

# Understanding the Modal Shift in Response to Bike-sharing Systems in the City of Delft

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# CONTENT

01 Background

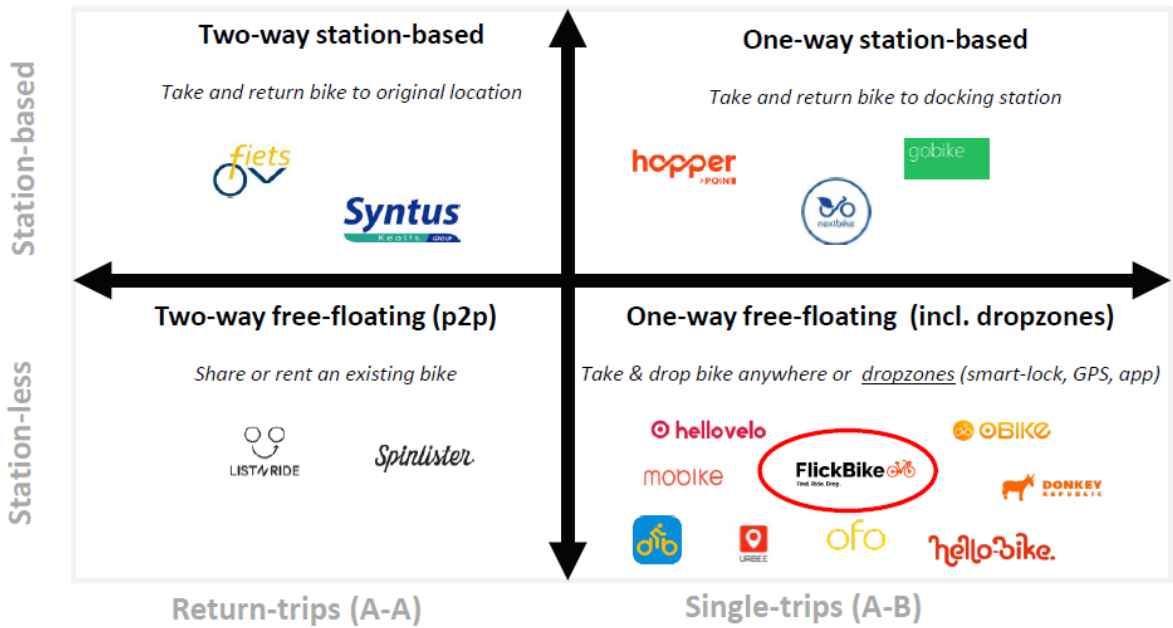
02 Research questions

03 Survey

04 Model




05 Findings

06 Further research



Van Waes et al. 2018

## Bike-sharing Systems in Delft, Netherlands

Bike-sharing Type	OV-fiets	Mobike	Swapfiets
Image illustration			
Year Launched	2003	2017	2014
Feature of systems	Docked bike-sharing system	Dockless bike-sharing system	Bicycle-lease system on a subscription basis
Way to use	1.Subscription online or on a NS App 2. Using the Personal public transport chip card (NS card) to rent a bike.	1.Subscription on a Mobike App 2.Using the Mobike App to open the bike.	Subscription online or on a Swapfiets App and get a Swapfiets bike within 1 day at a location of your choice
User pricing	€ 3.85/day	€ 12/month, 49.90/year or €1.5/20min	€ 15/month

Who

Non-bikesharing users? Bike-sharing users?

Why

Reasons? Barriers & Motivations

What

Modal shift caused by bike-sharing systems?

How

Relationship between Modal shift and factors?

## 03 Survey design

### Non-bikesharing users

- ✓ Personal characteristics
- ✓ Barriers

### Bike-sharing users

- ✓ Personal characteristics
- ✓ Modal shift patterns
- ✓ Motivations

## 03 Survey collection



- June and July
- Twenty interviewers
- 565 respondents

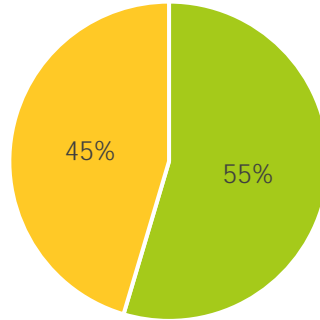
## 04 Model

**Binary logit models for each of the bike-sharing systems.**

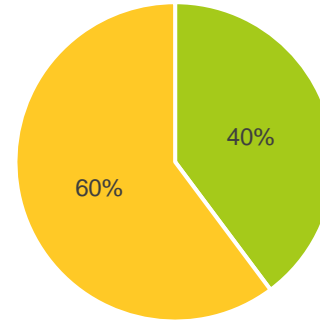
Variable name	Description
<b>Dependent variables</b>	Shift to Mobike=1, No shift=0; Shift to OV-fiets=1, No shift=0; Shift to Swapfiets=1, No shift=0
<b>Independent variables</b>	Socioeconomic variables
	Commuting trip variables
	Motivation variables



