

Parallel Session 6 – Mobility, Accessibility & Door-to-Door solutions



INTERMODALITY HUBS

Including new emerging modes



UIC next station
TEHRAN 2019

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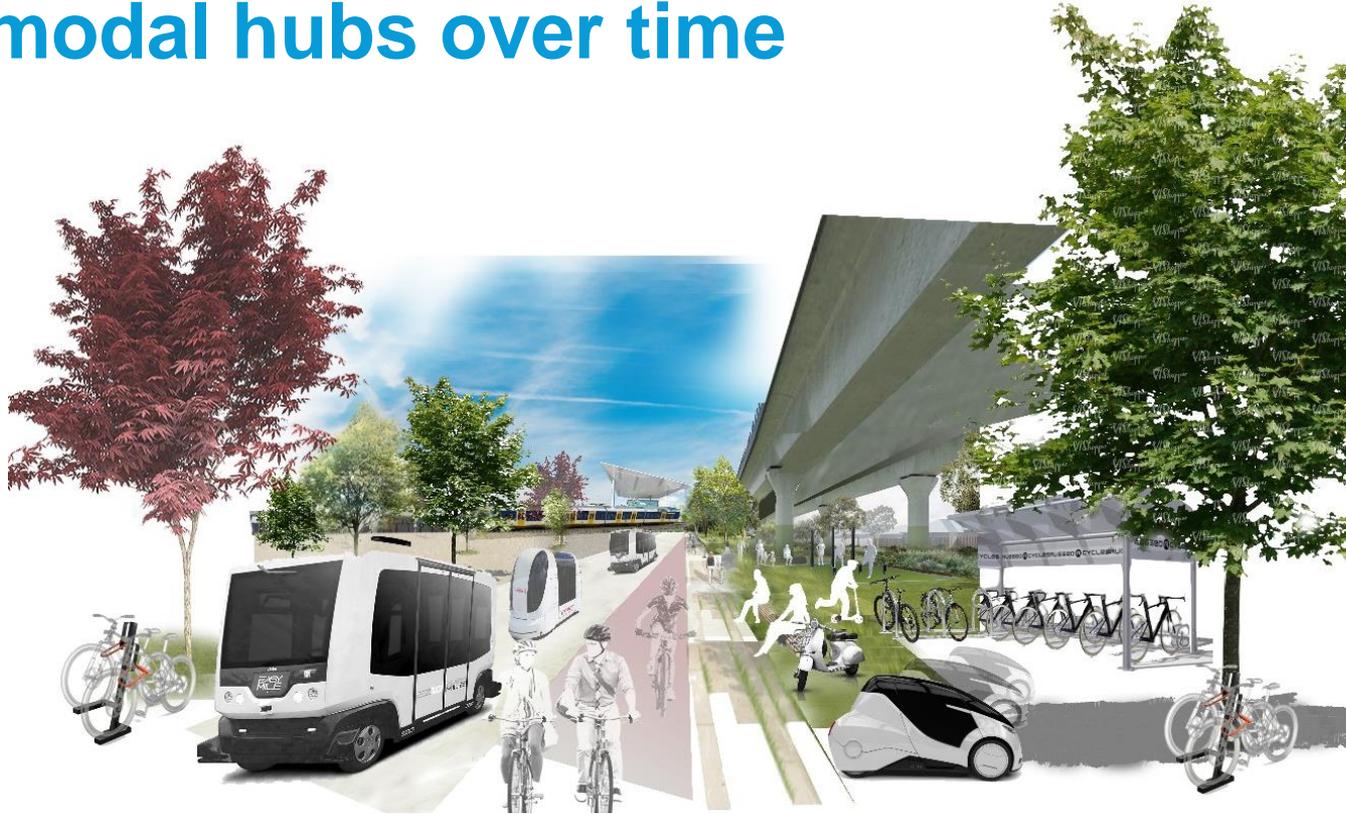
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Overview

