

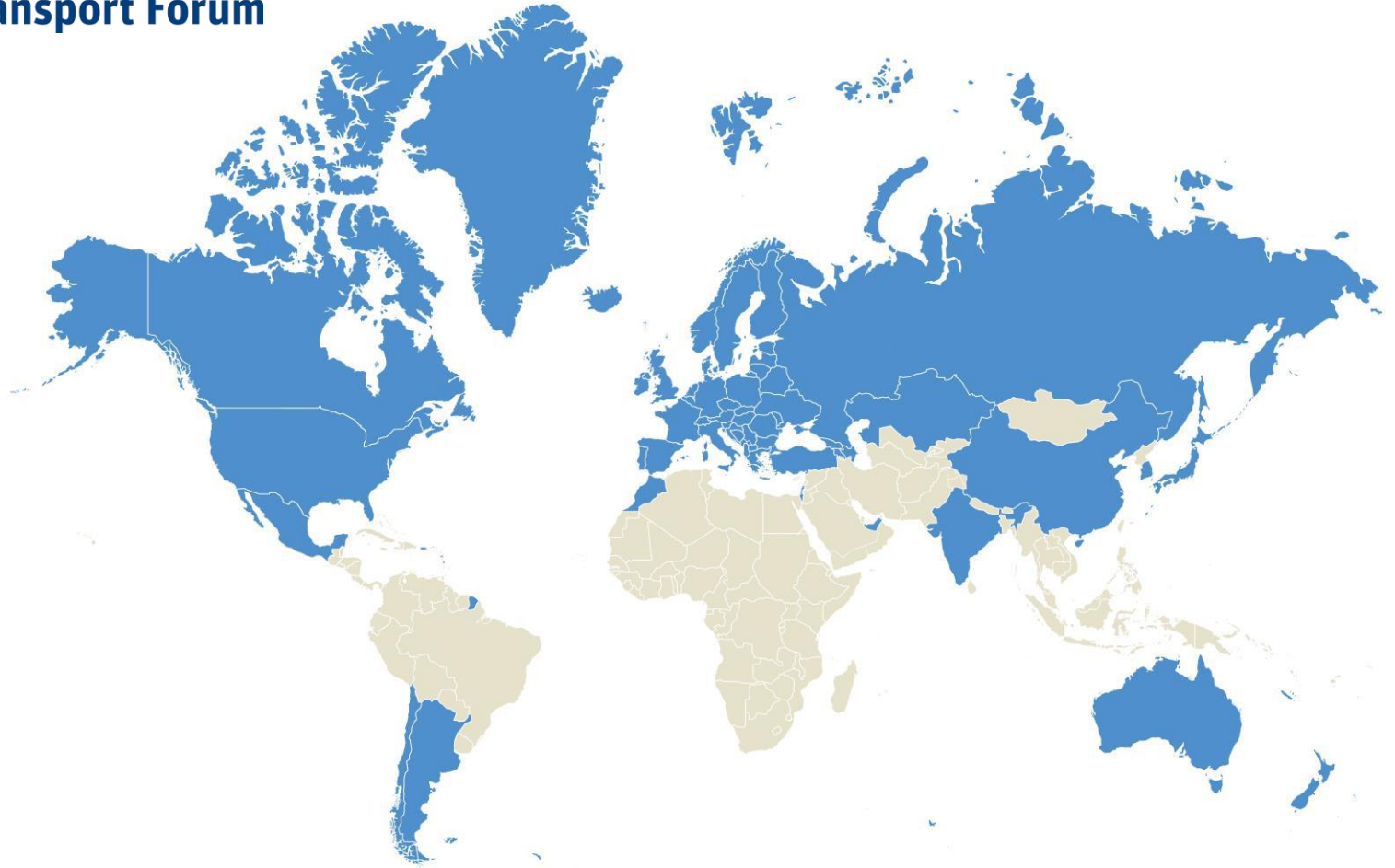
Shared Mobility

How it can cut emissions,
decrease congestion and free
public space

Francisco Furtado
(with Luis Martinez*, Olga Petrik and Jari Kauppila)