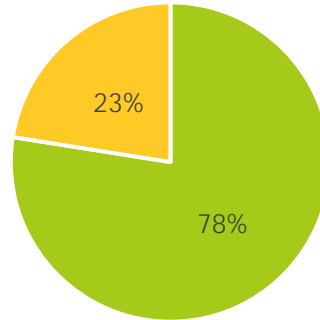
## Nation



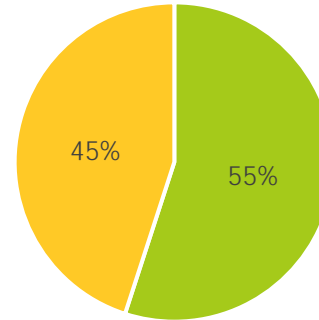
Non-bike-sharing users



Mobike users



OV-fiets users

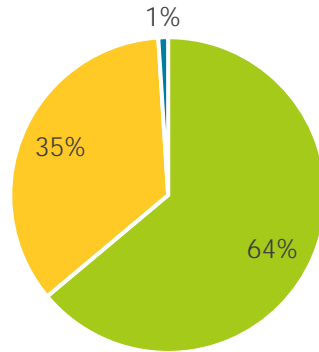


Swapfiets users

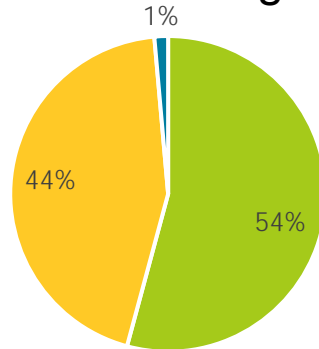
■ Dutch  
■ Non-Dutch

## 05 Findings: sample composition

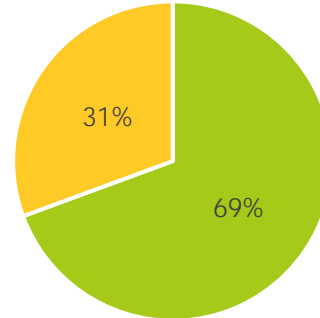
### Gender



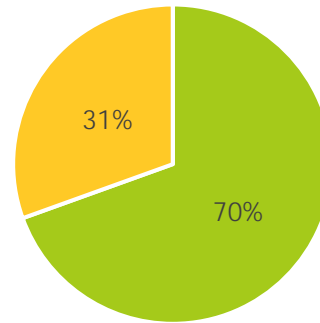
### Non-bike-sharing users



### OV-fiets users



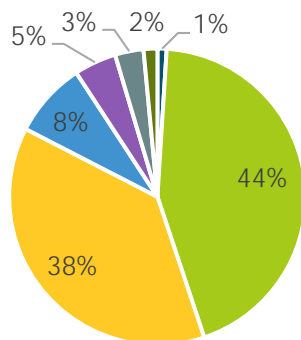