- Introduction
- Research Question
- Methodology
 - Case Study (Delft-zuid Train Station)
 - Stated preference survey
- Conclusion

Intermodal hubs over time



"Society is changing, and our transport systems need to innovate to keep pace"

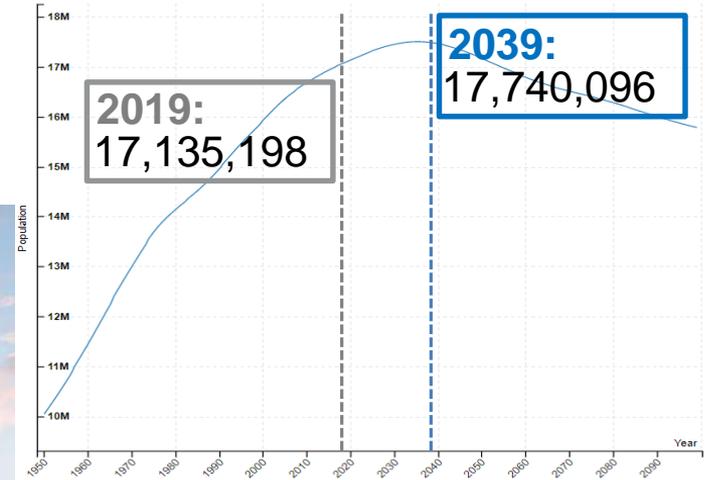
PhD Research Question

With arrival of the new modes, what design guidelines should be implemented (or considered) in order to increase accessibility of passengers to access/egress zone of intermodal hubs?

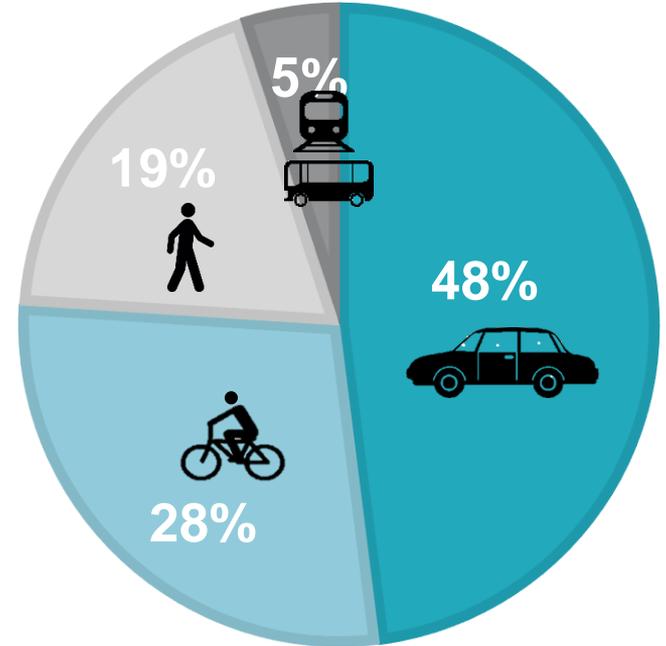
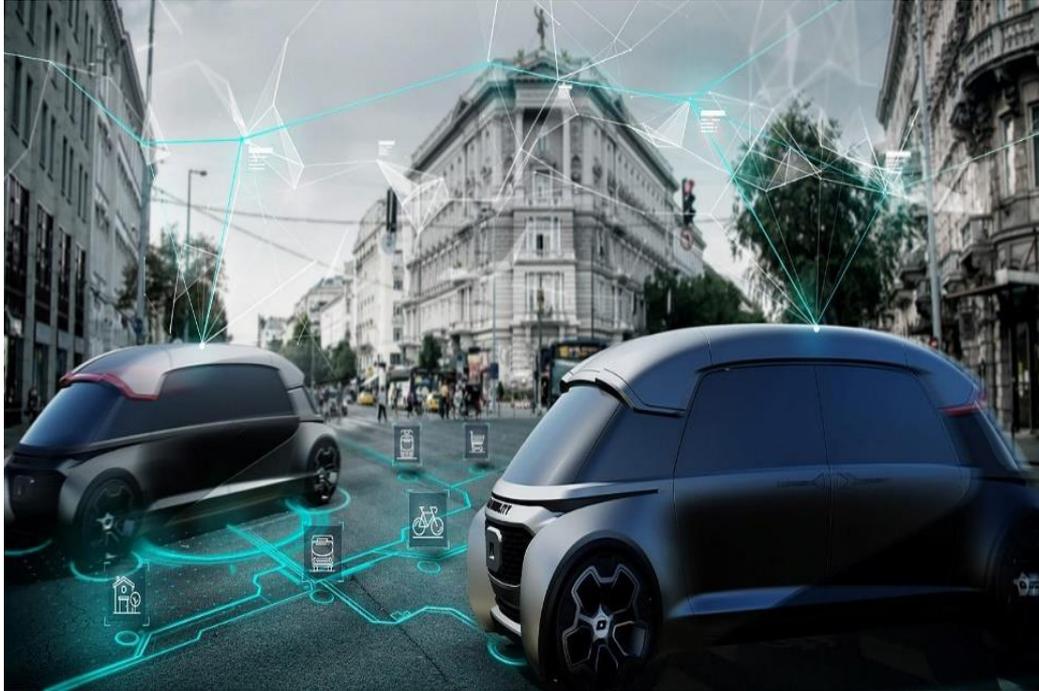
The Netherlands...

