# Less (cars) is more: how to go from new to sustainable mobility





## **Emerging urban mobility trends**



### **Objectives of this study**

Model the impacts of the 4 Revolutions

Assess the developments of vehicle automation

Provide an overview of the new mobility market in Europe

Give policy recommendations to steer these revolutions

# Impact assessment of TNCs

### Uber and Lyft are the 'biggest contributors' to San Francisco's traffic congestion, study says

Between 2010 and 2016 traffic congestion in San Francisco increased by about 60 percent — and Uber and Lyft are responsible for more than half of that increase By Andrew J. Hawkins | @andyjayhawk | May 8, 2019, 2:00pm EDT

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- TNCs responsible for more than 30% increase in San Francisco's congestion (2010-16)
- Where UberPool available, only ca. 20% of rides are shared (ex. Boston)
- Public transport is a '**competitor**' (IPO S1)
- Ride hailing in Massachusetts had a net carbon footprint of nearly 100 kt in 2018. +0.5% of all passenger transport CO2 emissions. Unchecked growth in ride-hailing will make it hard to reach the state's climate goals.

Photo by Scott Olson/Getty Images

# **Autonomy and Electrification**

NHTSA	Autonomy	OEDR	ODD	Example		
Level 0	No automation	Driver	N/A	N/A		
Level 1	Driver assistance	Driver	Limited	Adaptive cruise control (ACC)		
Level 2	Partial automation	Driver	Limited	ACC with lane keeping		
Level 3	Conditional automation	System	Limited	Traffic Jam Pilot		
Level 4	High automation	System	Limited	Navvy Shuttle		
Level 5	Full automation	System	Unlimited	N/A		

# What does this mean for VMT & mobility?

Price of taxis/TNC rides could more than half

Cars could drive around empty

Additional passenger market

Breaking of the Marchetti constant?





# Mobility and the city

#### The Fourth revolution:

- Build places, not passages
- Reduce road space for cars
- Reduce parking space



Dedicated bus lanes in London increase by almost 50% after the introduction of the congestion charge in 2003



### Ghent (BE):

- 36 Ha pedestrian area
- Progressive parking policy

# **Summary of results**

Metric in 2050	Baseline	Rapid automated	Slow automated	Slow automated & rapid Electric	New mobility & urban planning		Metric	Change from
Mt CO2	226	671	332	75	28		Induced	Dase Case
Mt CO2 cumulative from	13456	18538	14026	10306	9129		passenger demand	0%
2018							Modal shift from	20%
Cumulative emissions above (or below) 1.5°C/2°C EU car budget	+195% / +16%	+306% / +59%	+207% / +21%	+126% / -11%	+100% / -21%		Load factors of automated vehicles	+250%
Car vehicle km (G-vkm)	3989	9640	5868	5860	1622		ZEV sales	100% in 2035
Car passenger km (G- pkm)	6633	8920	7700	7696	5306		Energy demand	Electric vehicle energy demand

# **Policy Recommendations**

	European level	National level	Local level
TNCs & taxis		- Zero-emission by 2025 in large cities, 2030 whole territory	<ul> <li>Tax single occupant ride</li> <li>Cap deadheading</li> </ul>
Automated vehicles	<ul> <li>Common framework for AV testing data</li> <li>AV must be EV</li> <li>Citizen involvement</li> </ul>	- AV must be shared, e.g. as part of taxi or ride sharing	- Reduce road space, as AV need less
Data	<ul> <li>Minimum public-private data sharing criteria</li> <li>GDPR compliant</li> </ul>		
Mobility demand management		- Taxation should incentivise sharing	- Road charging, e.g. combined with (U)-LEZ
Micromobility			- Specific e-scooter parking, reclaimed on car parking