### Mobike users



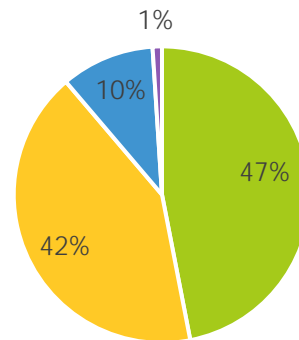
### Swapfiets users



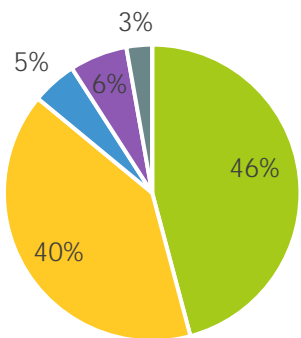
## Age



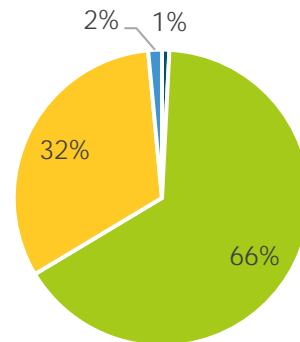
Non-bike-sharing users



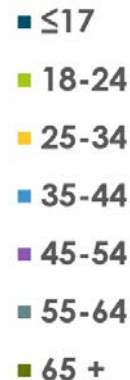
Mobike users



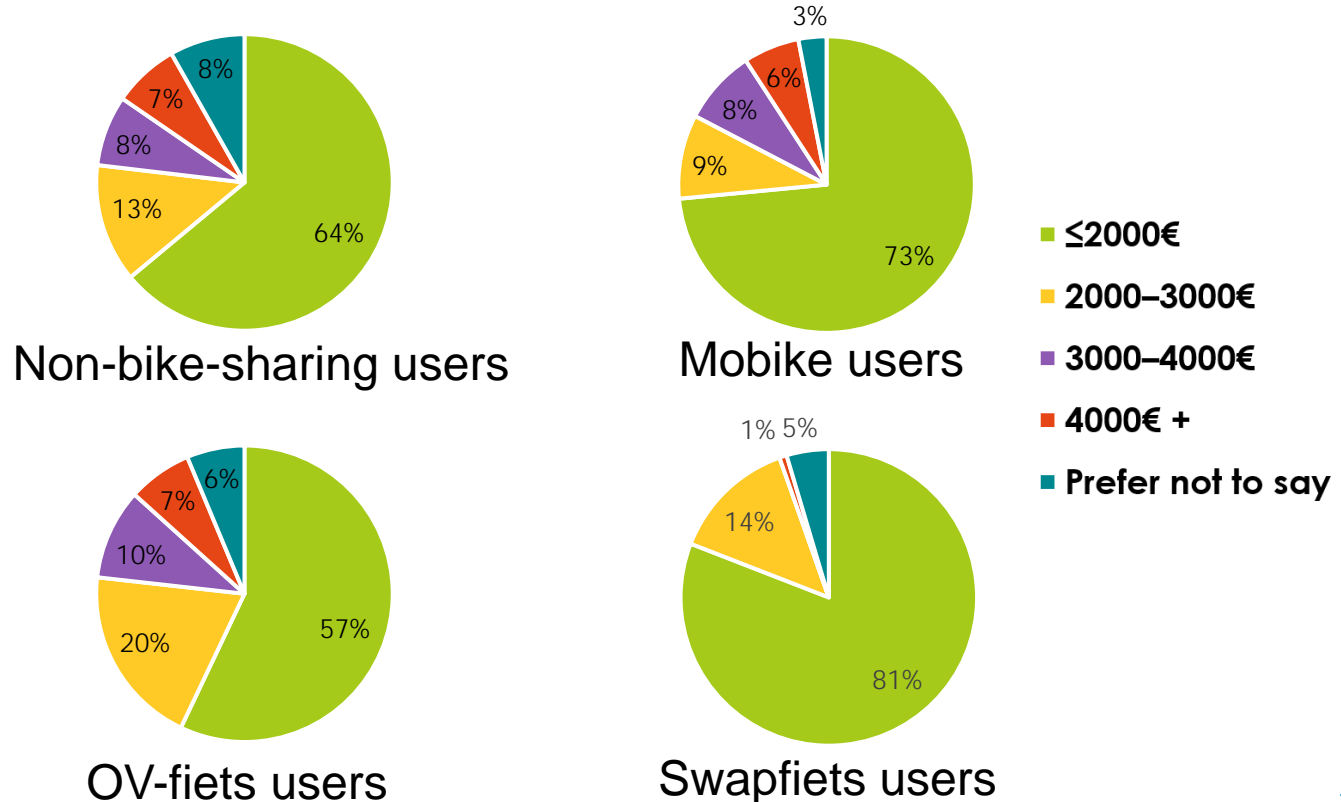
OV-fiets users



Swapfiets users

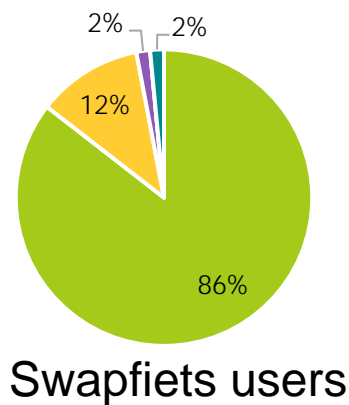
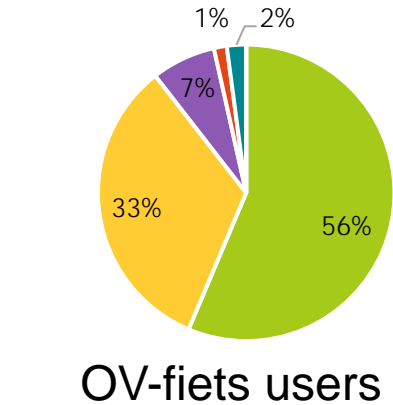
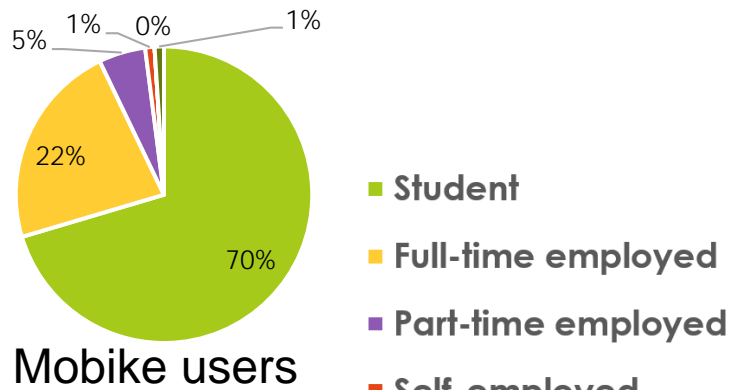
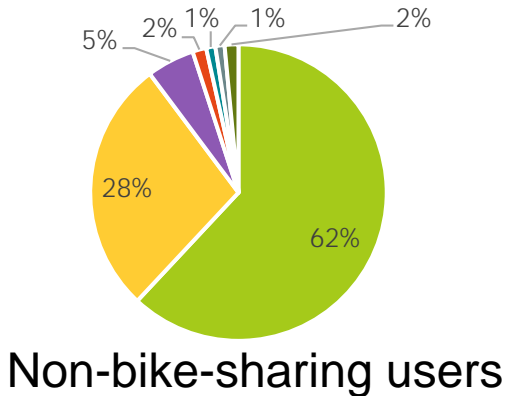