Area: 41,850 km²

Population: 17,135,198



Modal split in The Netherlands



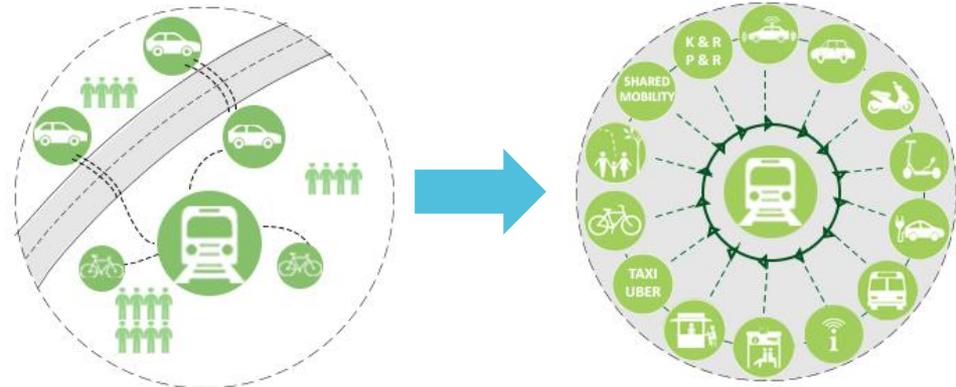
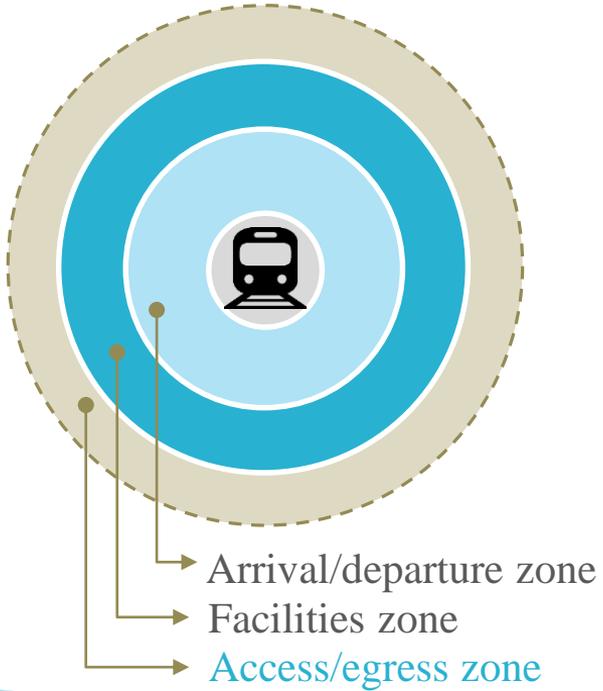
The Netherlands has a wish for change...

