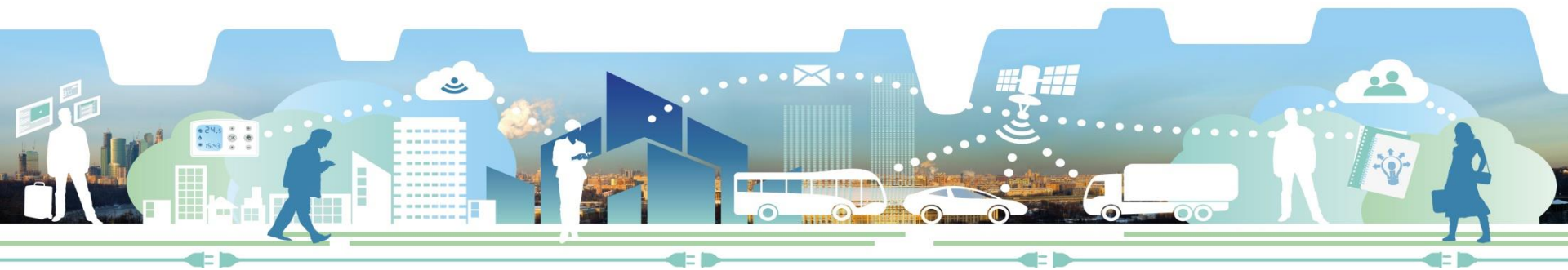


Parking implications of AVs

STAD June 2020

Francis Ostermeijer

Prof. Jos van Ommeren & Assoc. Prof. Hans Koster

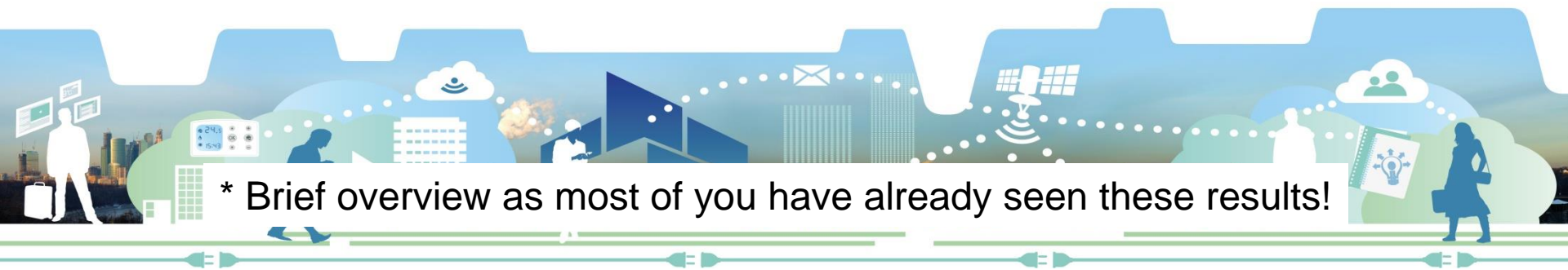


Contents



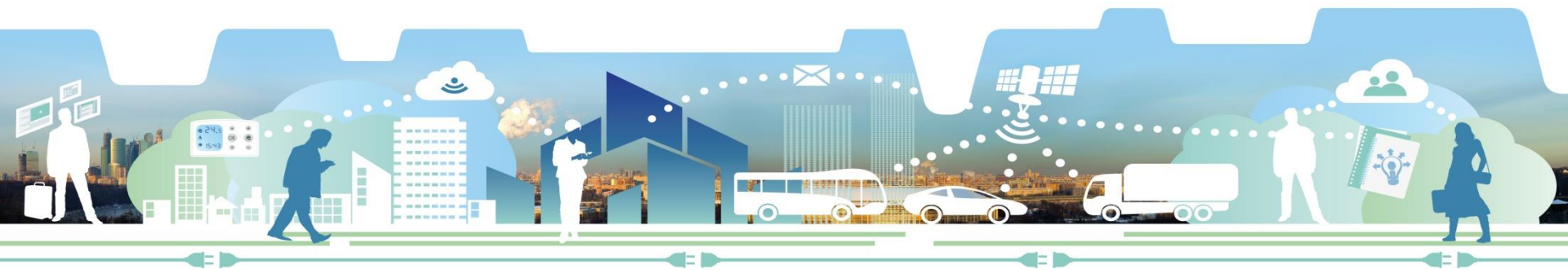
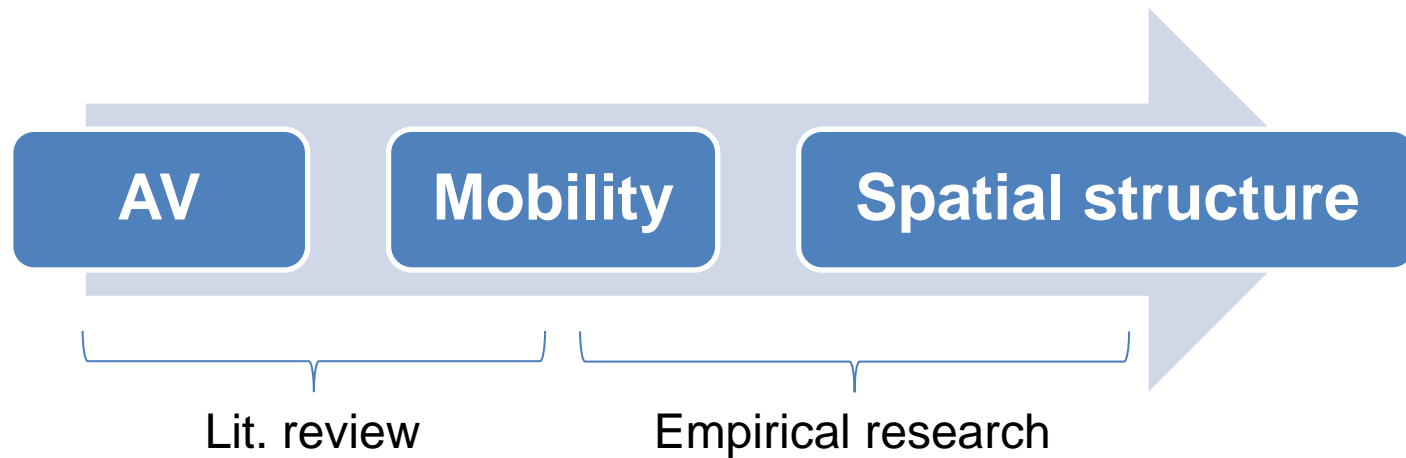
- I. Overview
- II. Parking (residents)*
- III. Parking (visitors)
- IV. Conclusions

* Brief overview as most of you have already seen these results!



I Overview

Figure 1: Research strategy