## Income



# 05 Findings: sample composition

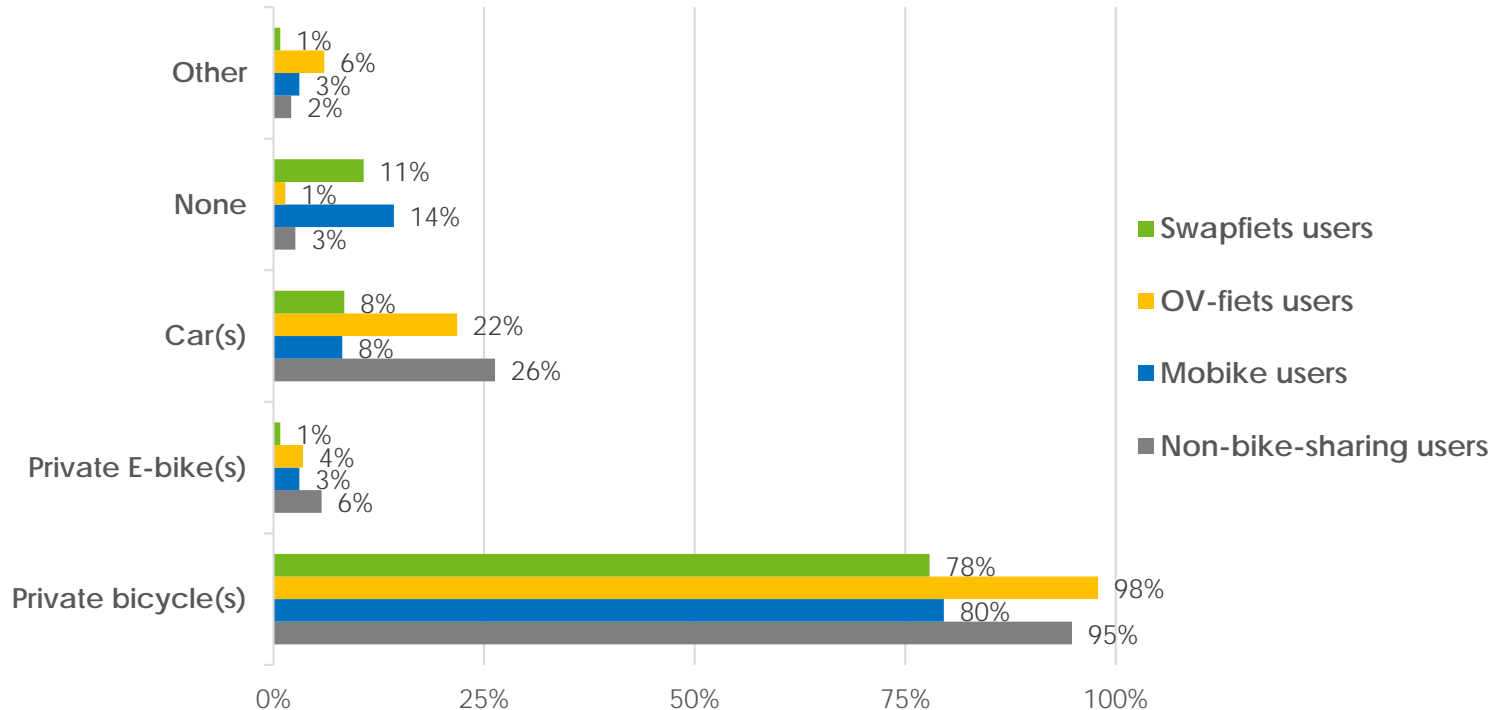
## Employment status



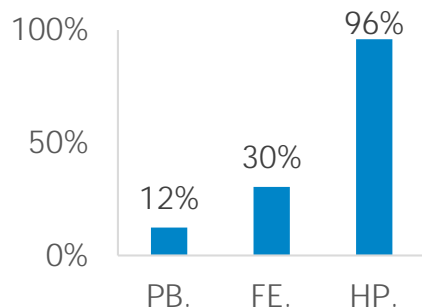
- Student
- Full-time employed
- Part-time employed
- Self-employed
- Seeking for a job
- Retired
- Other

## 05 Findings: sample composition

### Vehicle ownership (Multiple choice)

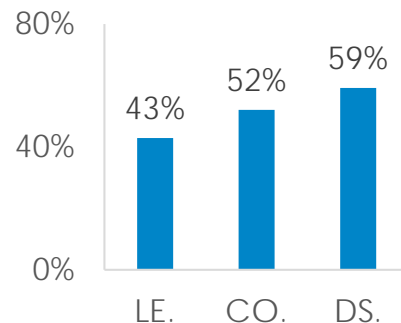


## Non-bike-sharing users (*Barriers*)



HP.	Having private bicycle
FE.	Fee charge
