

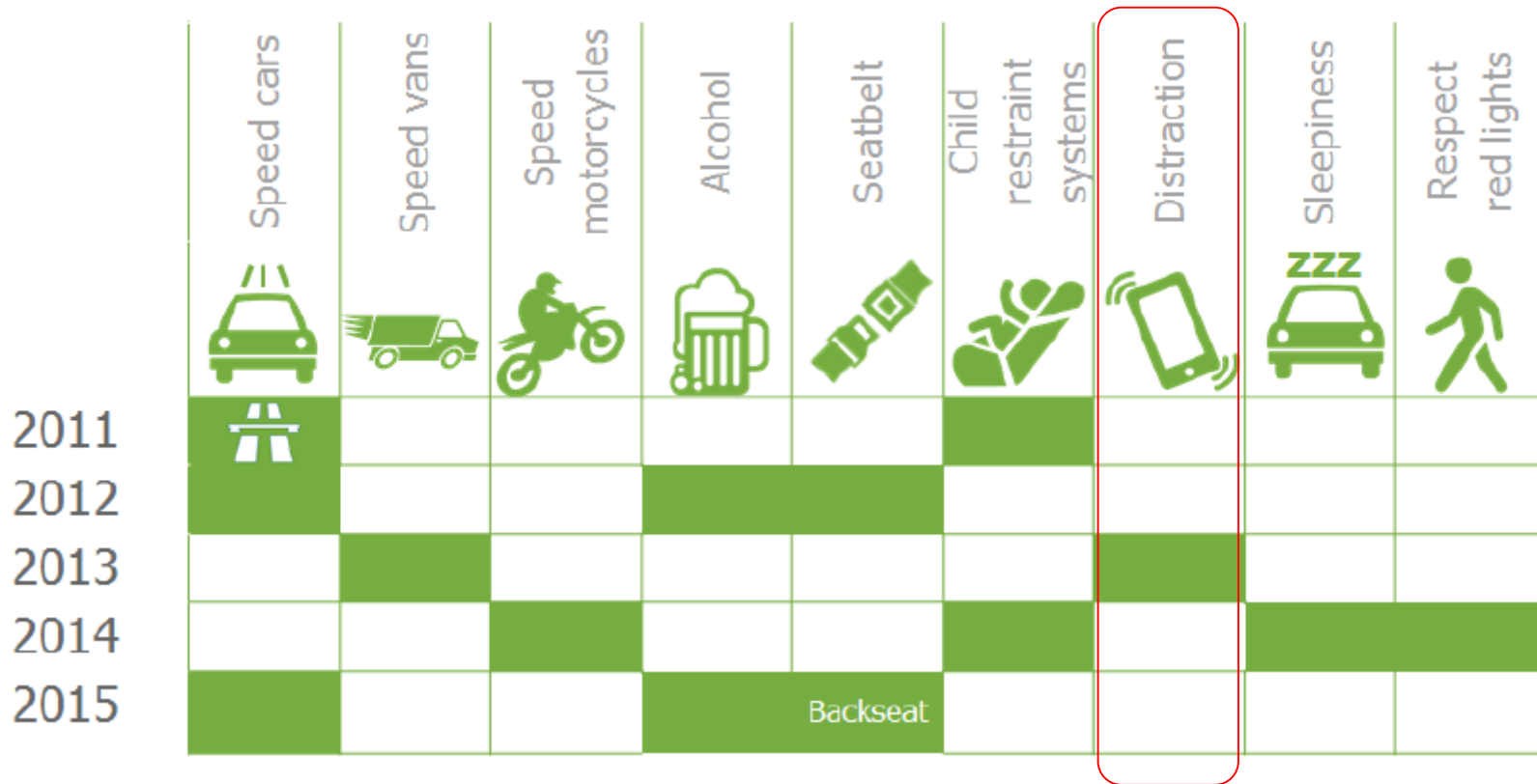
# Phone manipulation at intersections with traffic lights: an observational study

