

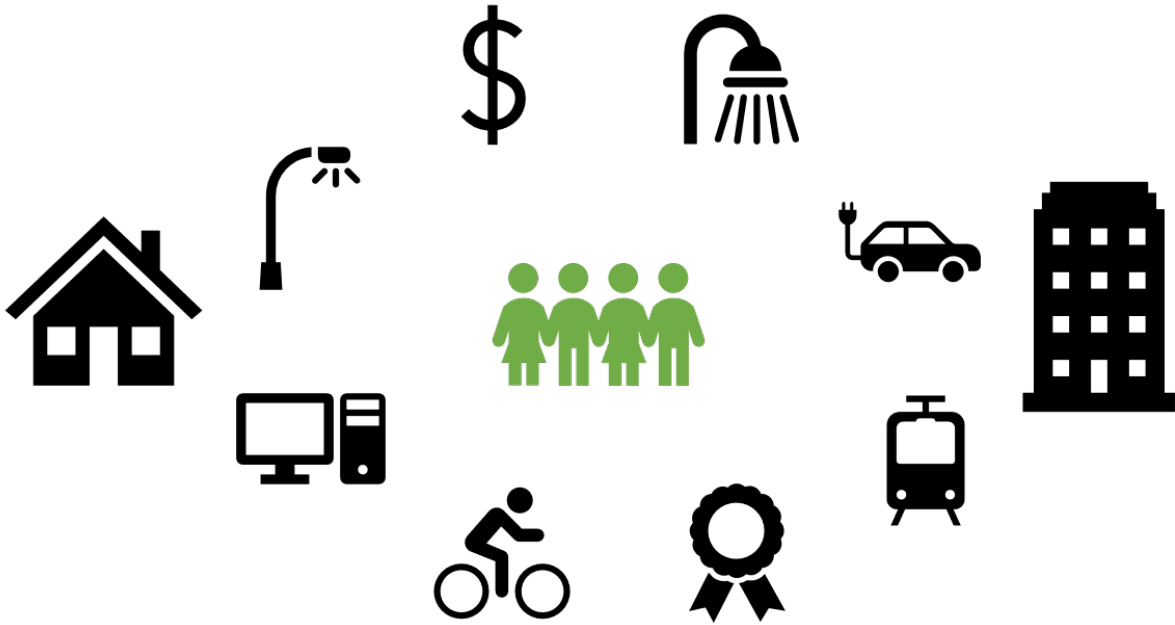
Developing a model to  
select and rank  
sustainable workplace  
mobility plan measures



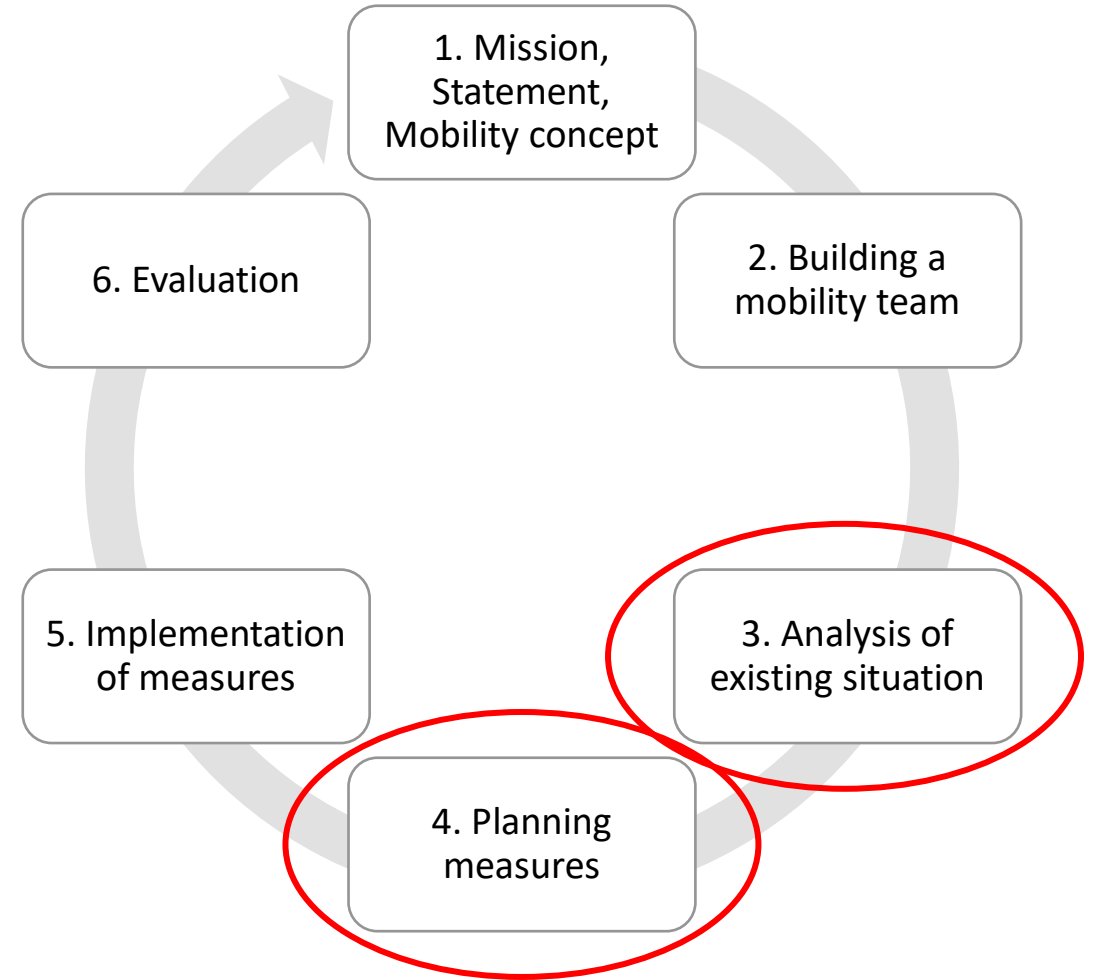
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Supervisor: Dr. Domokos Esztergár-Kiss

# Workplace Travel Plan (WTP)



WTP is a package of measures that an employer puts in place to encourage and enable employees to travel to work more sustainably.