PB.	Poor bicycle quality

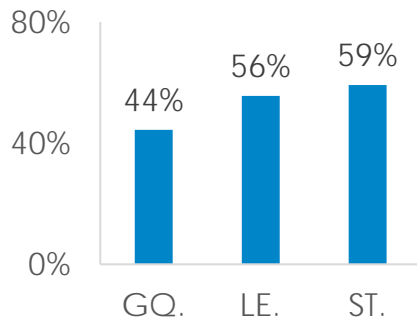
## Mobike users (*Motivations*)



DS.	no fixed pick-up and drop-off locations
CO.	Convenience of the app, payment method
LE.	Less effort than walking

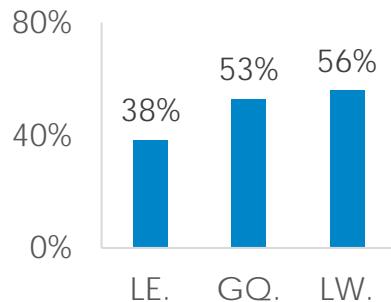
# Findings: barriers and motivations

## OV-fiets users (*Motivations*)



ST.	Saving time
LE.	Less effort than walking
GQ.	Good quality of bikes

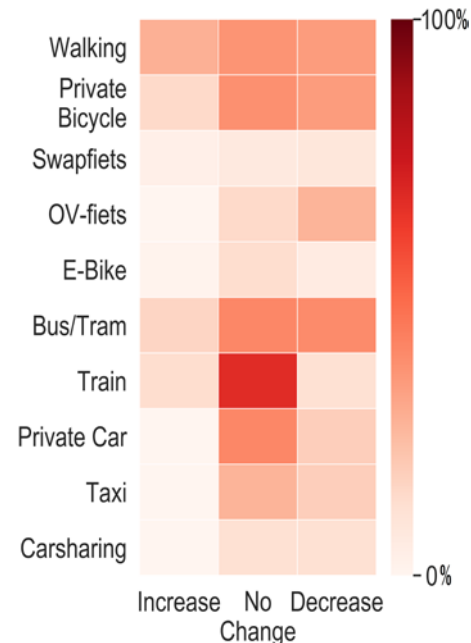
## Swapfiets users (*Motivations*)