I Overview

Figure 2: Spatial structure



Land use

- Employment*
- Residence*
- **Transport infra (parking)**

Density

- Land use*
- Buildings*
- Activity

Transport flows

- **Modes**
- Direction
- **Speed**
- Safety*

* Papers on accessibility and accidents caused by mobile phones

II Parking (residents): Vision

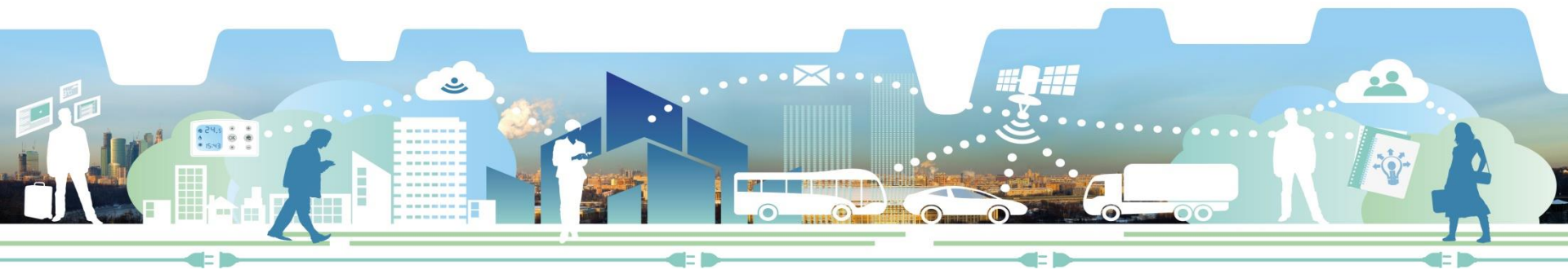
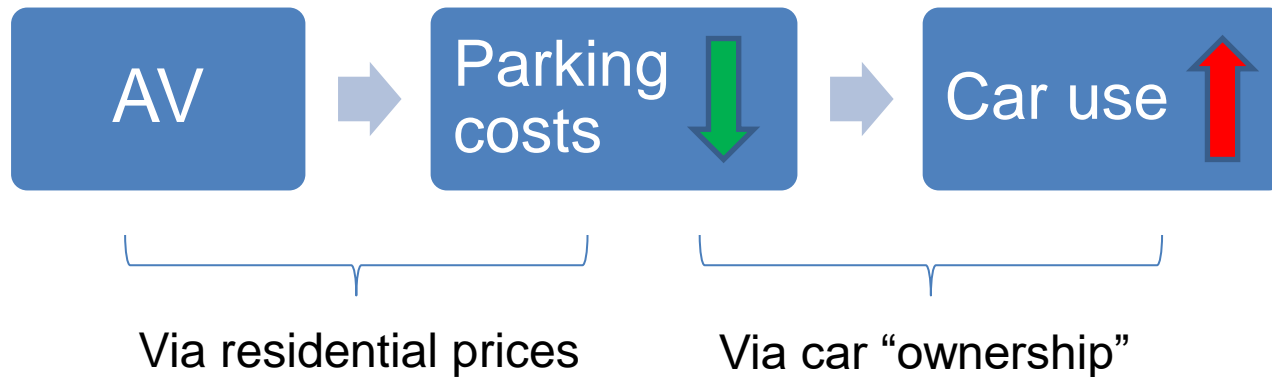
- Lots of space in cities → residential parking
- No longer require parking in dense city centres