States General of the Green Economy





disruption

data







RENAULT

GM



TOYOTA



Mercedes-Benz

Google

TESLA



Audi



City of Stockholm

10% of 18 year

olds

have a driver's licence

Aretun & Nordbakke, 2014



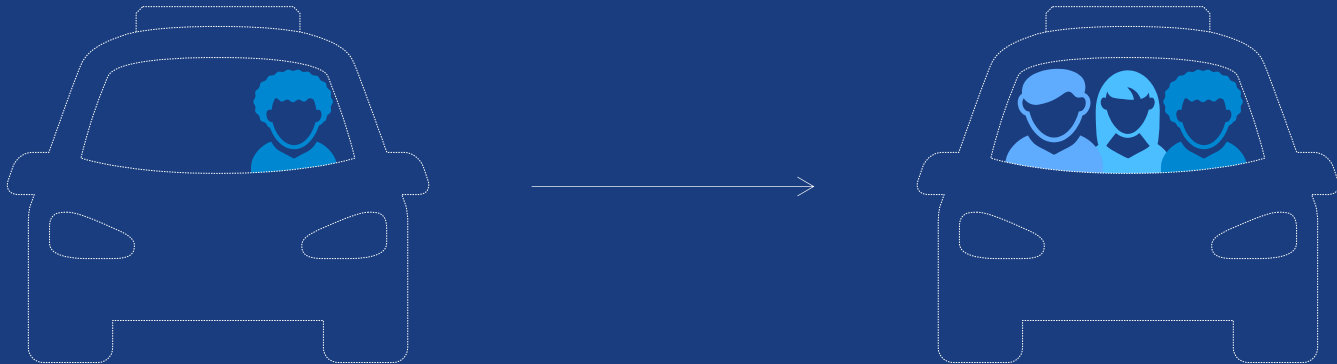








what if?



The background is a dark, high-contrast aerial map of a city grid. The map shows a dense network of streets and building footprints in shades of gray and black. A solid blue horizontal band runs across the middle of the image, serving as a background for the text.

real city

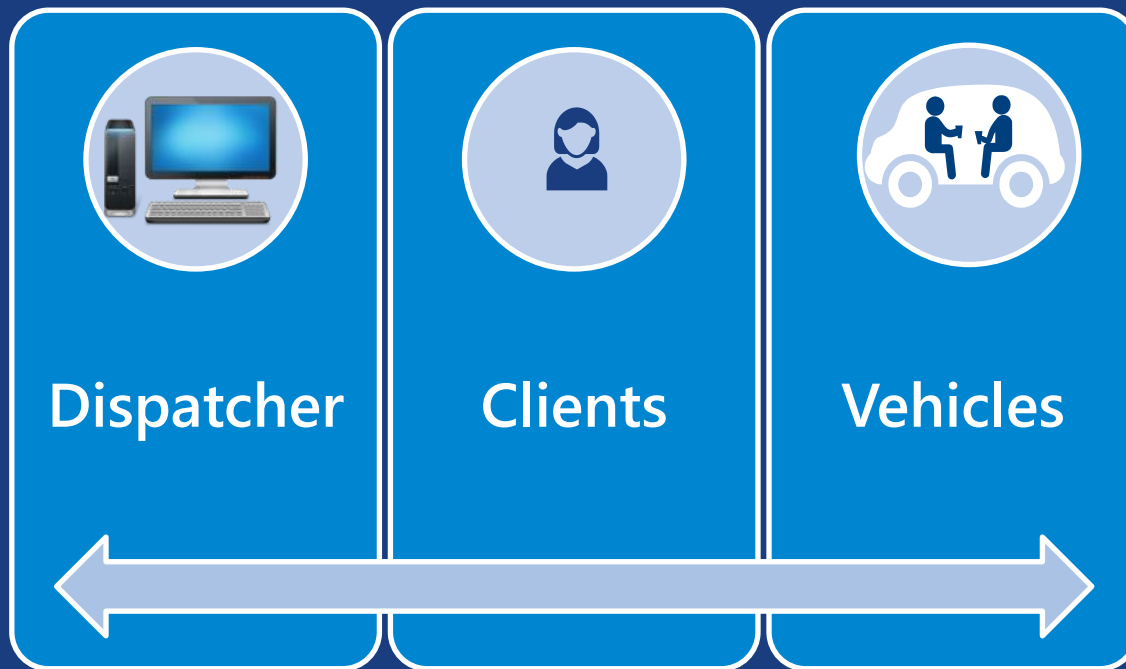


real* trips



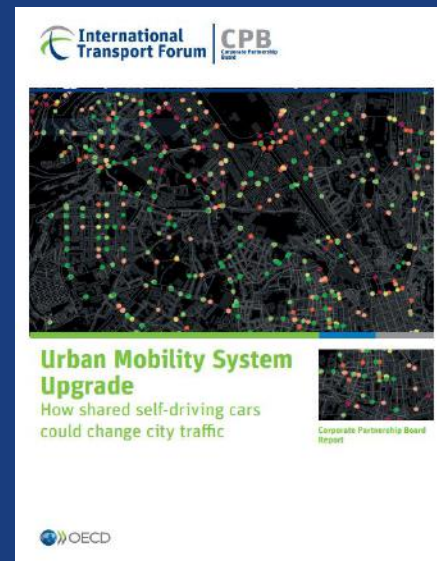
real routes

Agent-based Simulation framework



2015 Report

Urban Mobility System Upgrade:
How Shared Self-Driving
Cars Could Change City Traffic
(Lisbon city)