(Ton, 2019)

Upcoming modes in the Netherlands



Access-egress zone



Seamless mobility in intermodal hubs

Methodology

Case study

Delft;

- Population: 106,816
- A top tourist destination
- The capital in terms of innovation and technology

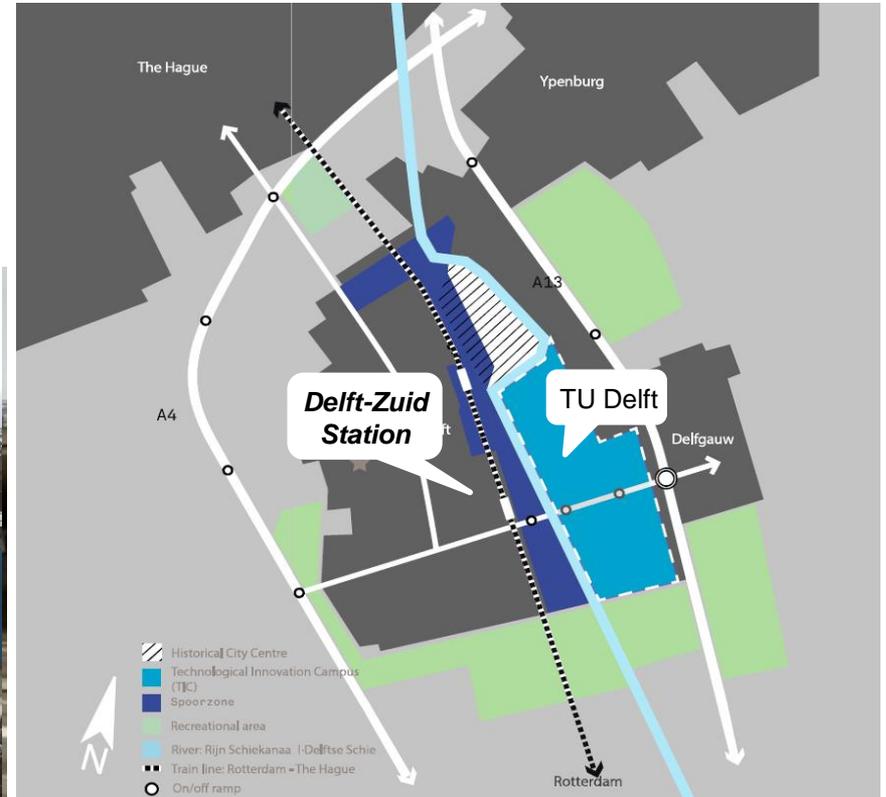
TU Delft ; The Netherlands

- Ranked in the top 20 best engineering University in the World
- Highest ranked University in NL
- 8 Faculties
- 22,000 students+ 2,100 staff



Case study

- 5000 passengers/working days
- 35% TU Delft staff
- Poor public transportation



Stated Preference Survey

TU Delft
Delft University of Technology

Do you like to experience new transport modes?