II Parking (residents): RQ

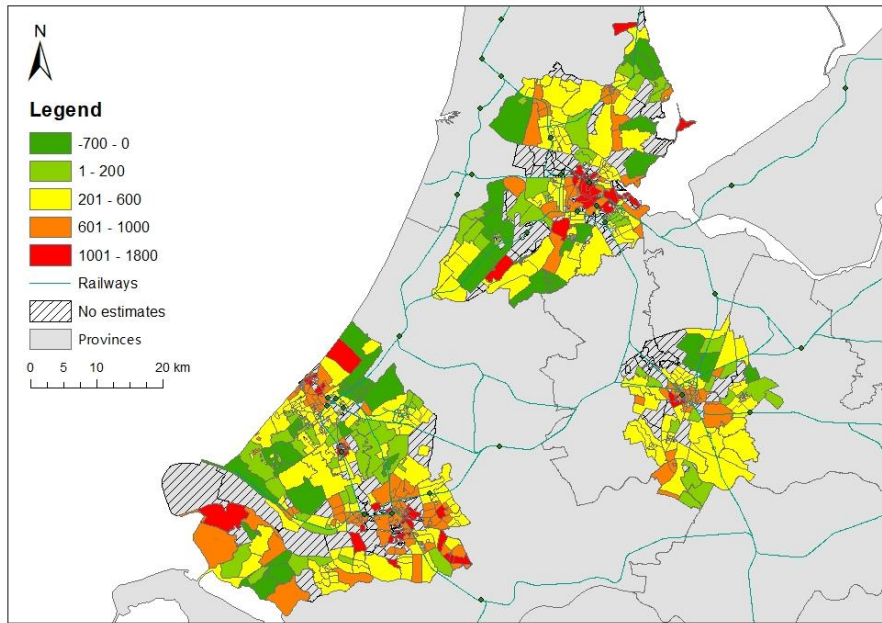
*To what extent do parking costs affect residential car use?
(published)*