Kevin Diependaele, Nathalie Focant, and Peter Silverans

BRSI

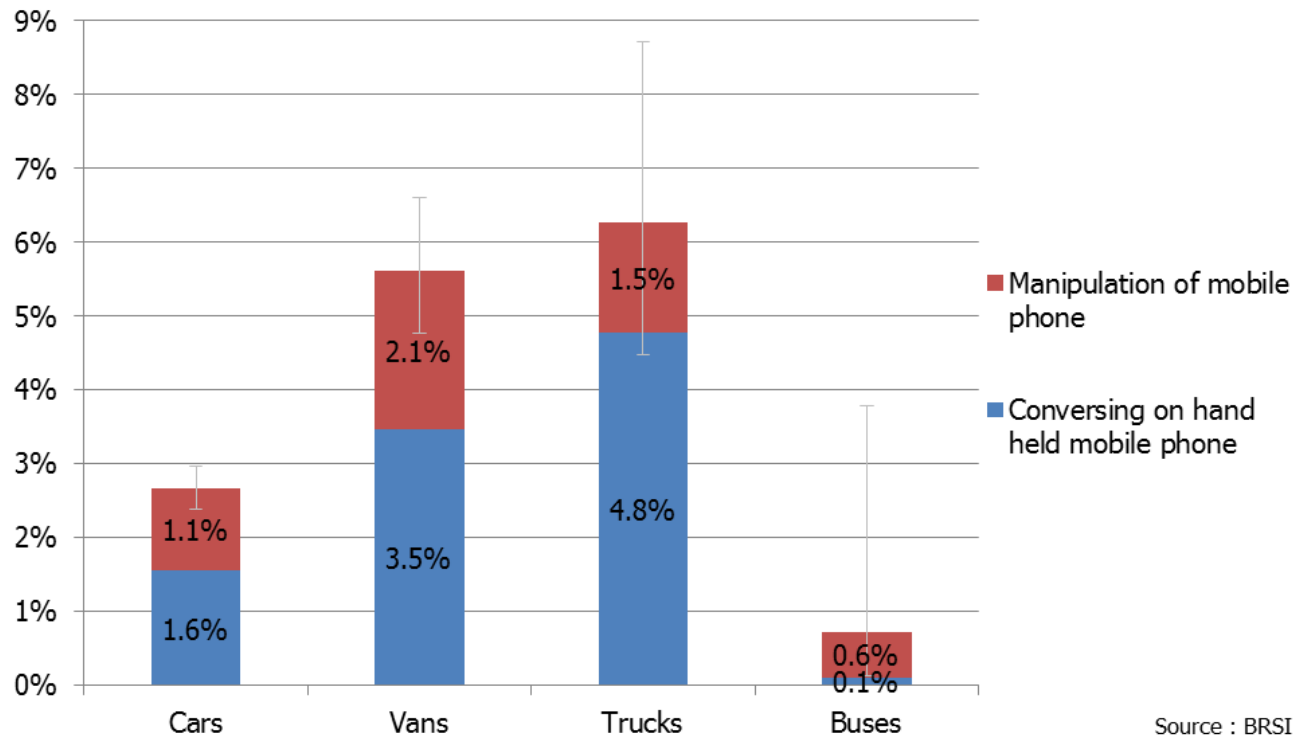


# BRSI's road safety indicators programme



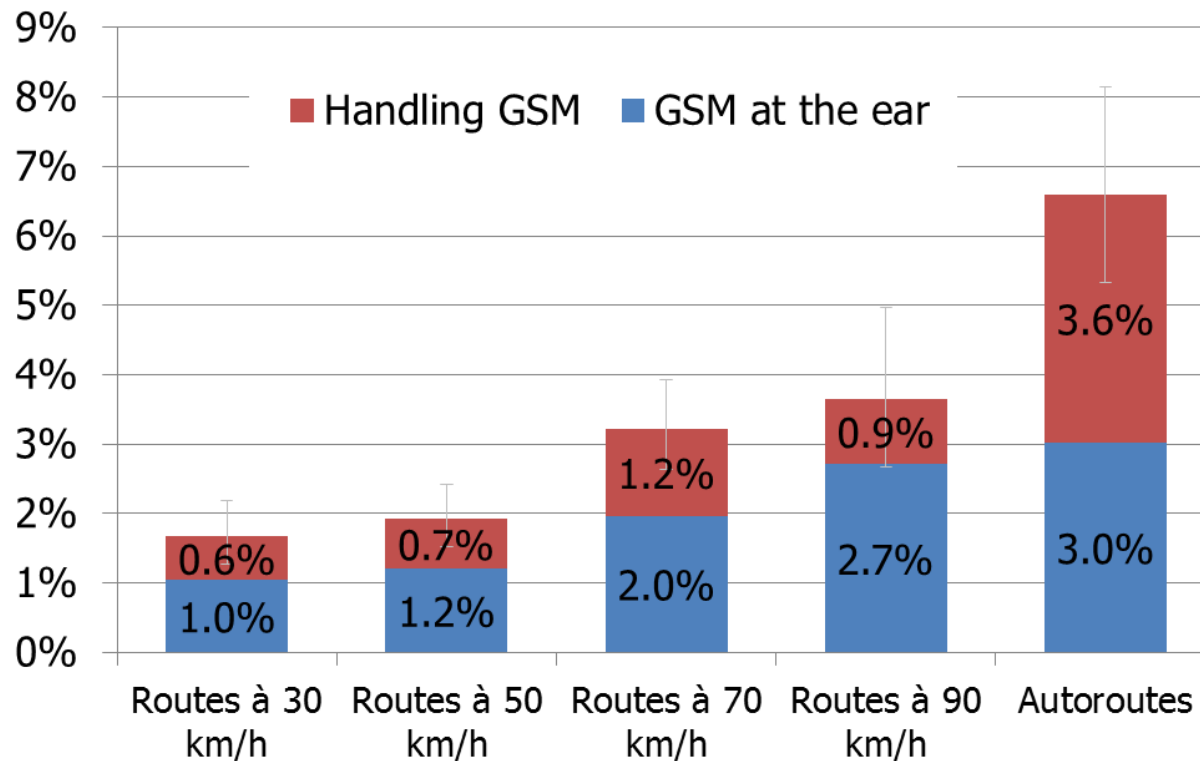
# Phone manipulation while driving

- ▶ Belgium, 2013



# Phone manipulation while driving

- Belgium, 2013



Source : BRSI

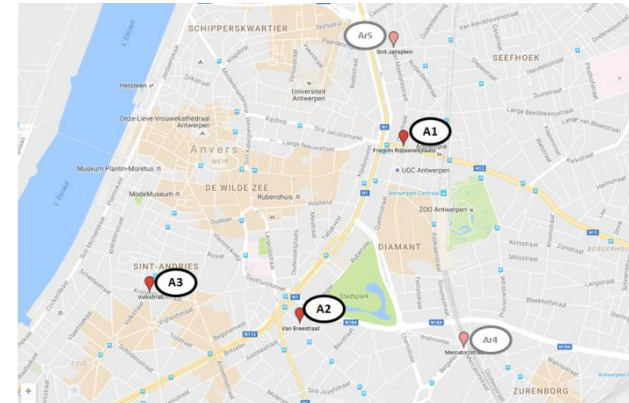
# Comparing the modes ...