WIN €100
(shared by 2 persons)

EN Scan me! Scan mij! NL

or Go to this link:
<https://urlzs.com/8abqk>

or Go to this link:
<https://urlzs.com/cfjcE>

Travel mode shift in response to the new emerging transport modes

Availability
Travel cost
Total travel time

Attributes

Weather

Luggage

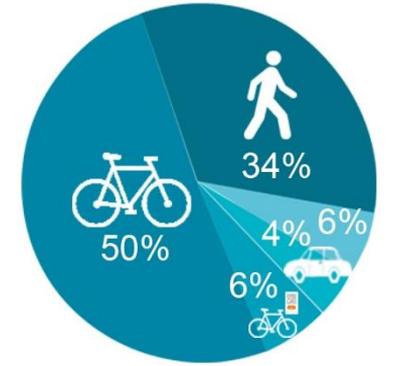
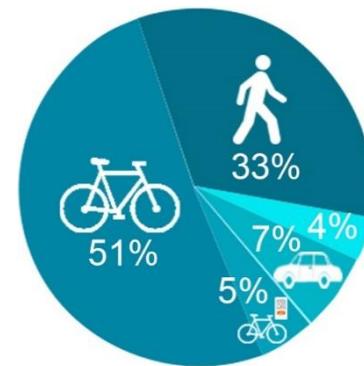
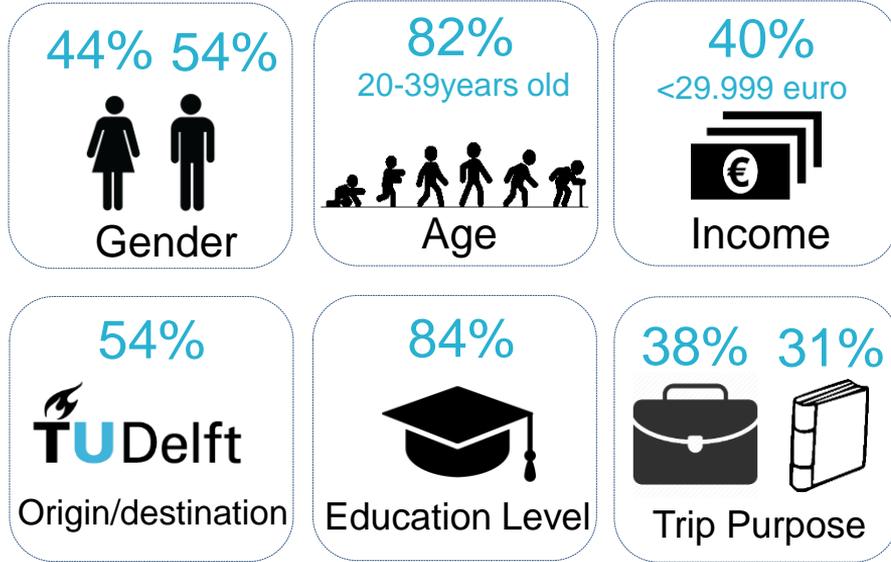
Weather is **rainy** and you have a **luggage max 10kg**.

Scenario E3					
	Bike sharing	E- Step sharing	E- Scooter sharing	Individual AV	Collective AV
Travel Time	6 min	3 min	3 min	6 min	11 min
Cost	1.5 euro	1 euro	1.5 euro	5 euro	2.5 euro
Availability	80%	70%	90%	90%	100%

1) What is your choice?