Figure: Research design

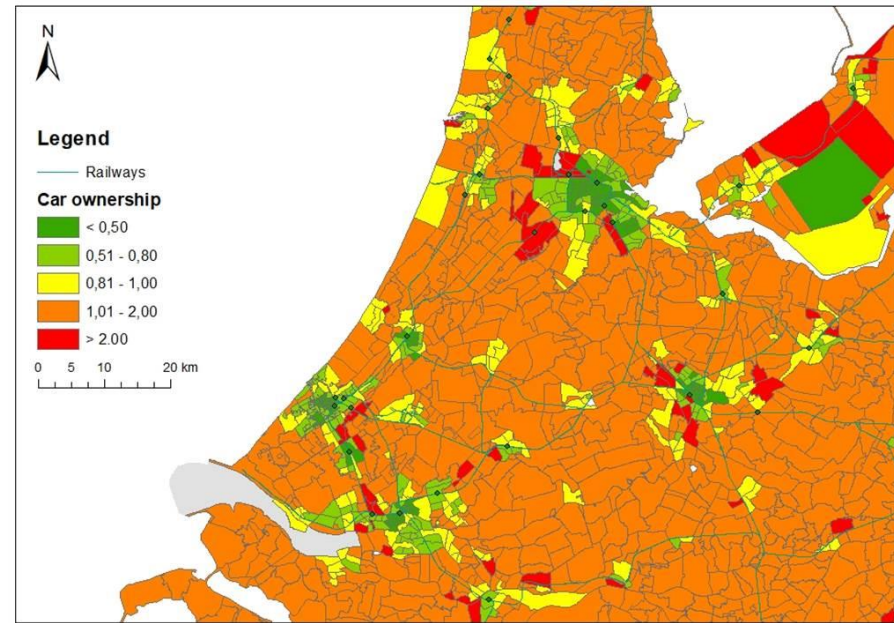


II Parking (residents): Findings

Residential parking prices



Car ownership 2017



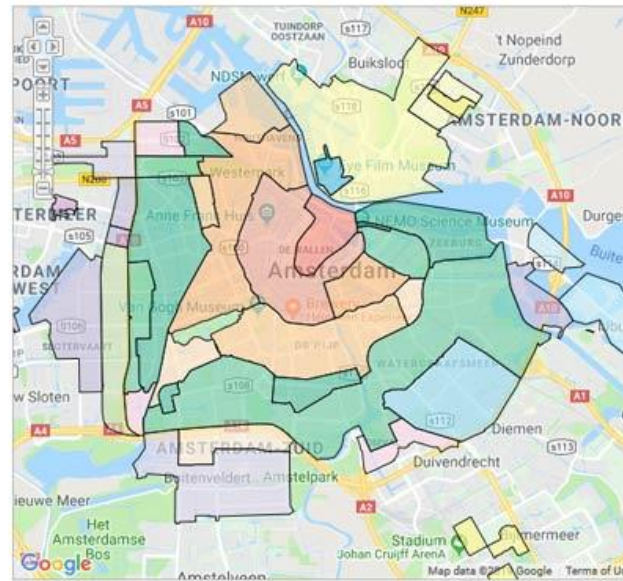
- Parking costs explain $\approx 30\%$ difference in car ownership rates between city centre and periphery
- Application to AVs
 - No longer require residential parking
 - Residential parking costs fall
 - Car demand in city centres $\rightarrow \uparrow 8-14\%$

III Parking (visitors): Vision



- High parking prices in city centre > €5
- Goal: discourage taking car into city
 - Large portion of municipal revenues
 - E.g. \approx 25% Amsterdam (5% of expenditures)

✖ **Gemeente**
✖ **Amsterdam**
✖



Legenda parkeertarieven en tijdvakken

7,50	ma-za 09.00-24.00 zo 12.00-24.00 ma-za 09.00-04.00 zo 12.00-04.00	3,50	ma-za 09.00-19.00 ma-za 09.00-21.00 ma-za 09.00-19.00 ma-za 09.00-24.00 zo 12.00-24.00
6,00	ma-vr 09.00-19.00 ma-za 09.00-21.00 ma-za 09.00-24.00 ma-za 09.00-24.00 zo 12.00-24.00	2,50	ma-vr 09.00-19.00 ma-za 09.00-19.00 ma-za 09.00-24.00 ma-za 09.00-19.00 do 09.00-21.00
4,50	ma-za 09.00-19.00 ma-za 09.00-21.00 ma-za 09.00-24.00 ma-za 09.00-24.00 zo 12.00-24.00	1,40	ma-vr 09.00-19.00 za 12.00-19.00 ma-za 09.00-19.00 zo 12.00-19.00 ma-za 09.00-21.00 zo 12.00-21.00 ma-vr 09.00-19.00 za 12.00-19.00
0,10/ 3,50	ma-vr 09.00-19.00		