TaxiBots
Ride-sharing



AutoVots
Car-sharing

Impacts

	Scenario	Fleet size	Parking spots	Car-kms (million)	Peak hour flow
	Baseline (% of baseline fleet)	203,000	203,000*	3.8	60,000
 Ride-sharing	No high capacity public transport (commuter rail, subway, BRT, LRT)	25,917 12.8%	11,563 7.2%	3.75 98.7%	25,867 43.1%
	High capacity transport (commuter rail, subway, BRT, LRT)	21,120 10.4%	8,901 5.7%	3.55 93.4%	21,105 35.2%
 Car-sharing	No high capacity public transport (commuter rail, subway, BRT, LRT)	46,249 22.8%	25,621 16.0%	5.45 143.4%	46,011 76.7%
	High capacity transport (commuter rail, subway, BRT, LRT)	34,082 16.8%	17,110 10.7%	4.83 127.1%	33,975 56.6%



Shared Mobility
Innovation for Liveable Cities



Corporate Partnership Board
Report

2016 Report

Shared Mobility: Innovation for Liveable
Cities
(Lisbon city)

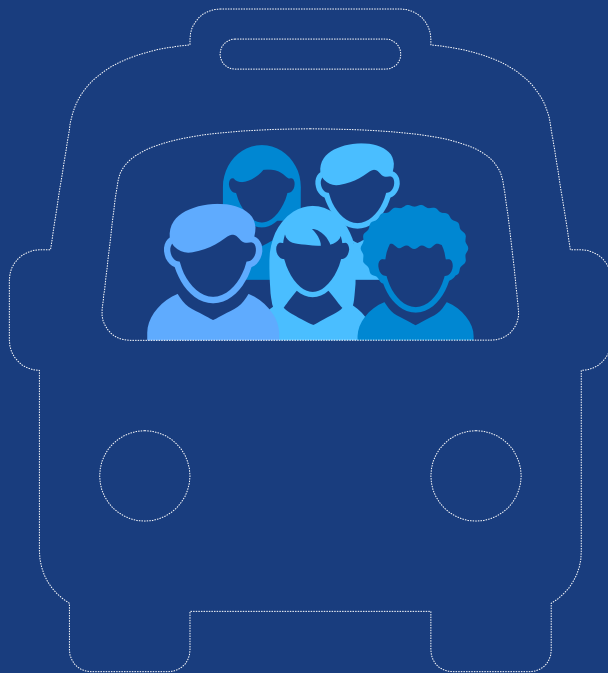
2017 Report

Transition to Shared Mobility: How large cities can deliver
inclusive transport services
(Lisbon metropolitan area)