Results

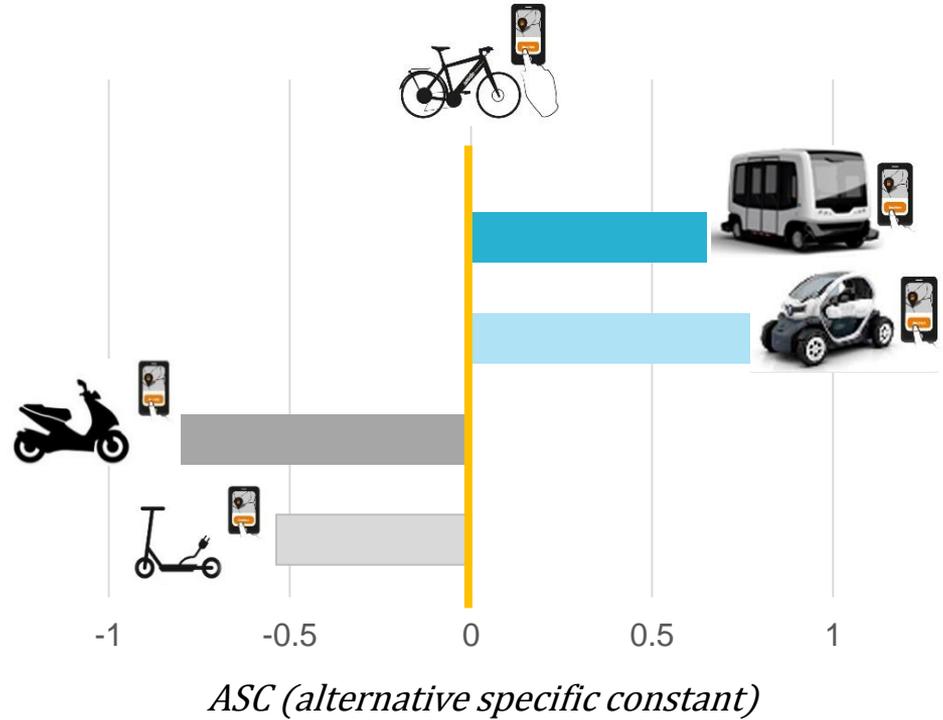
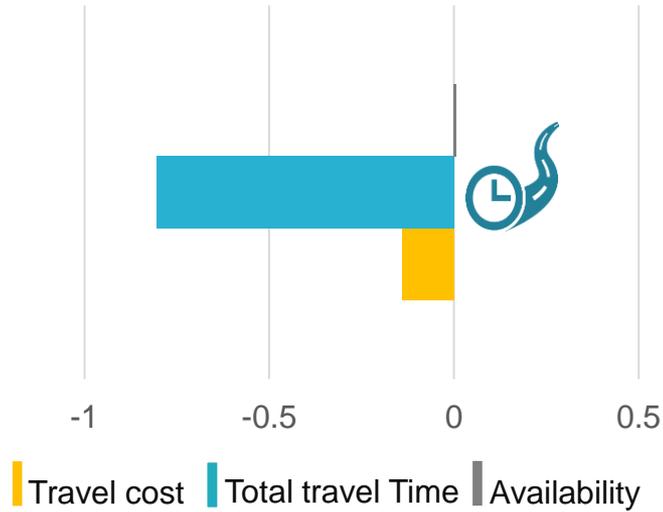
User characteristics



Results

MNL (Multinomial Logit)