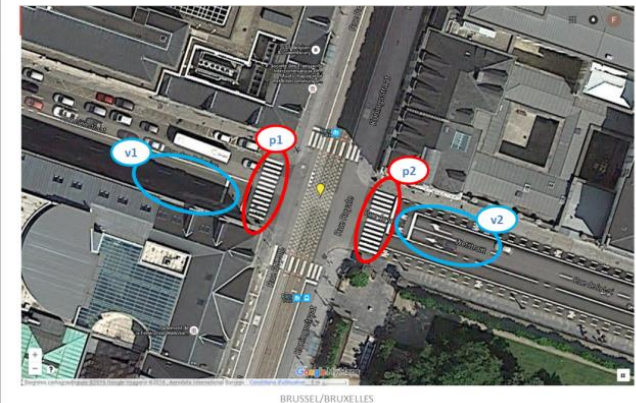


# Where and when?

- ▶ Three Belgian cities: Brussels, Antwerp and Liège
- ▶ Three signalized intersections in each city
- ▶ Six week days: August 16 – 23 2016
- ▶ Daily observations at each intersection (2 x 1 hour)
- ▶ Different times of the day
- ▶ Different locations on the intersection
- ▶ Observer 1: cars, vans & cyclists
- ▶ Observer 2: pedestrians
- ▶ Total : 216 observation hours



B1 Rue Royale – Rue de la Loi – Rue des Colonies  
Koningsstraat – Wetstraat – Koloniënstraat



# What?

► Pedestrians



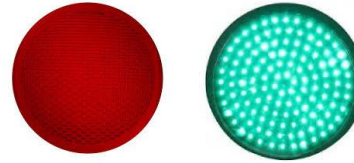
max. 3

	Gender	Age			Phone	From ... to ...				Delayed start	Traffic at green light Pedestrians	
		15- <del>15-29</del>	30-50	50+		At arrival	When waiting	Going green	Restart	End crossing	Y/N	
		15-15-29	30-50	<del>50+</del>		At arrival	When waiting	Going green	Restart	End crossing	Y/N	
		15-15-29	<del>30-50</del>	50+		At arrival	When waiting	Going green	Restart	End crossing	Y/N	lo
		15- <del>15-29</del>	30-50	50+		At arrival	When waiting	Going green	Restart	End crossing	Y/N	
		15- <del>15-29</del>	30-50	50+		At arrival	When waiting	Going green	Restart	End crossing	Y/N	13
		15-15-29	30-50	50+		At arrival	When waiting	Going green	Restart	End crossing	Y/N	













































# What?

- Car/Van drivers & Cyclist



max. 3

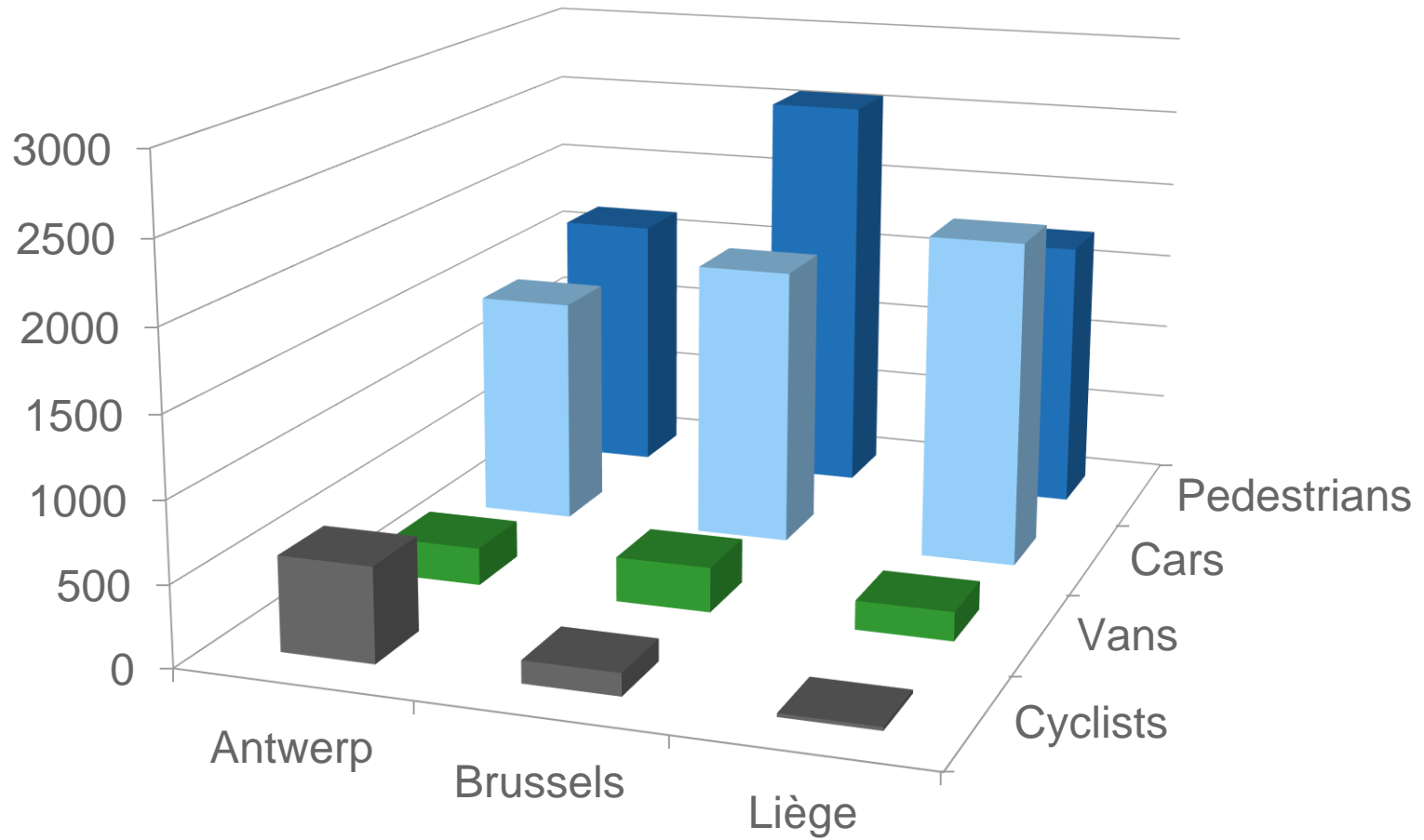
	Gender	Age
max. 3	 	15-29   30-50   50+
	 	15-29   30-50   50+
	 	15-29   30-50   50+
	 	15-29   30-50   50+
	 	15-29   30-50   50+
	 	15-29   30-50   50+