Shared Taxis

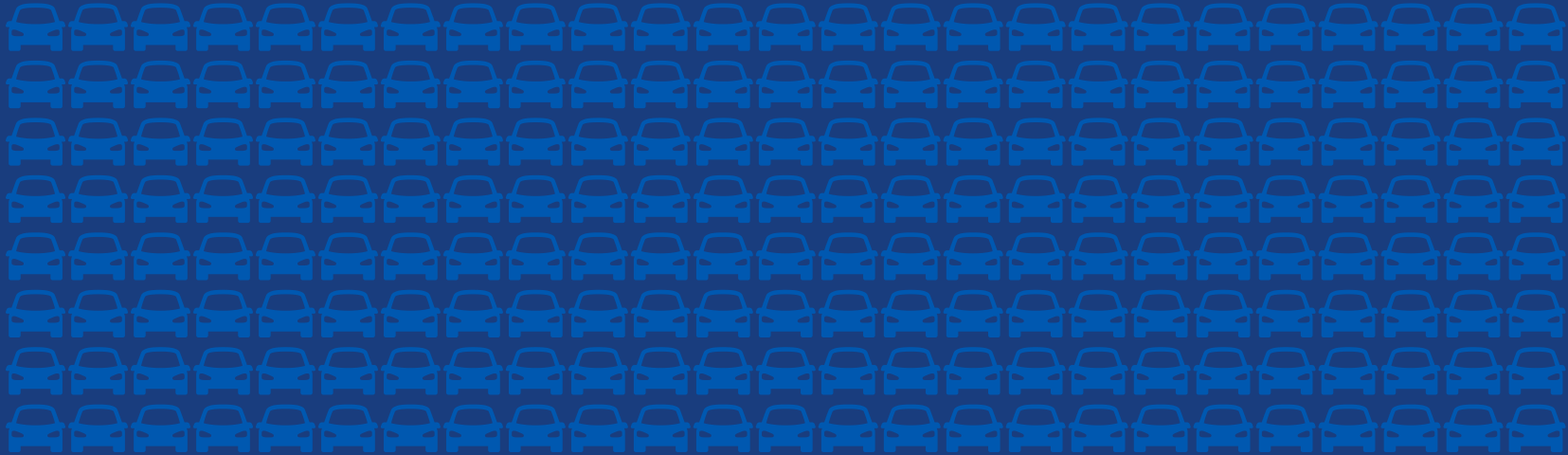
simultaneous ride-sharing



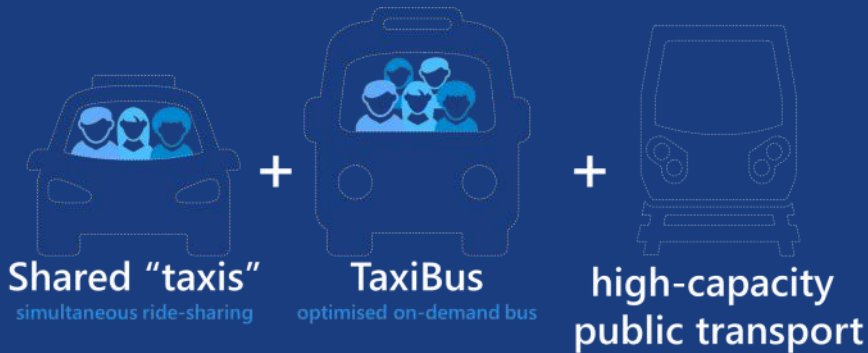
Taxi-Bus

optimised on-demand bus

Lisbon

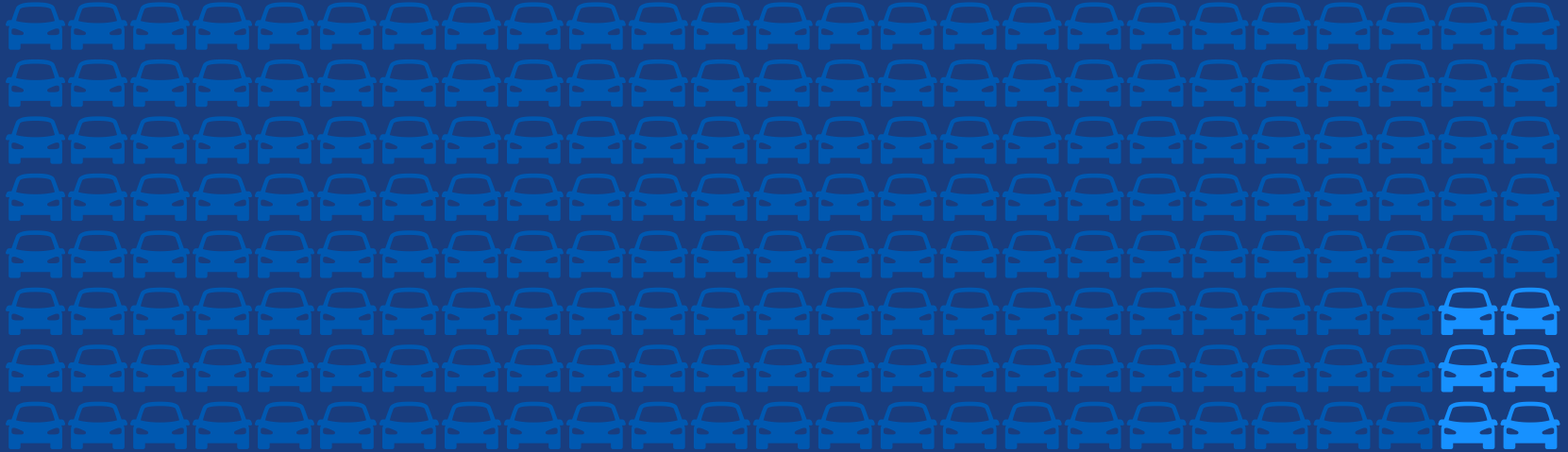


Scenario: 24 hours



number of cars
required to provide the
same trips as before:

Lisbon



Scenario: 24 hours



number of cars
required to provide the
same trips as before:

3%

Vehicle kilometres travelled

-23% to -37%

24 hr.