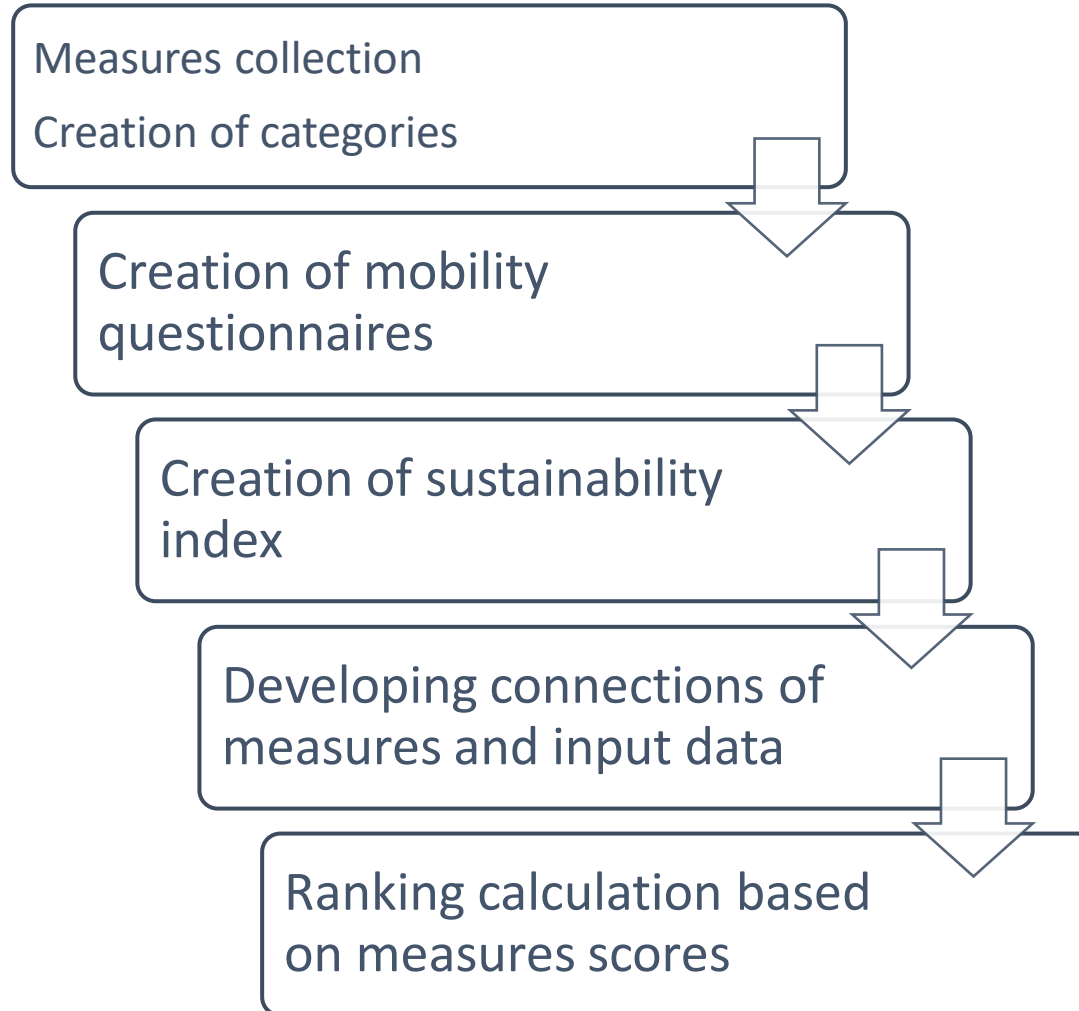
# Strategies of WTP in the literature

DfT, London (2008)	Rye, T. (2002)	NZ Transport (2011)	Vanoutrive et al. (2010)	VTPI (2019)
Walking	Walking	Walking / Running		Non-motorized improvements
Cycling	Cycling	Cycling	Cycling	
Bus and Rail	Public Transport	Public Transport	Public Transport	Public Transit improvements
Carsharing	Carsharing	Carpooling	Carpooling	Carsharing, Ridesharing
Parking management	Parking	Car parking management	Company cars	Parking pricing Parking management
Reducing the need to travel	New conditions of employment	Reducing the need to travel	Tele-commuting Flexible work schedules	Teleworking Flexitime