Road user	Phone	From ... to ...				Delayed start	Traffic at green light	
							Vehicles	Cyclists
  	 	At arrival	When waiting	Going green	Restart	Y/N		
  	 	At arrival	When waiting	Going green	Restart	Y/N		
  	 	At arrival	When waiting	Going green	Restart	Y/N	20	0
  	 	At arrival	When waiting	Going green	Restart	Y/N		
  	 	At arrival	When waiting	Going green	Restart	Y/N	30	2
  	 	At arrival	When waiting	Going green	Restart	Y/N		



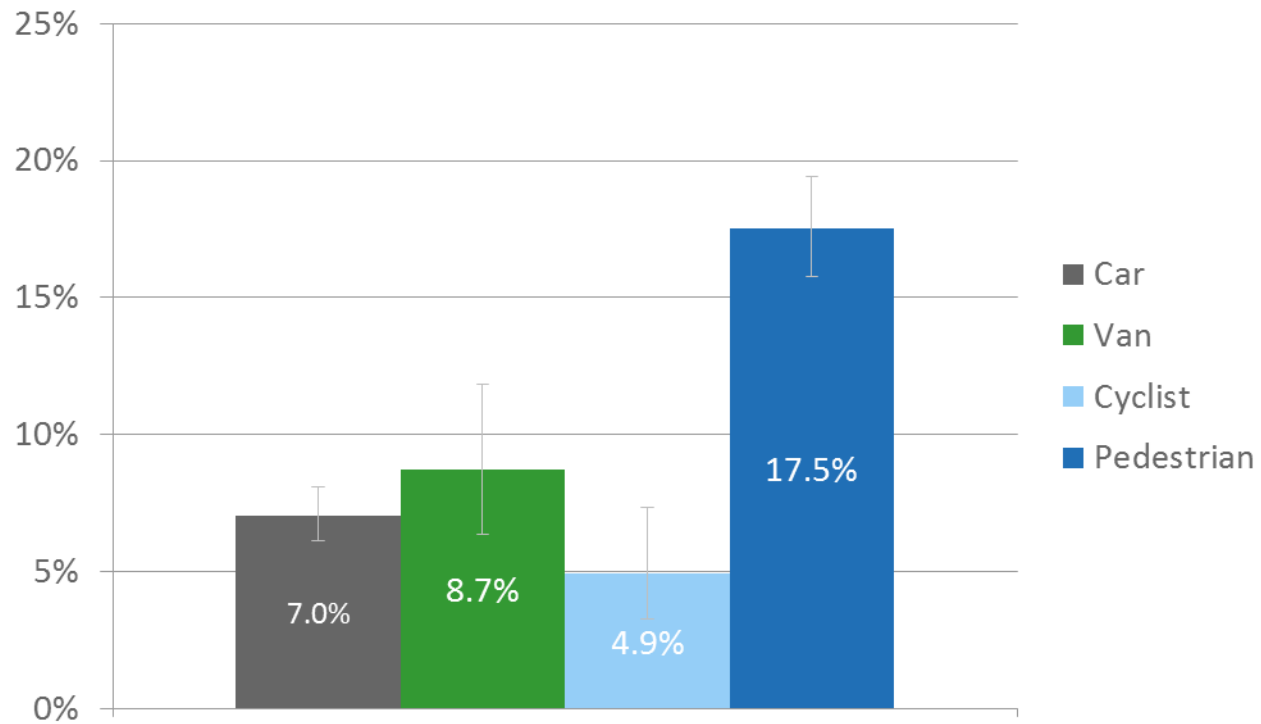


# Sample size



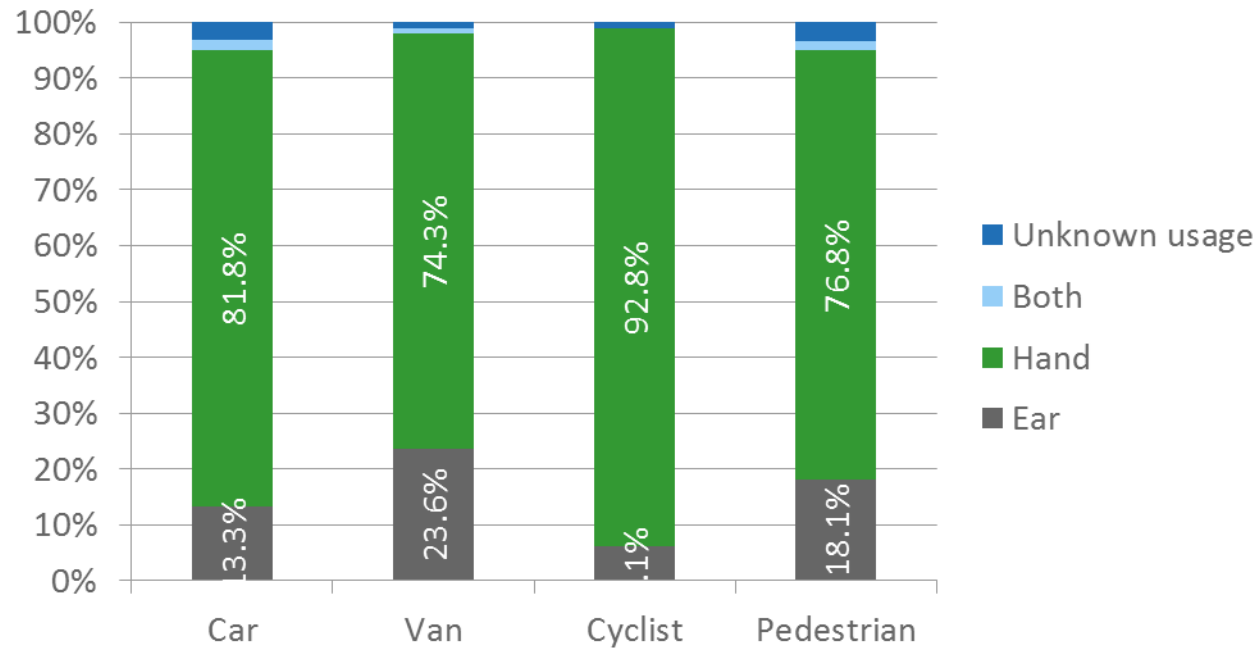
# Results

- ▶ Phone use



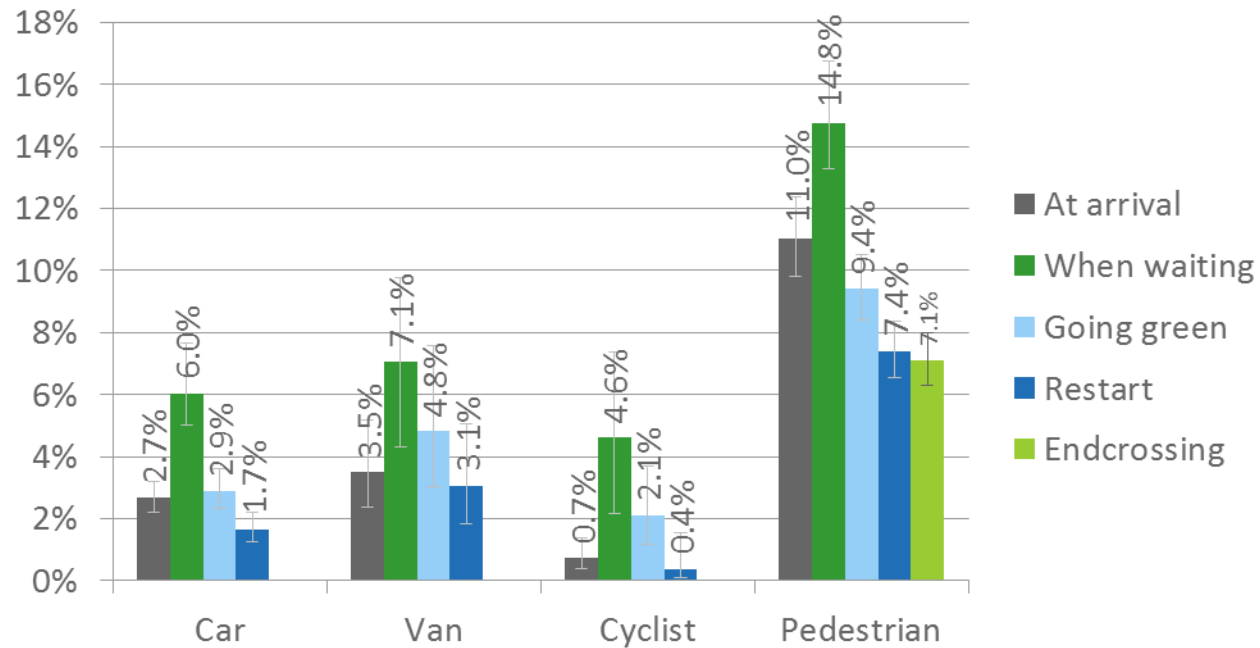
# Results

## ▸ Usage type



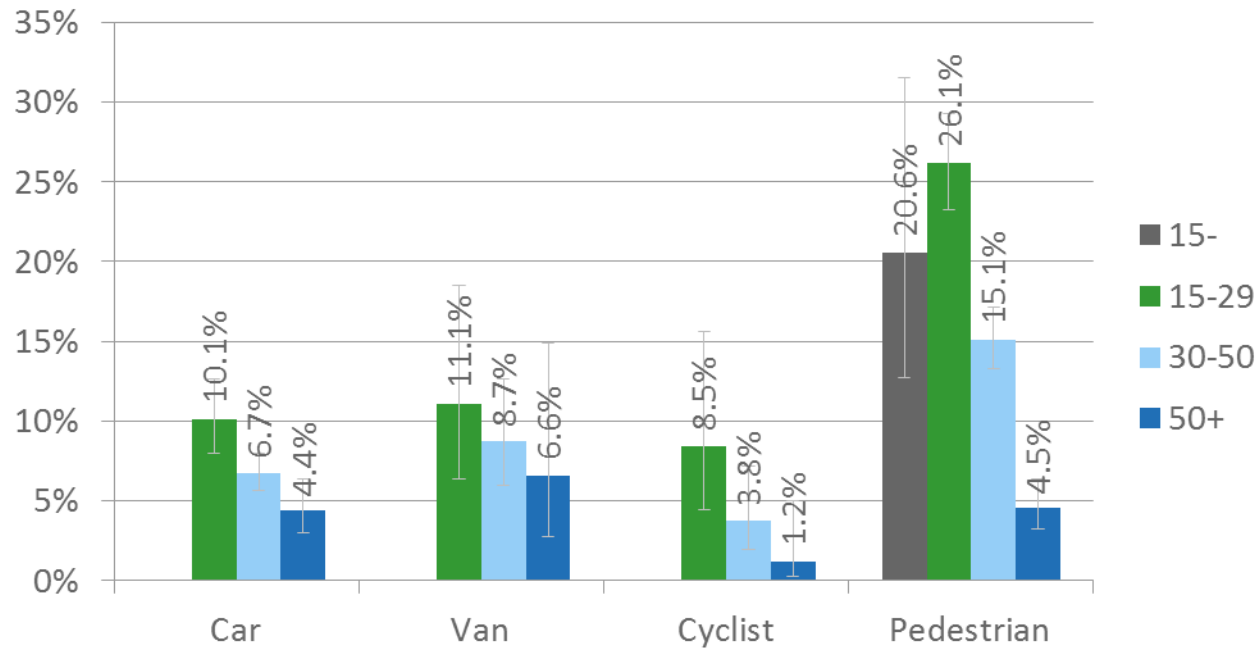
# Results

## ▸ Usage time



# Results

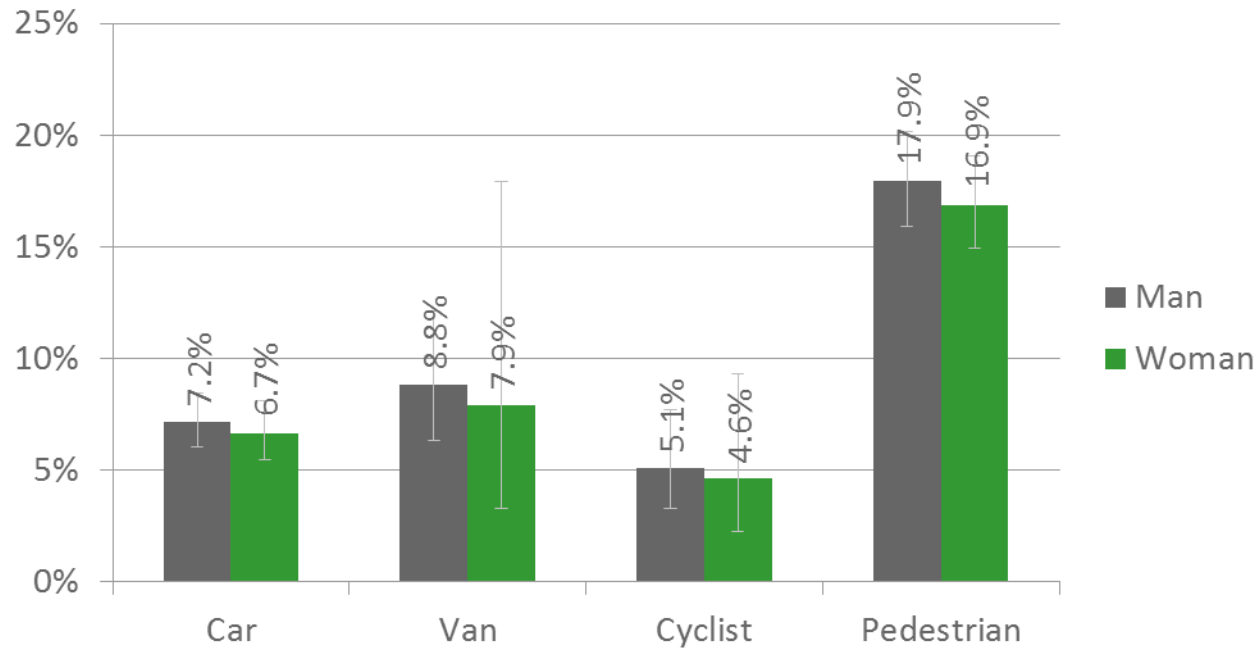
- Age effect





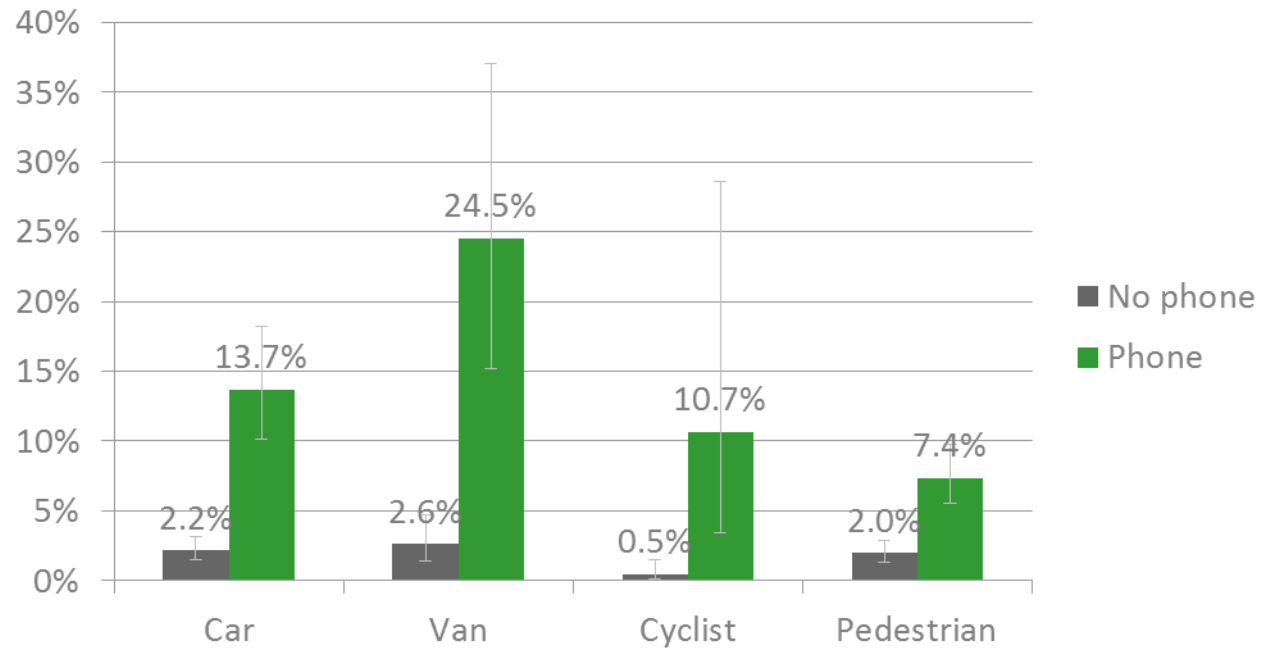