Peak hr.

(Lisbon city)

CO₂ emissions

-62%

(Lisbon Metropolitan Area)

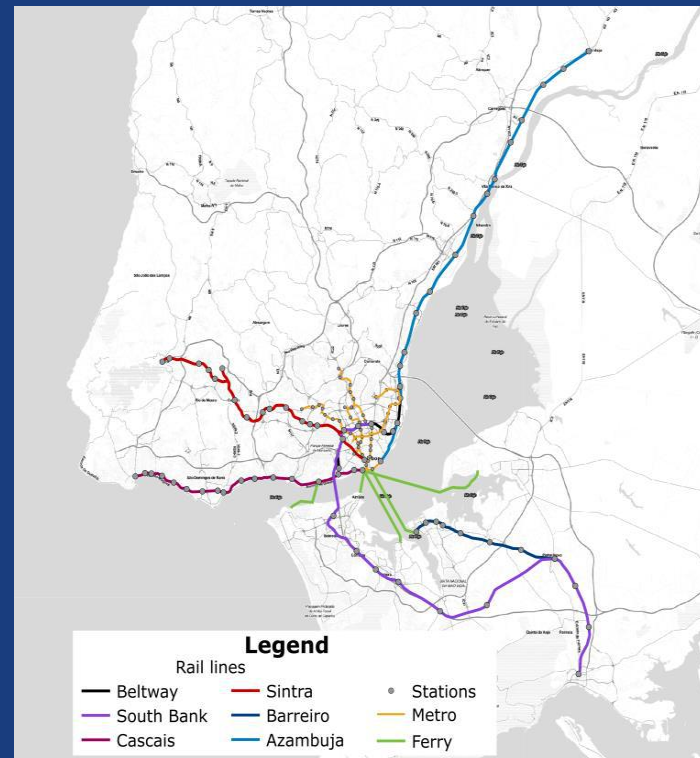
-34%

(Lisbon city)

Increase in metro and rail ridership (LMA)

45%

(passengers per day)



Vehicle occupancy



Private cars

1.2

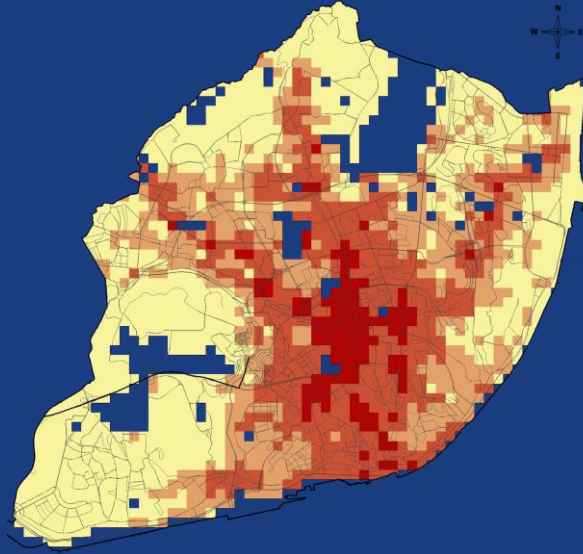


Shared Taxis

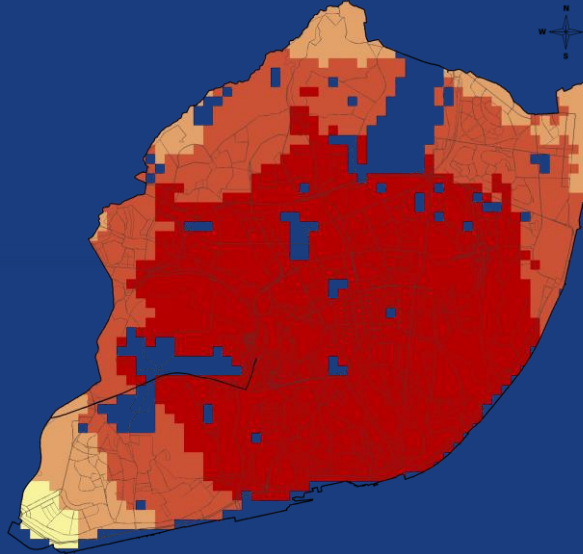
2.0-2.6

Impacts on Accessibility - Jobs

Current public transport + walking



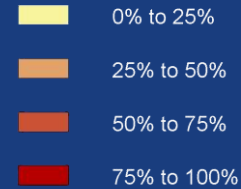
Taxibus + Metro + walking



Inequity Indicator	Current PT + Walk	Taxibus + Metro + Walk
P90/P10	17.3	1.8
Gini coeff.	0.27	0.11