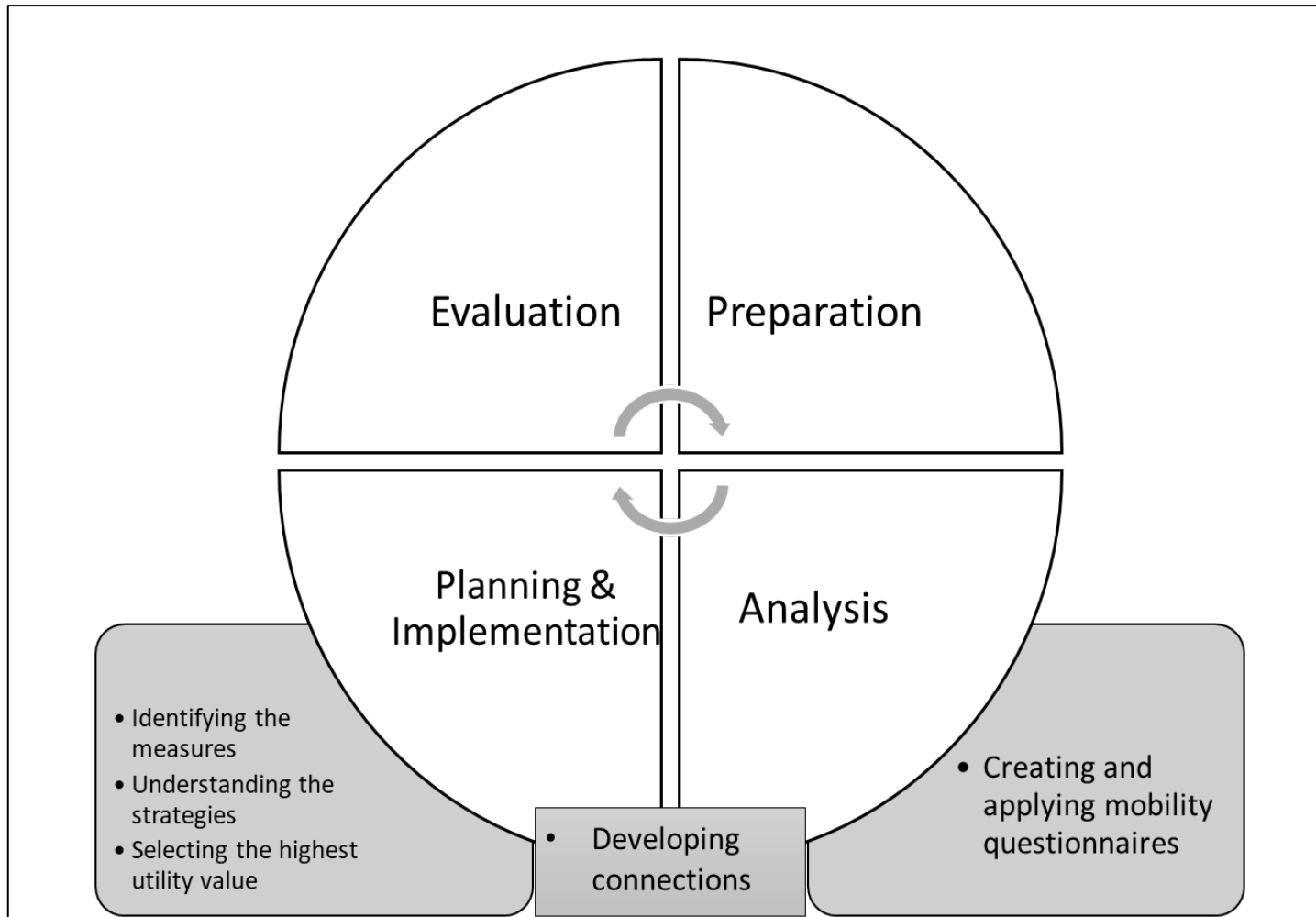


- Mode type
- Strategies
- Approach

# Method



# Method



- Connections are the interaction between input data, and they produce utility values
- Utility values for all WTP dimensions are calculated and provide the final score
- The ranking system is based on the final utility value of measure

# Classification system

## Mode type

Walk

Bike

Scooter

Public  
transport

Car

Other

## Strategy cluster

Rationalization of car  
use

Active modes  
incentives

Promotion of public  
transport

Reduction of the need  
for travel

Parking  
rationalization

Electrification

Reduction of trips  
during peak hours

## Approach

Infrastructure

Incentives

Programs

Information

Other

## Financial demand

Financial  
incentives

Investment  
level

Investment  
periodicity

## Time frame

Time frame of  
implementation

# Measure Sustainability Index (MSI)

The MSI is a tool created to assess the sustainability of measures based on the three dimensions of sustainability:

- Environmental (EMI)
- Social (CWB)
- Economic (FIN)

Strategy cluster (EMI)	Impact
Active modes incentives	5
Reduction of the need for travel	5
Promotion of public transport	4
Electrification	4
Rationalization of car use	3
Parking rationalization	3
Reduction of trips during peak hours	2

Emissions (EMI)