# Results

- ▶ Gender effect



# Results

## ▸ Delays

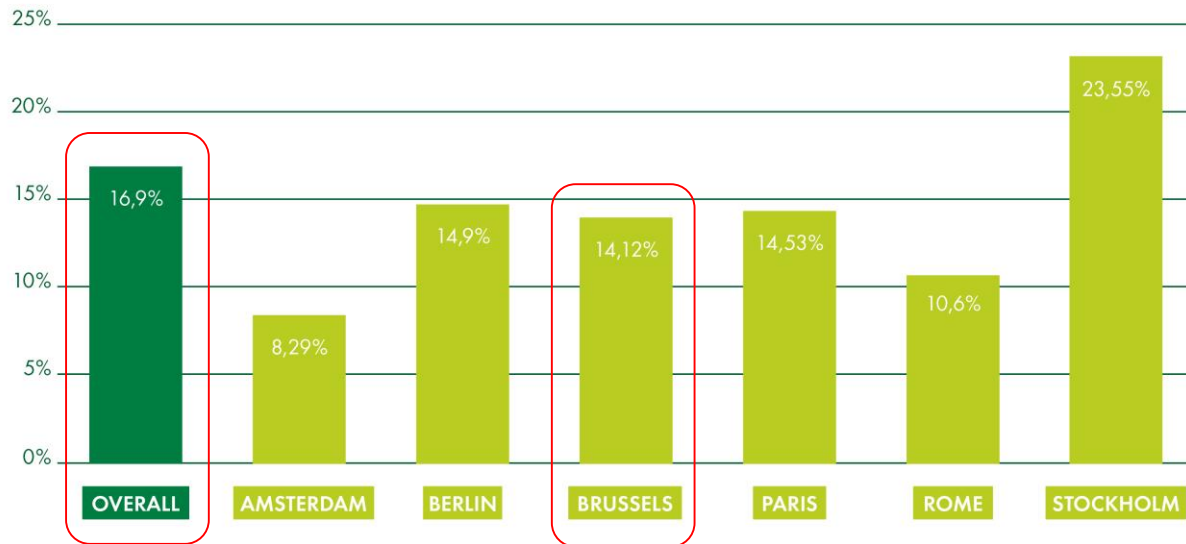


# Summary

- ▶ Cars & Vans (illegal):
  - ▶ Much higher prevalence than in flowing traffic, but less phoning
    - ▶ Cars: 2.7 -> 7%
    - ▶ Vans: 5.6 -> 8.7%
    - ▶ Lower physical/cognitive constraints and perceived safety/legality
  - ▶ Van drivers perform worse across the board
    - ▶ Effect of professional activity
- ▶ Cyclists (illegal):
  - ▶ Show lowest prevalence (4.9%)
    - ▶ Highest level of physical/cognitive constraints & perceived unsafety
- ▶ Pedestrians (legal):
  - ▶ Show highest prevalence (17.5 <-> 14.1-16.9% DEKRA)
    - ▶ Lowest level of physical/cognitive constraints & perceived unsafety
- ▶ Strongly correlated with age – smart-phone generation effect
- ▶ Higher prevalence for men