Legend

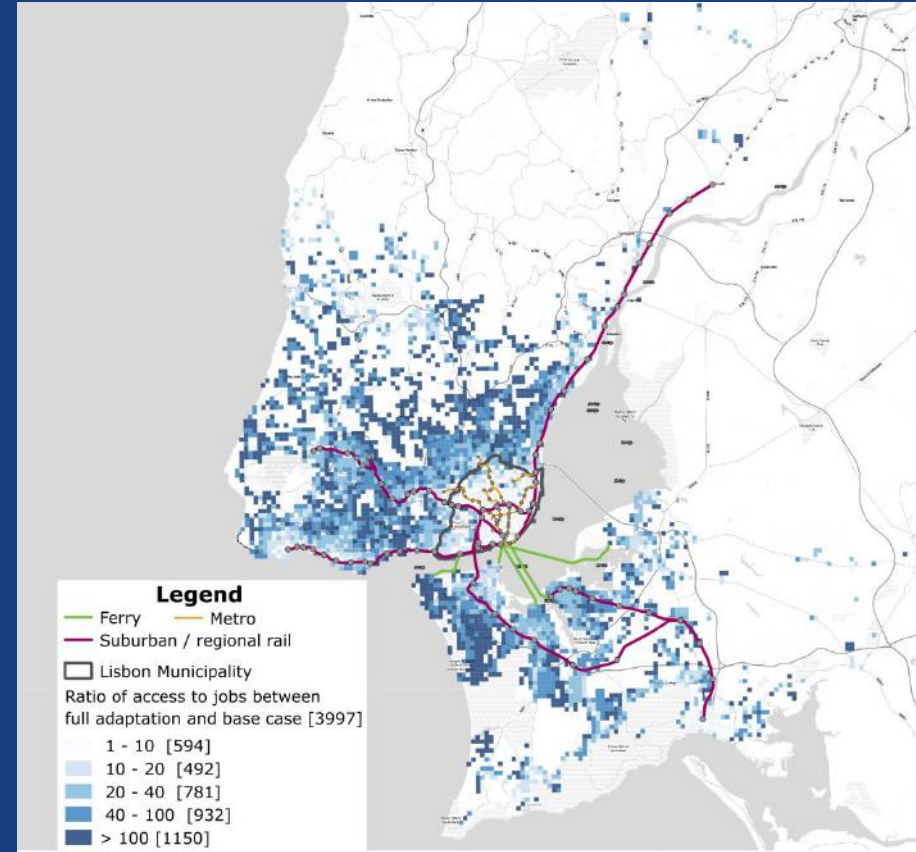
Classes of access by percentage of total jobs



For each cell as origin, % of total jobs in the city accessed in 30 minutes

Impacts on Accessibility - Jobs

Improvement in access especially for more remote regions less well-serviced by public transport.





