why traffic volume will increase

(even with fewer cars)

Robotaxis:

- most convenient way of travelling door-to-door (= modal shift)
- New user groups (as no driving licence required)
- Travel time is not “lost time” (= perception of travelling will change)
- More sprawl (?)

Thank you for your active involvement !

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