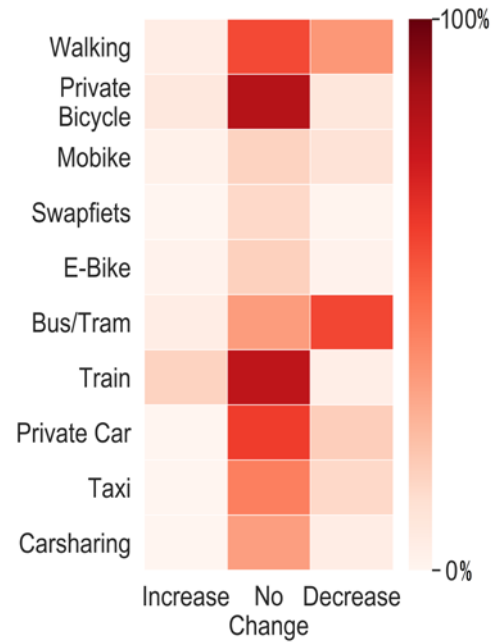
LW.	Less worried about being stolen/damaged
GQ.	Good quality of bikes
LE.	Less effort than walking



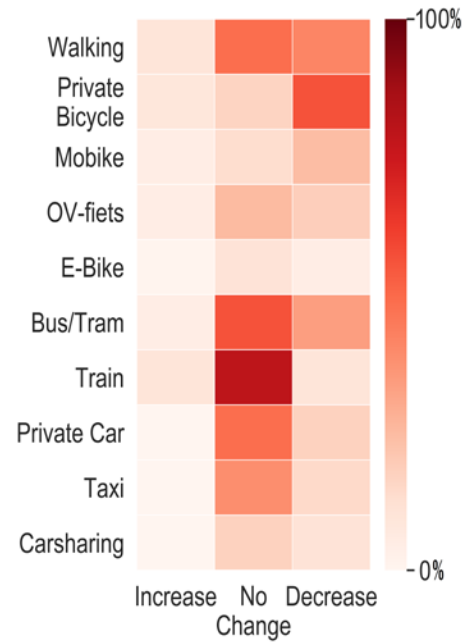