eliminate
all street parking



-80%
off-street parking

PARKING



PARKING





Shared Taxis

26% price of Taxi



Taxi-Bus

43% price, 28% cost of PT



TAXI

zero Emission

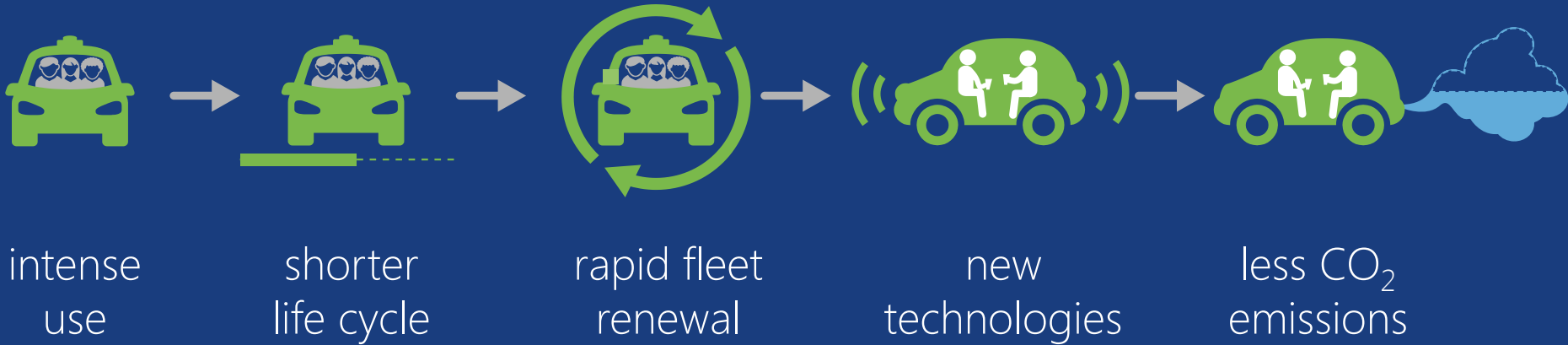


e-NV200

TAXI 00000

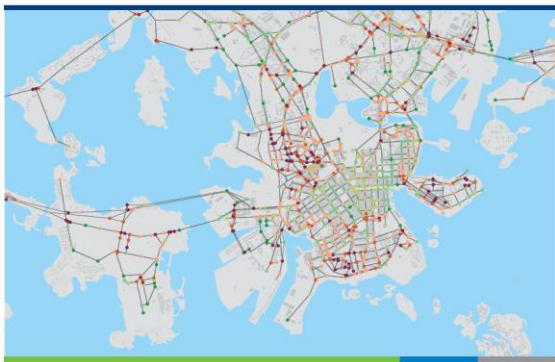
zero Emission

Shared mobility accelerates clean tech penetration



Conclusions for the Lisbon case

- Solutions for the key challenges are within reach, with today's technology
 - Strong reduction of emissions and pollutants
 - No congestion
 - Massive release of parking space
 - Lower or Zero subsidy for Public Transport (Taxi-Bus)
 - Much better and more equitable accessibility (compared to current PT)
 - Favourable introduction of e-mobility
- Sharing – vehicle occupancy critical element
- Adoption at a sufficient level



Shared Mobility Simulations for Helsinki



Case-Specific Policy Analysis

2017 Reports

Shared Mobility Simulations for
Helsinki
Auckland
Dublin

Recommendations

Enable shared mobility as part of policy package

Introduce at a sufficient scale

Target potential early adopters particularly car users

Feed to mass transit

Ensure line and station capacity



Thank you!

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Olga.PETRIK@itf-oecd.org

Jari.KAUPPILA@itf-oecd.org

Latest report available at

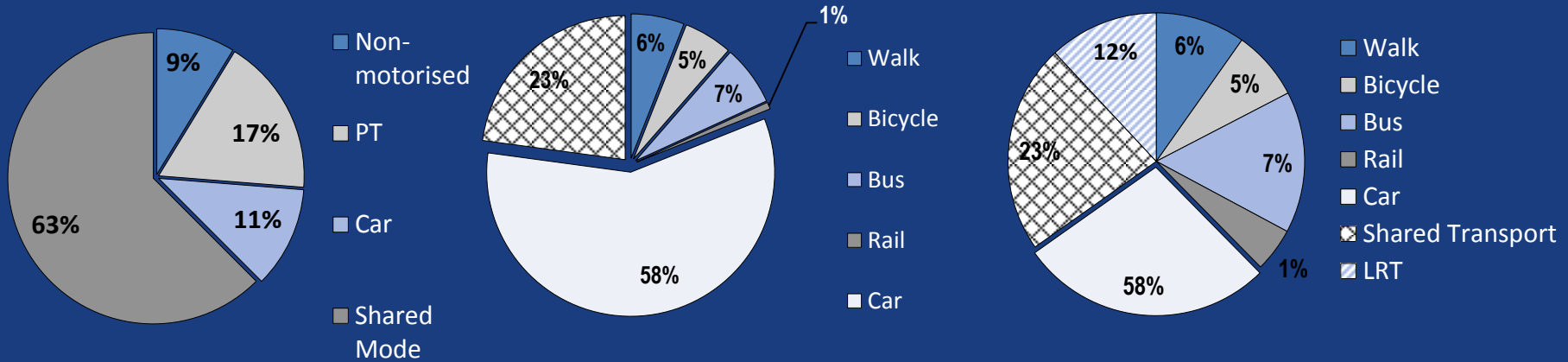
<https://www.itf-oecd.org/new-shared-mobility-study-helsinki-confirms-ground-breaking-lisbon-results>