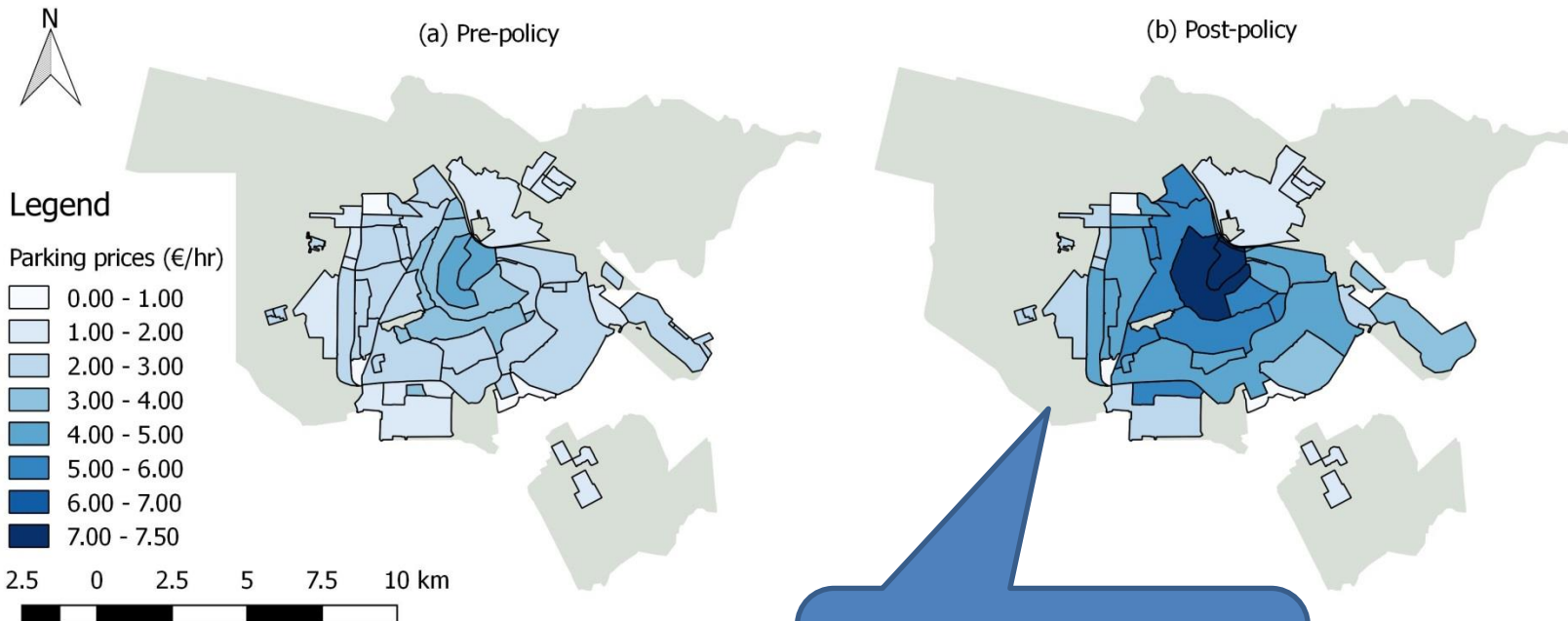
Amsterdam Parking Zones

source: amsterdam.nl (City Council)