# 05 Findings: modal shift



(a) Modal Shift as a result of Mobike

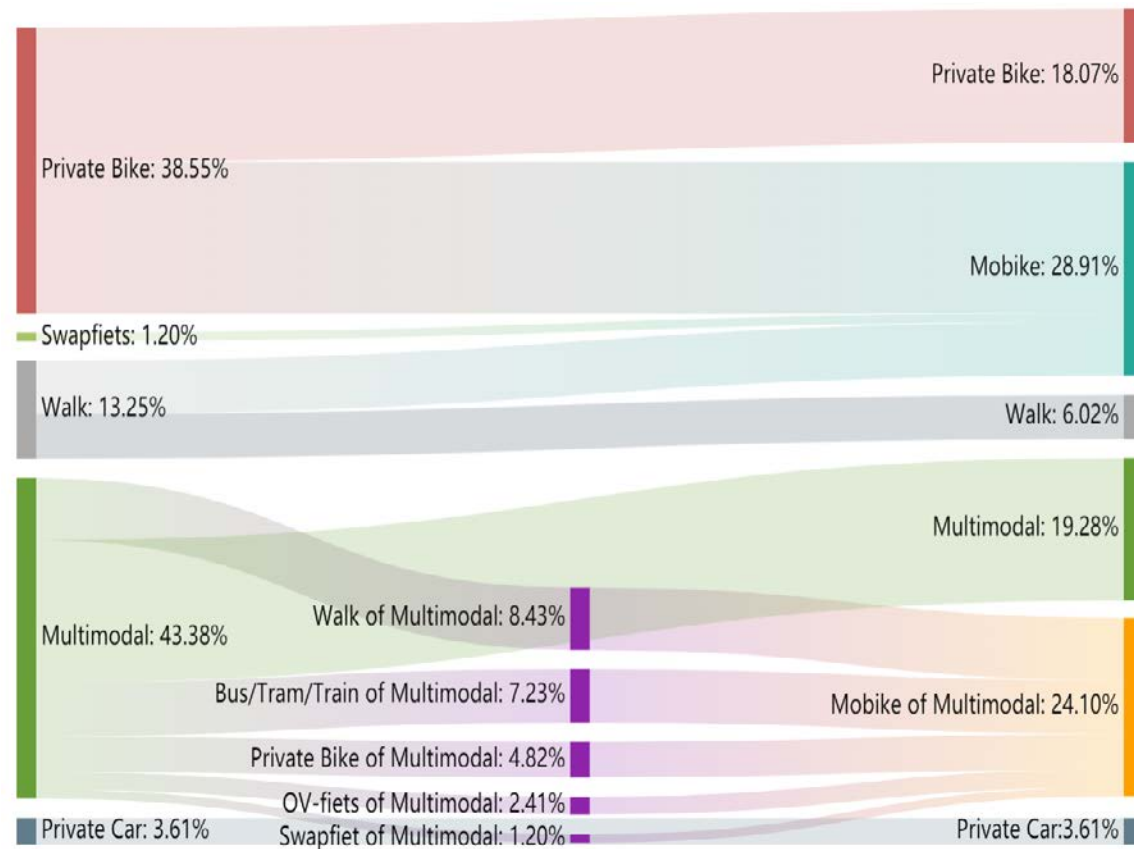


(b) Modal Shift as a result of OV-fiets



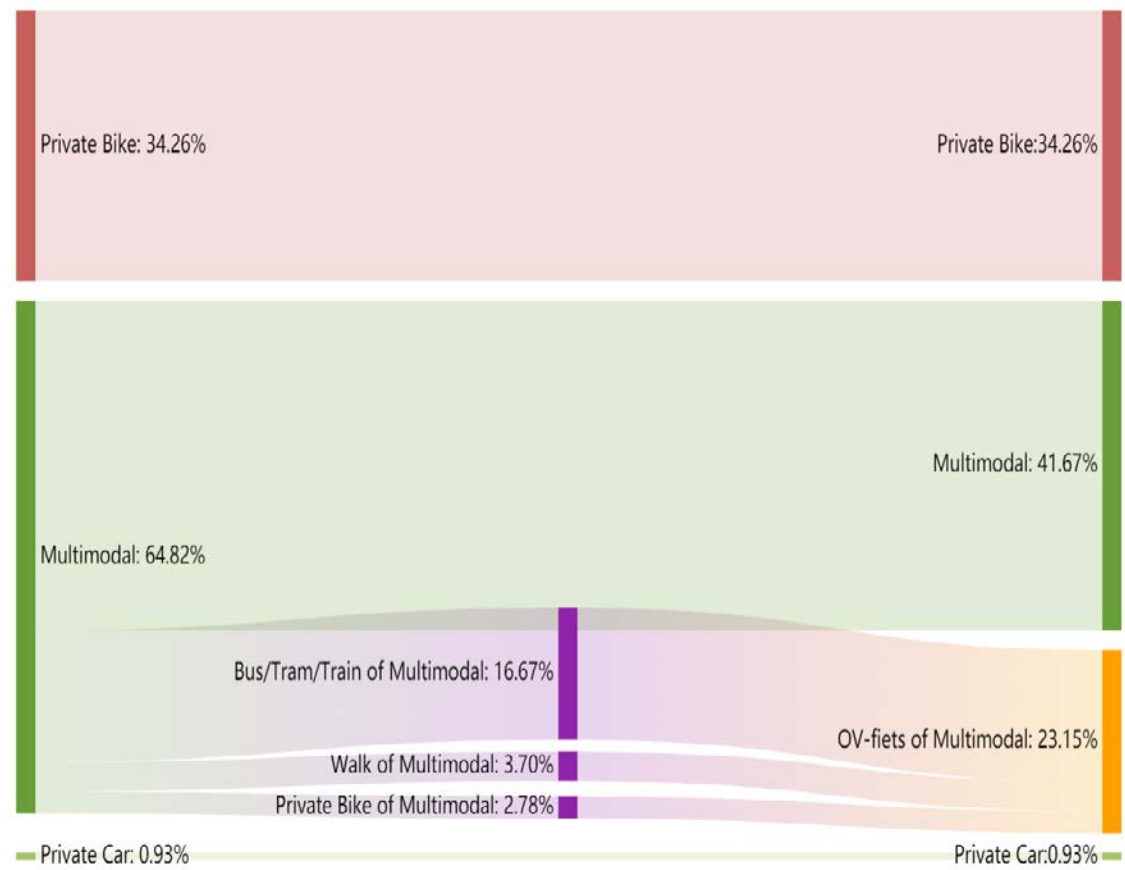
(c) Modal Shift as a result of Swapfiets