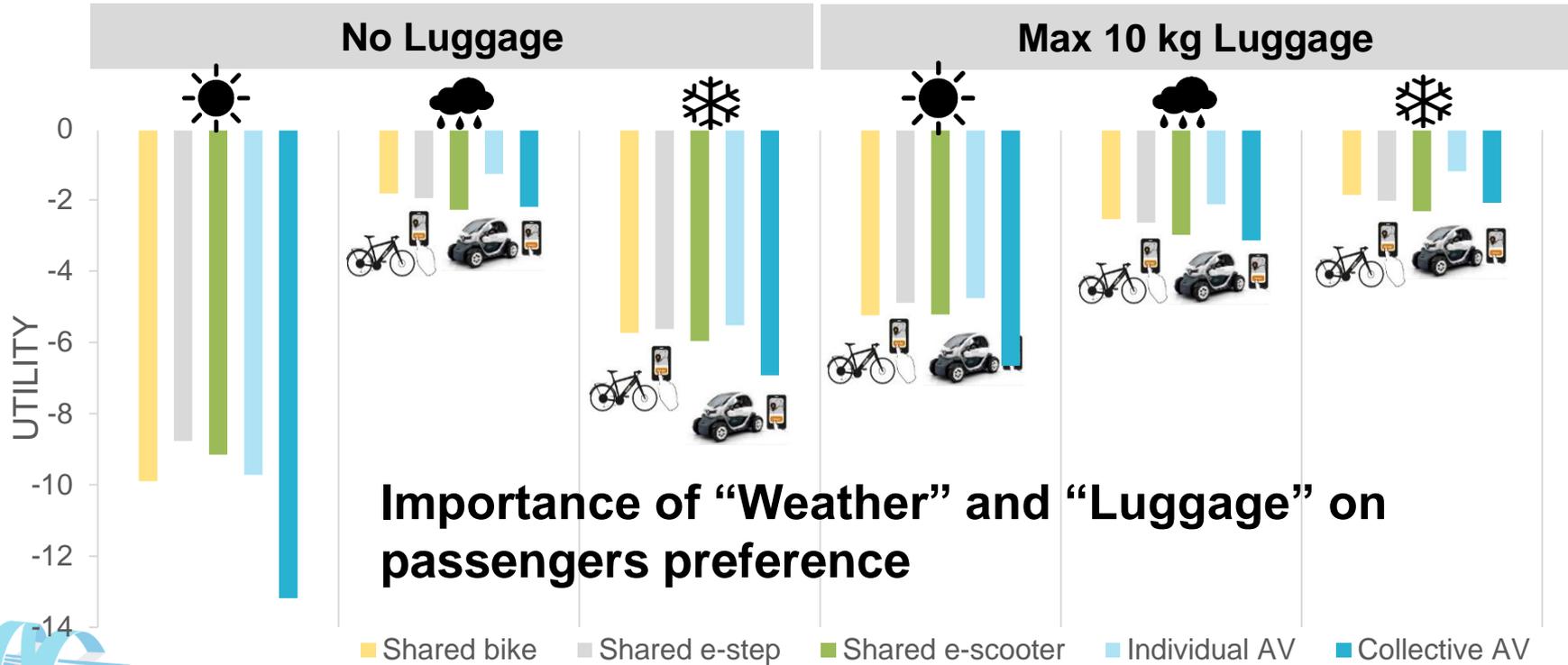
All Significant



β (attributes)

ASC (alternative specific constant)

Results

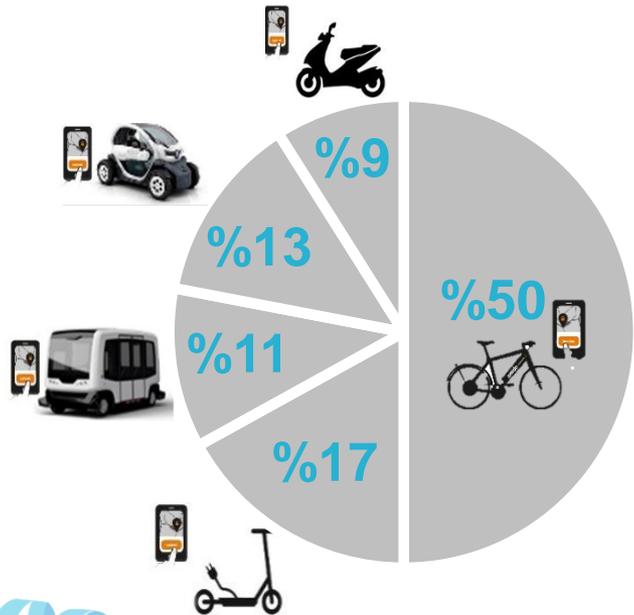


Importance of “Weather” and “Luggage” on passengers preference

$$U = \beta_C x_C(mode) + \beta_T x_T(mode) + \beta_A x_A(mode) + \beta_{C(context)} x_C(mode) + \beta_{T(context)} x_T(mode) + \beta_{A(context)} x_A(mode) + ASC$$