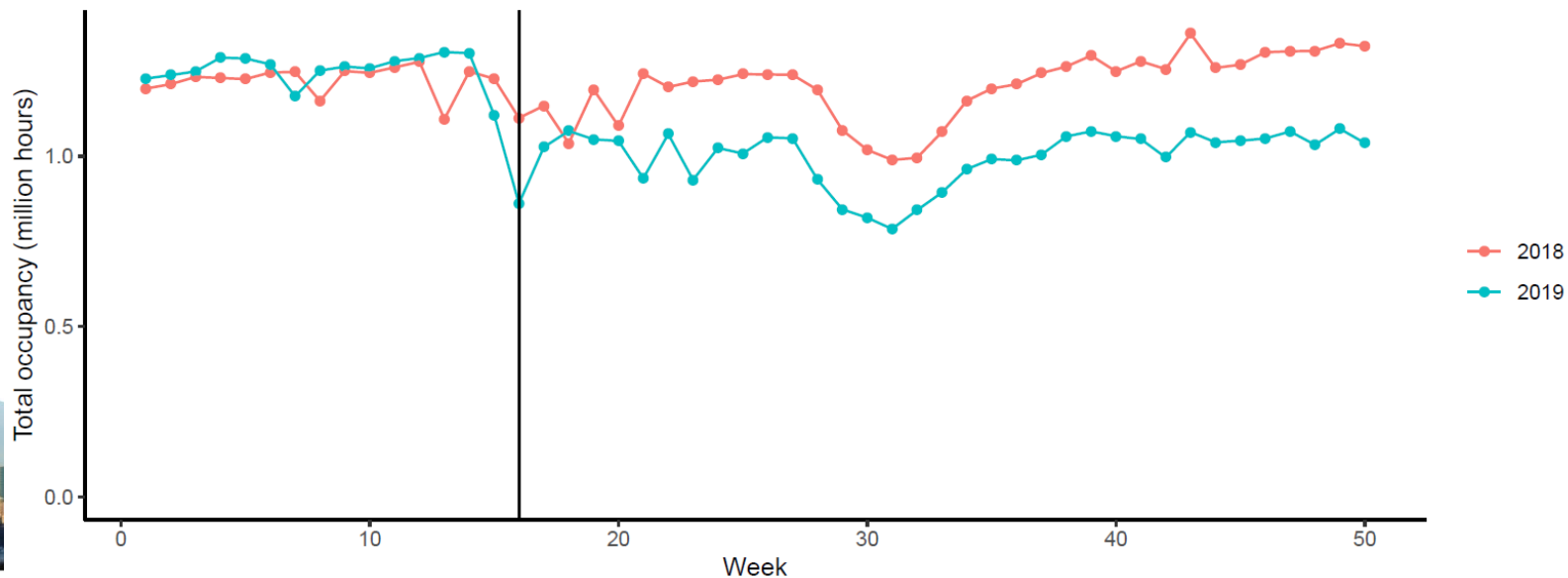
III Parking (visitors): RQ

- To what extent do parking prices effect visitor parking demand and traffic?*



III Parking (visitors): Analysis

- Data
 - All on-street parking transactions in Amsterdam (≈ 50 million)
 - Parking meters (≈ 3000)
 - Off-street garages (private, public, & P+R facilities)
- Methods
 - Detailed event study controlling for location specific effects, seasonality, weather, trends



III Parking (visitors): Findings



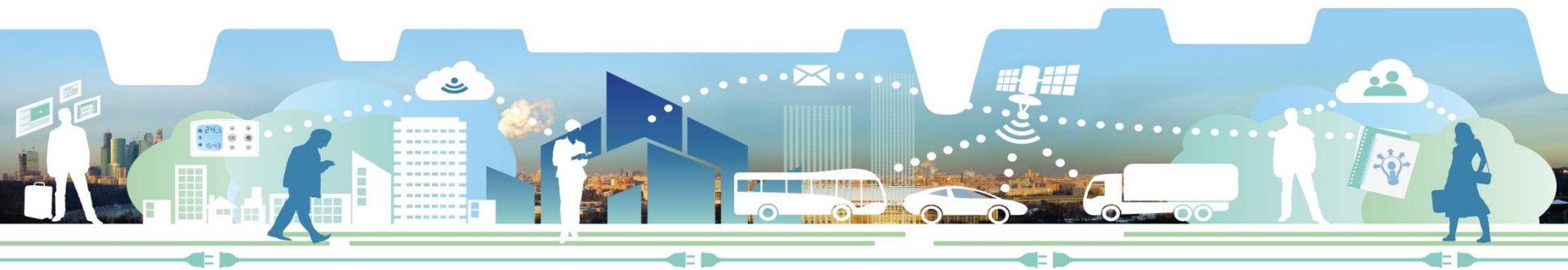
- Reduction in arrivals (-15%) and duration (-12%)
 - Also estimate price elasticities
 - Changes in off-street demand
- Wider mobility effects (currently under study)
 - Less traffic, congestion, and cruising
- AVs → ‘reverse policy’
 - Assume price becomes €1 throughout city
 - Approx. 50% traffic are visitors
 - Rough estimate: 15% increase in traffic overall, 30% in city centre
 - More car use in city centres where prices are currently high



IV Conclusions



- Automated vehicles and parking
 - Benefits: current parking space can be repurposed
 - Costs: more car use in cities if left unchecked
- Policy implications
 - Parking prices no longer effective tool to manage car use in city
 - More car use in city centres



V Food for thought...

- **Question:** *If parking prices are no longer an effective tool to manage car use in cities, what should municipalities do to avoid excessive use of AVs?*
 - A. Nothing, AVs are smart and will solve the problem using AI.
 - B. Charge a tax to enter the city (e.g. London).
 - C. Charge vehicles a km tax on particular roads.
 - D. Restrict the use of AVs to certain areas.