# 05 Findings: modal shift for commuting of Mobike users

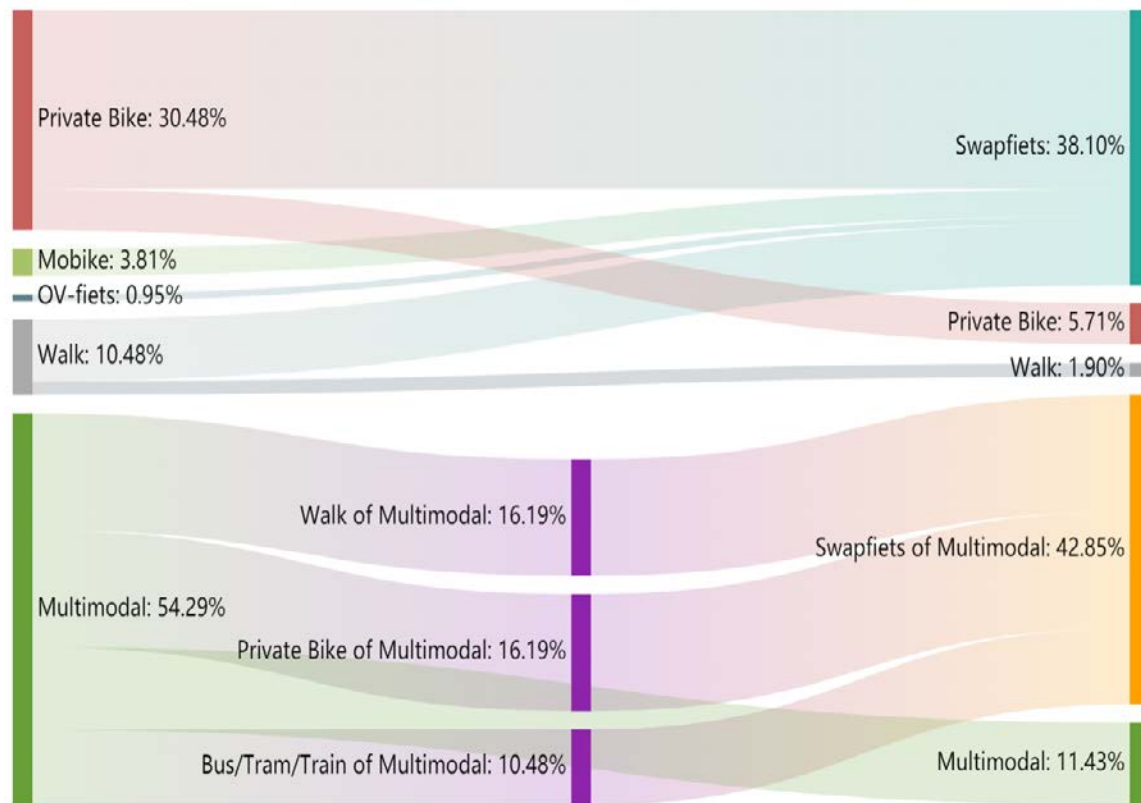


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# 05 Findings: modal shift for commuting of OV-fiets users



## Findings: modal shift for commuting of Swapfiets users



## Findings: binary logit model results

### Mobike

- Male (+)
- Travel with multiple modes (+)
- No stolen/damaged problem (+)
- Cheaper than other modes (+)

### OV-fiets

- Public transport subsidy (+)
- Private bicycle ownership (-)
- Good quality of bicycles (+)
- Convenient (+)
- Short Trip (-)

### Swapfiets

- Student discount (-)
- No stolen/damaged problem (+)
- Cheaper than other modes (+)
- Good quality of bicycles (+)

## 06 Further research

- Modal shift: Non-bike-sharing users (car users)
- Modal shift: Within bike-sharing systems

# Thanks for Listening!

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