Conclusion

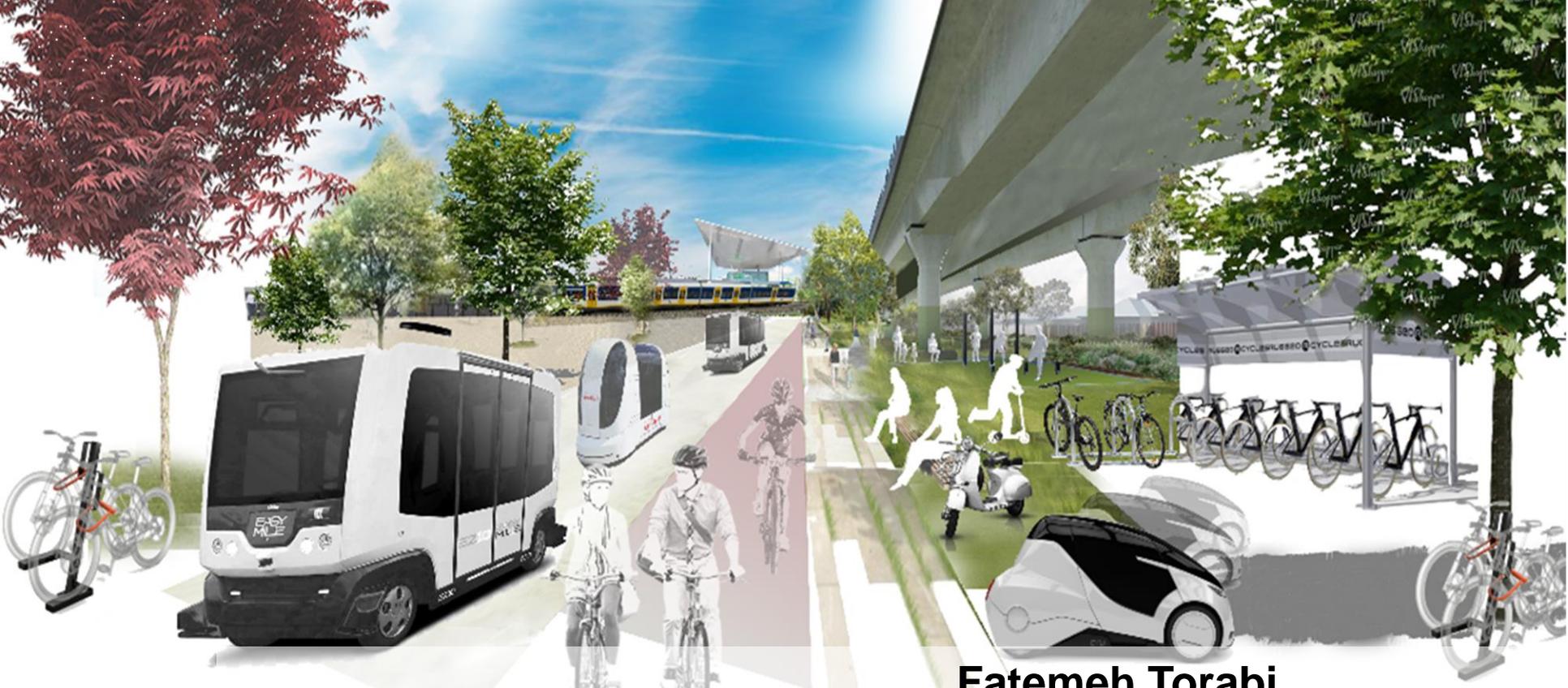
Future Market Share Prediction



- Importance of intermodal hubs in future
- Netherlands has potential for increasing sustainability!
- Many individuals use a limited set of modes
- **“Travel time”** is the most important attribute
- **“Weather”** and **“luggage”** have key role on modal split
- New modes are not interesting in Sunny weather (walking preferred)
- **“Shared bike”** and **“Avs”** are preferred
- **“Shared e-scooter”** least preferred







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Thank you
for your kind attention