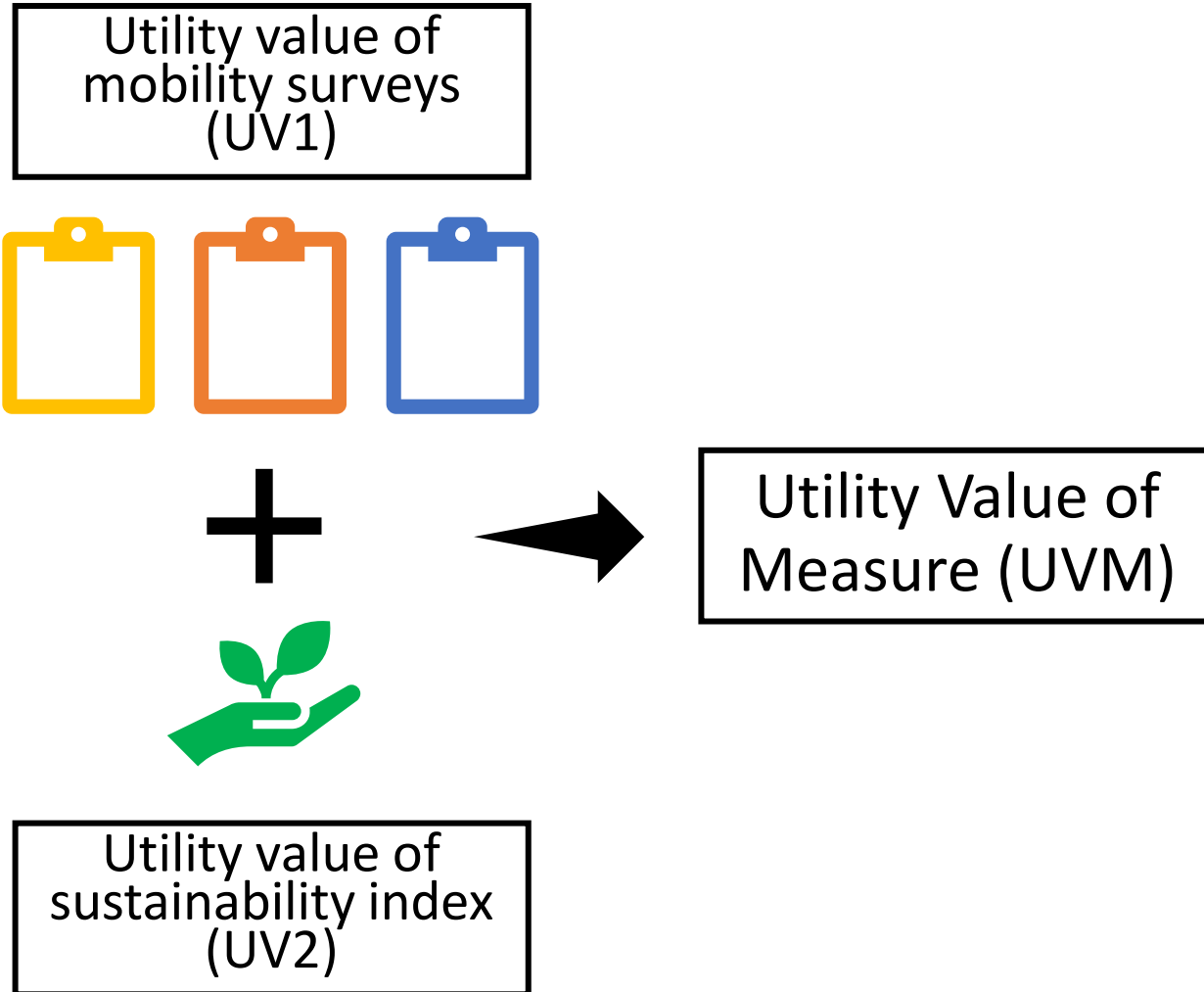
Commute Wellbeing (CWB)

Financial Factor (FIN)

Strategy cluster (CWB)	Impact
Active modes incentives	5
Reduction of the need for travel	4
Promotion of public transport	4
Rationalization of car use	3
Reduction of trips during peak hours	3
Parking rationalization	2
Electrification	2

Financial incentives	Investment level	Investment periodicity	Impact
Yes	None	No investment	3
-	Low	One-time, occasional inv.	2
No	High	Regular investment	1
-	Very high	-	0

# Utility Values



The utility values are the numerical results of the connections among the input data.

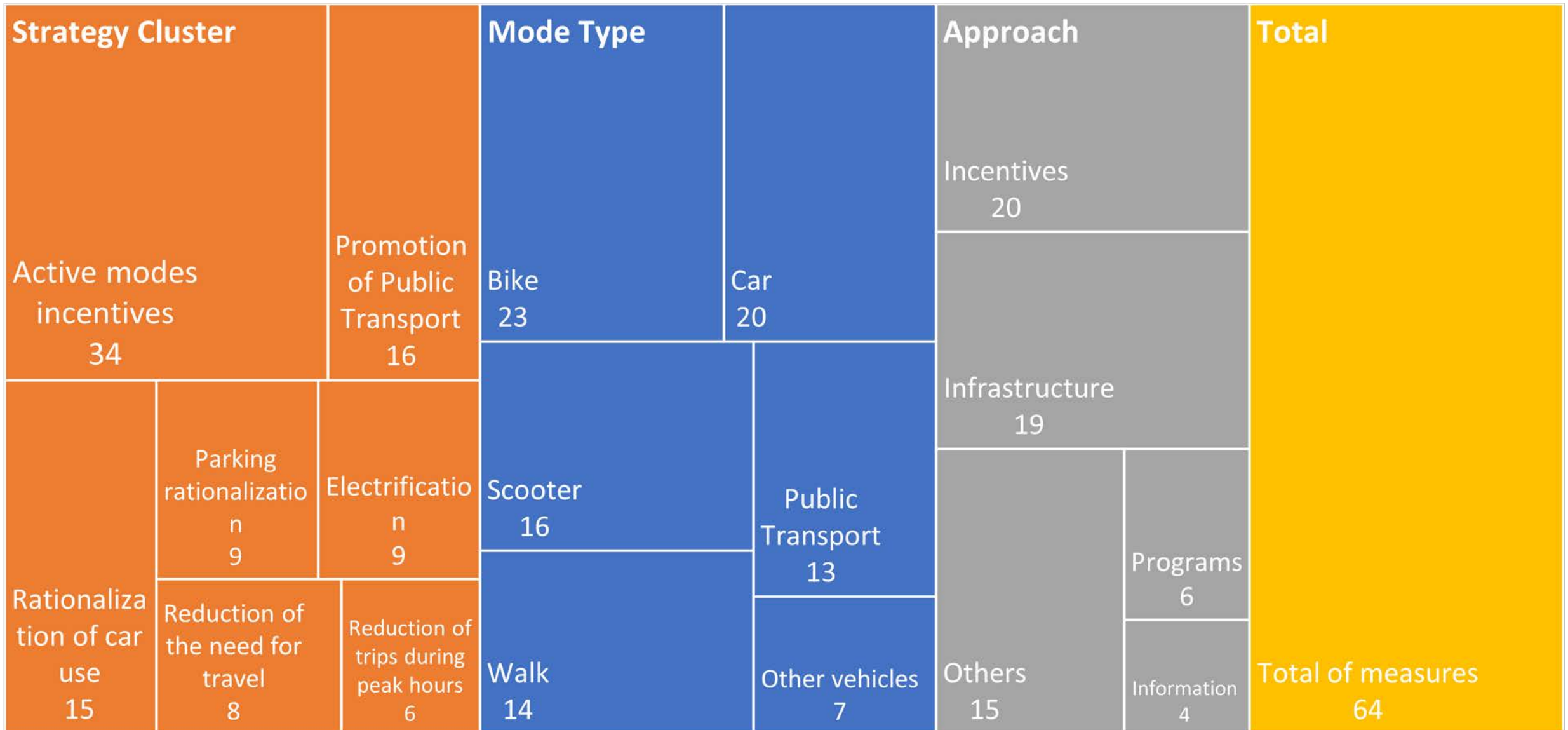
The Utility Value of Measure (UVM) is the final measure score, which allows their ranking.