Understanding user preferences

Focus group for each city

Stated preference survey

Shared mode in stated preference survey

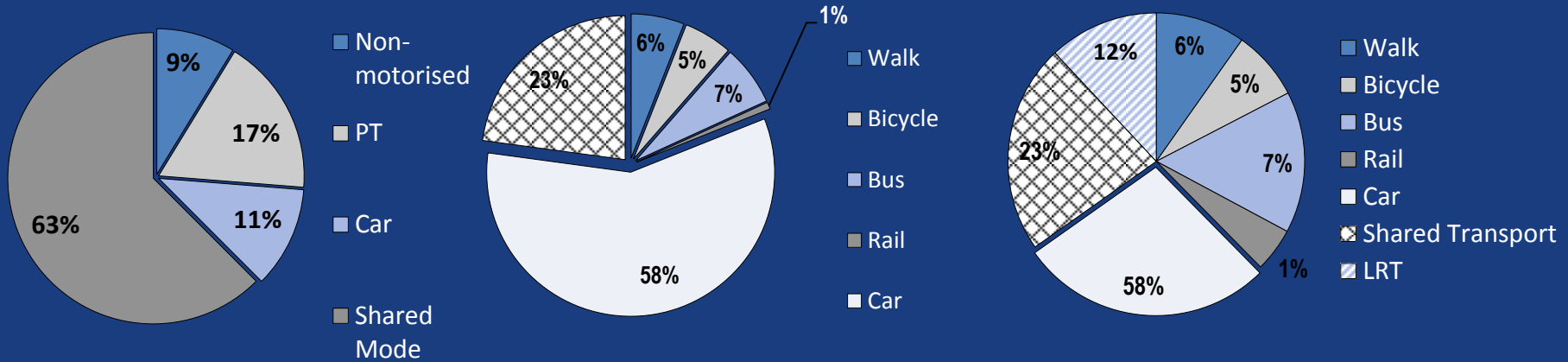


Helsinki

Auckland

Dublin

Car mode in stated preference survey



Helsinki (41%)

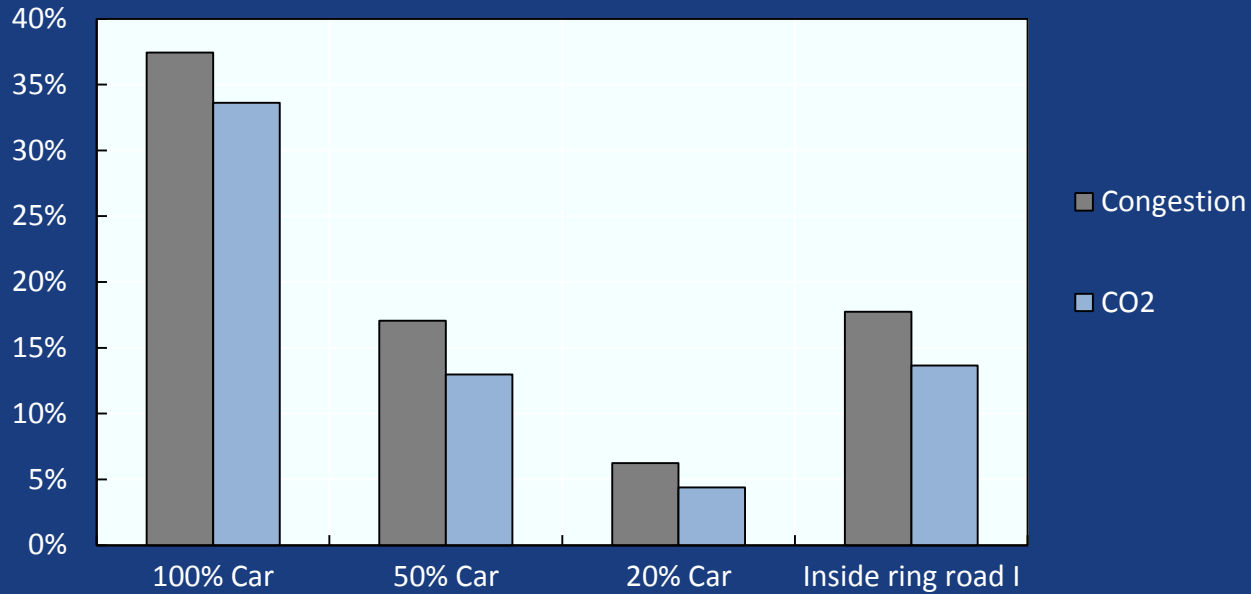
Auckland (87%)

Dublin (65%)

Other observations

- Importance of having services across the entire area – and feeder service to mass transit
- Willing to share vehicles with more rather than fewer travellers
- Early adopters: residents living far from the city centre, regular PT users young and people above 55 years
- Price important factor for all respondents
 - Waiting, access and travel time, number of transfers and comfort
- One third of respondents that own a car stated they would sell one of more cars if shared mobility services were available

Impacts on Helsinki MA



Factors affecting outcome

Current modal share

Public transport quality

Density of the area

Trip patterns

Transition

Land use policies

Economic instruments

Infrastructure/service measures

Regulatory policies