# Results from the database

## Number of measures per categories

■ Mode Type 
 ■ Strategy Cluster 
 ■ Approach 
 ■ Total



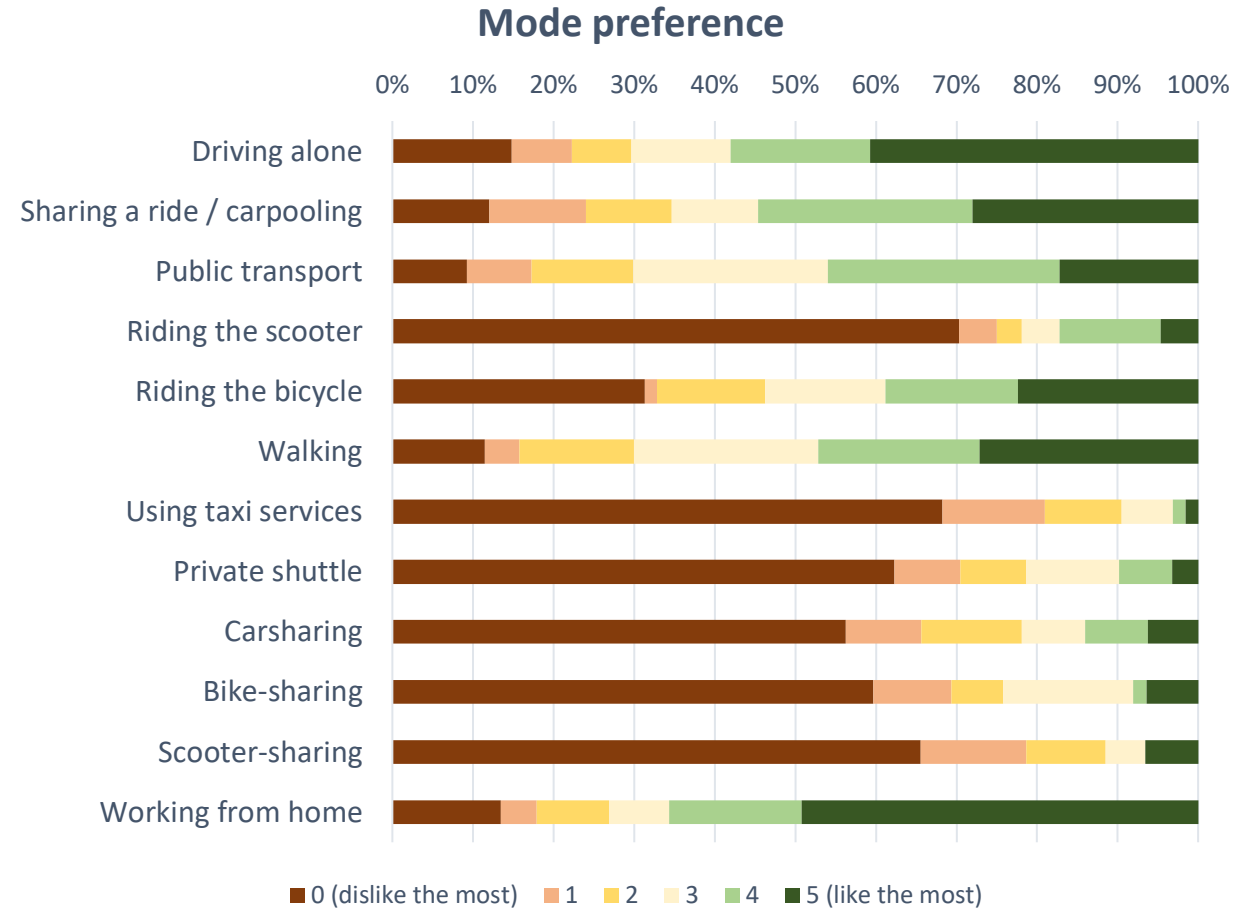
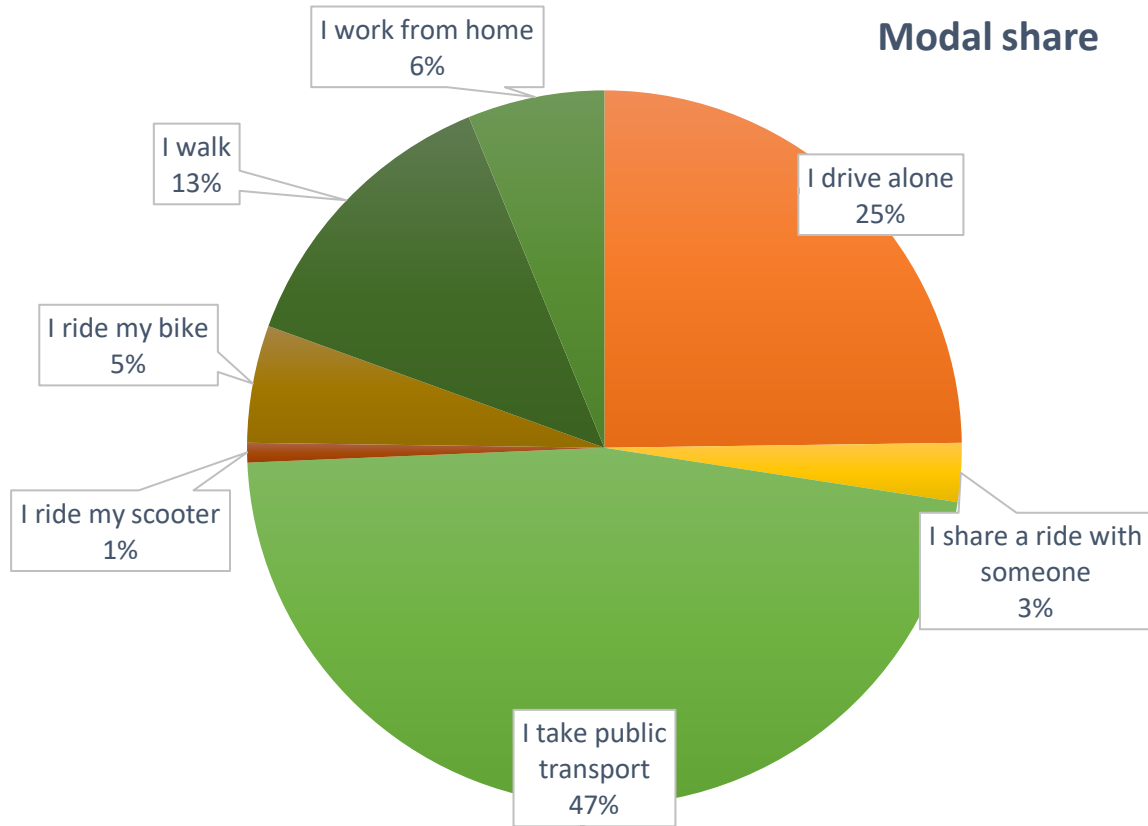
# Measure and connection example

Number	47	
Name	<b>Introduce parking pricing</b>	
Description	Parking Pricing means that motorists pay directly for using the company's parking facilities.	
Mode type	Car	
Strategy cluster	Parking rationalization	
Approach	Others	
Financial demand	Financial Incentives	No
	Investment	One-time investment
	Periodicity	
	Investment Level	High
	Investment Level Reasons	Costs might involve placing a barrier system, electronic ticketing, card/permit recognition, or safety cameras.
Implementation phase	Medium-term	

Questionnaire	Question	Answer	Factor
Employer	Does the workplace charge for parking?	No	1.1
Site Audit	Is there a car parking problem with demand close to or exceeding supply?	Yes	1.1
Employee	Modal share – Driving alone / Parking garage usage	40% / 83%	1.1

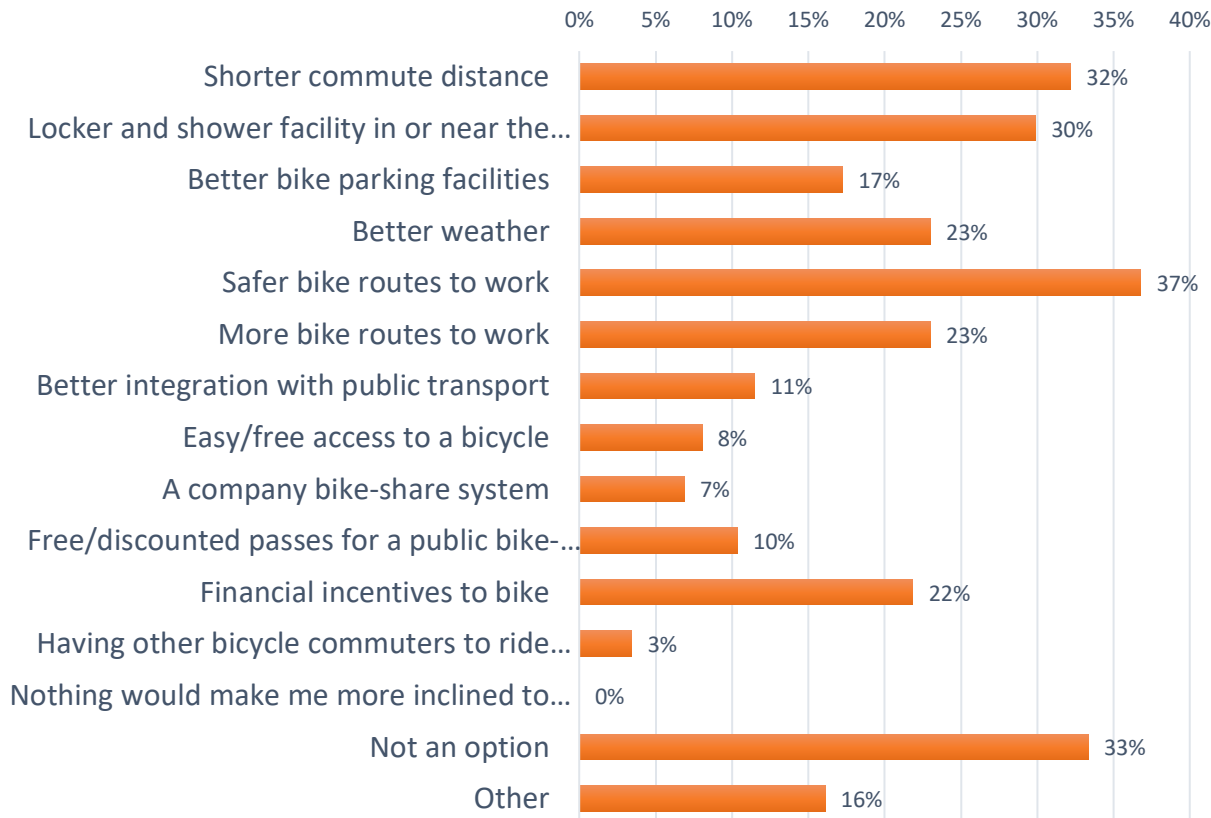
$$\text{Measure 47 Factor} = 1.1 \times 1.1 \times 1.1 = 1.331$$

# Case study – KTI Transport Science Institute

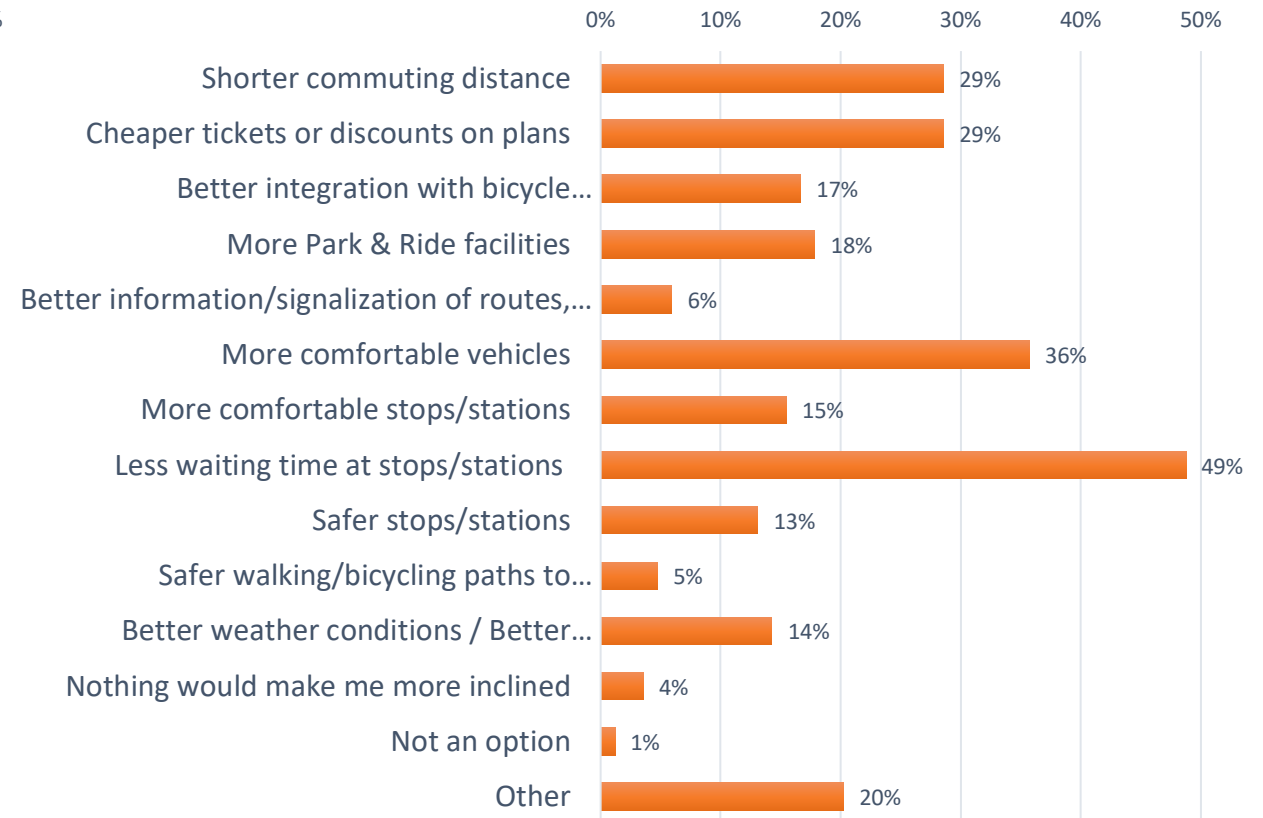


# Case study – KTI Transport Science Institute

## Encouragement for cycling

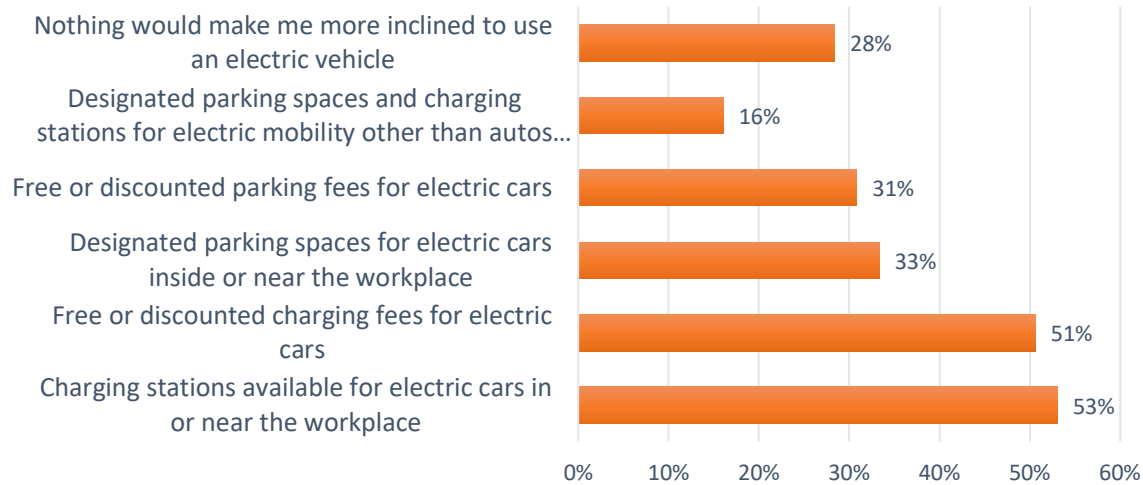


## Encouragement for Public Transport

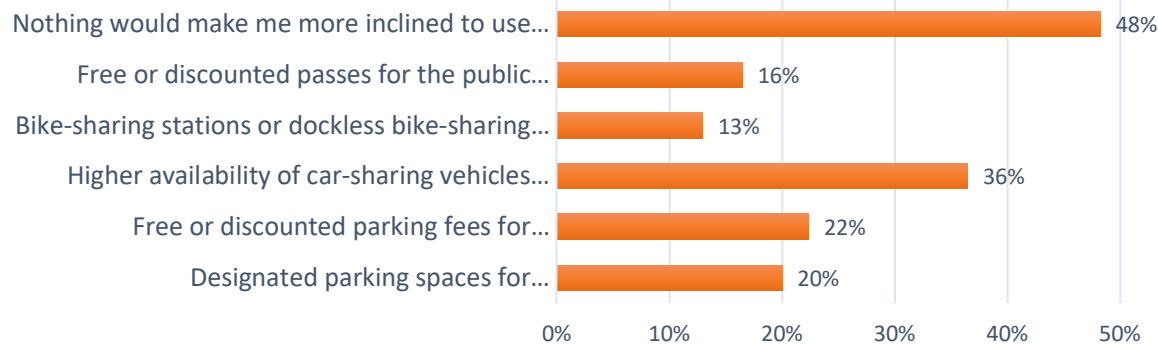


# Case study – KTI Transport Science Institute

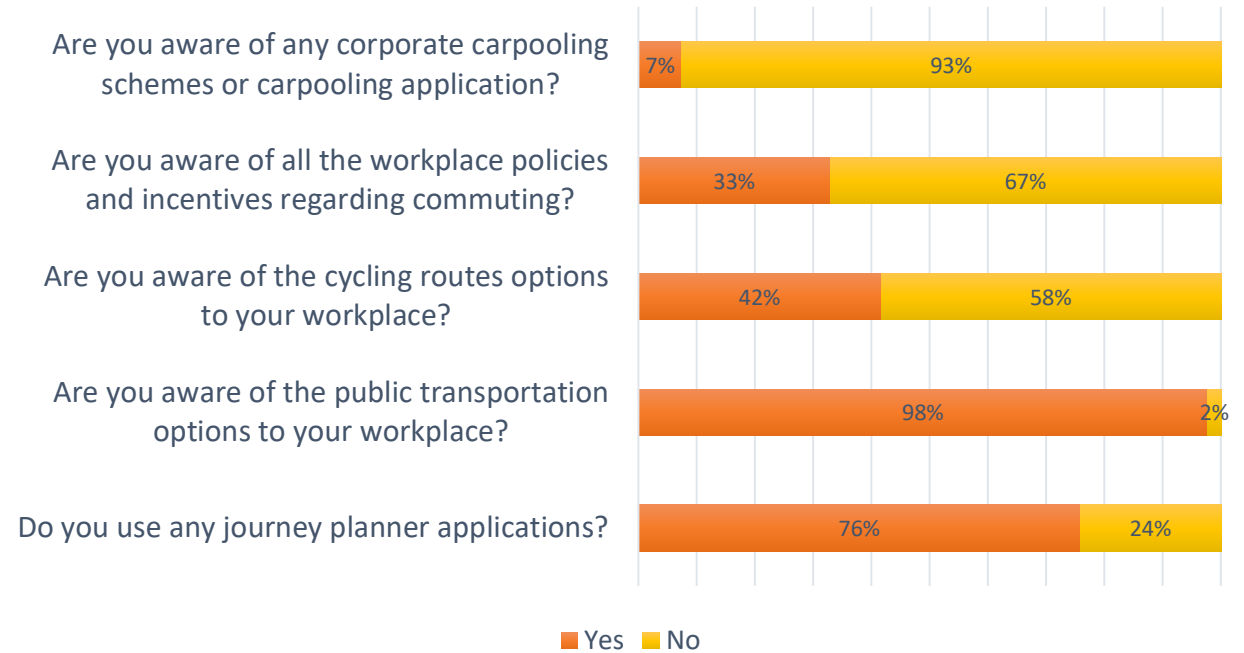
## Encouragement for electric vehicles



## Encouragement for shared alternatives



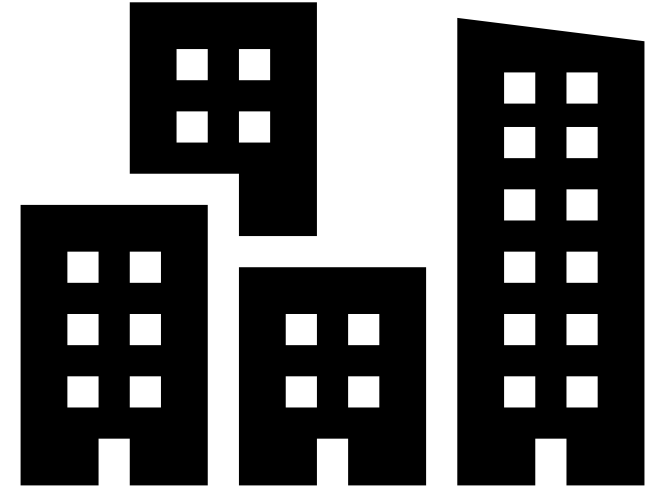
## Commuting options awareness



# Case study – KTI Transport Science Institute

Ranking		Measure
1	9	Free or low-interest loans for employees' bicycle purchase
2	10	Reimbursement of cycle mileage for commuting trips made by bicycle
2	13	Financial benefits for cycling-related accessories and services
2	15	Create a bicycle commuter/user group to advocate for cyclists
5	60	Install a bike repair center or partner with nearby bike services shop
6	24	Create a walking commuters' group
7	61	New employee induction kit
8	45	Financial benefits for Park and Ride
9	57	Implement traffic calming measures in the surroundings of workplace
10	42	Designated parking spaces for carpooling vehicles in company's parking lot

Mode type		Strategy		Approach	
Bicycle	6	Active modes incentives	7	Incentives	5
Walking	2	Rationalization of car use	2	Programs	2
Car	2	Parking rationalization	1	Infrastructure	2
Public Transport	1	Promotion of Public Transport	1	Information	1



Thank you for your attention!

Conrado Braga Zagabria