# Phone manipulation by crossing pedestrians

## Pedestrians' Smartphone Use Cities

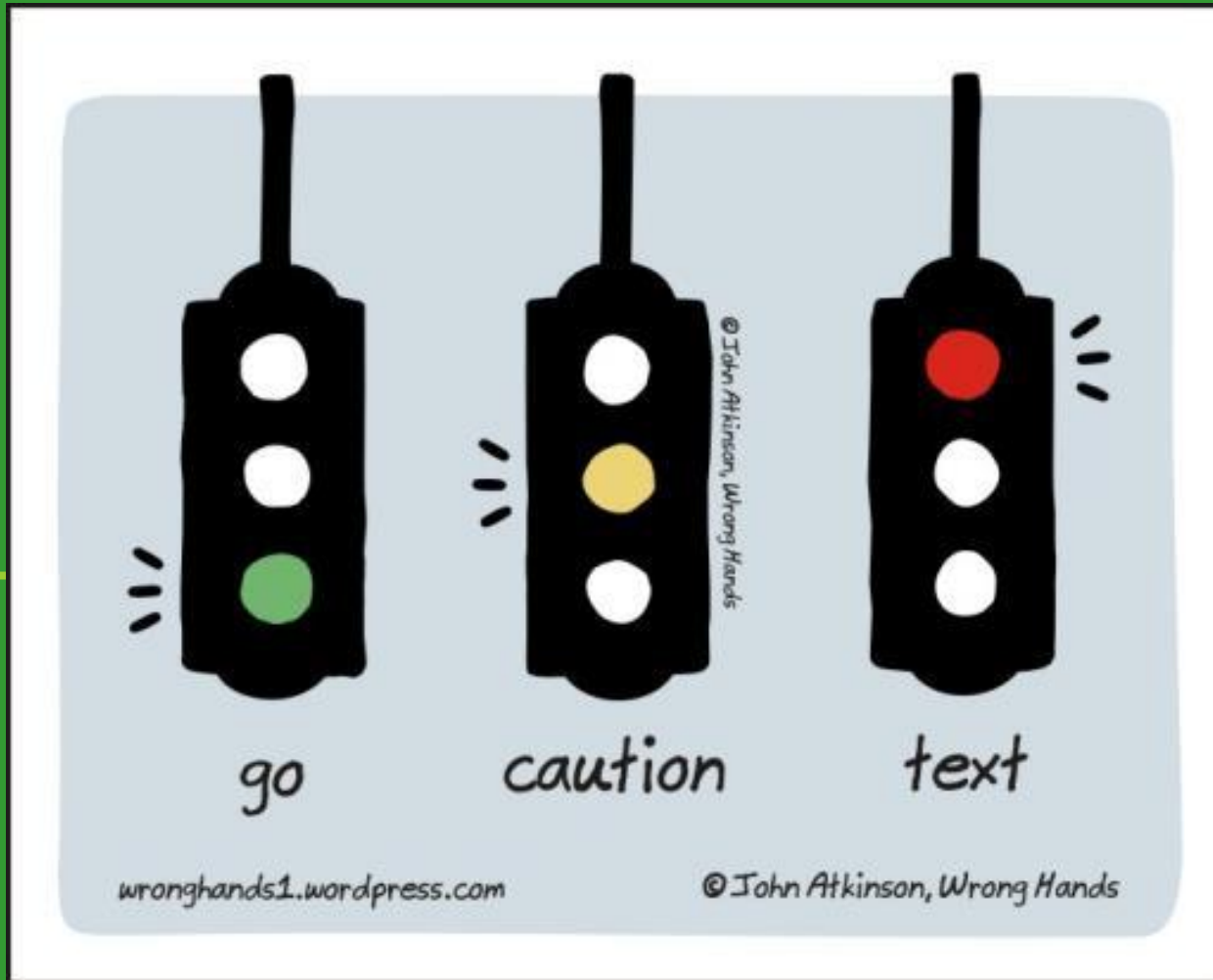


Source: DEKRA Accident Research  
Survey of 13,822 pedestrians in 6 cities

# Summary

- ▶ Cars & Vans (illegal):
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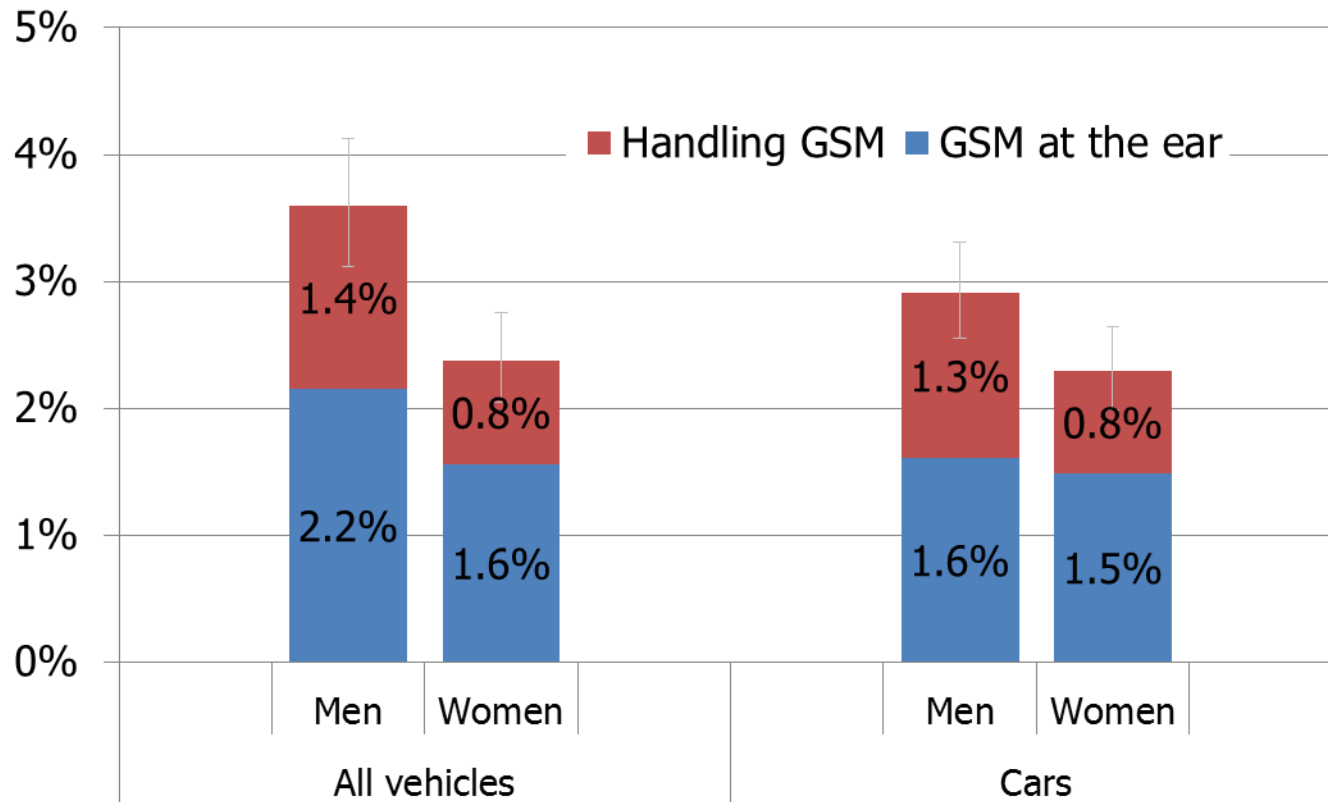




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kevin.diependaele@ibsr.be

# Phone manipulation while driving

- ▶ Belgium, 2013

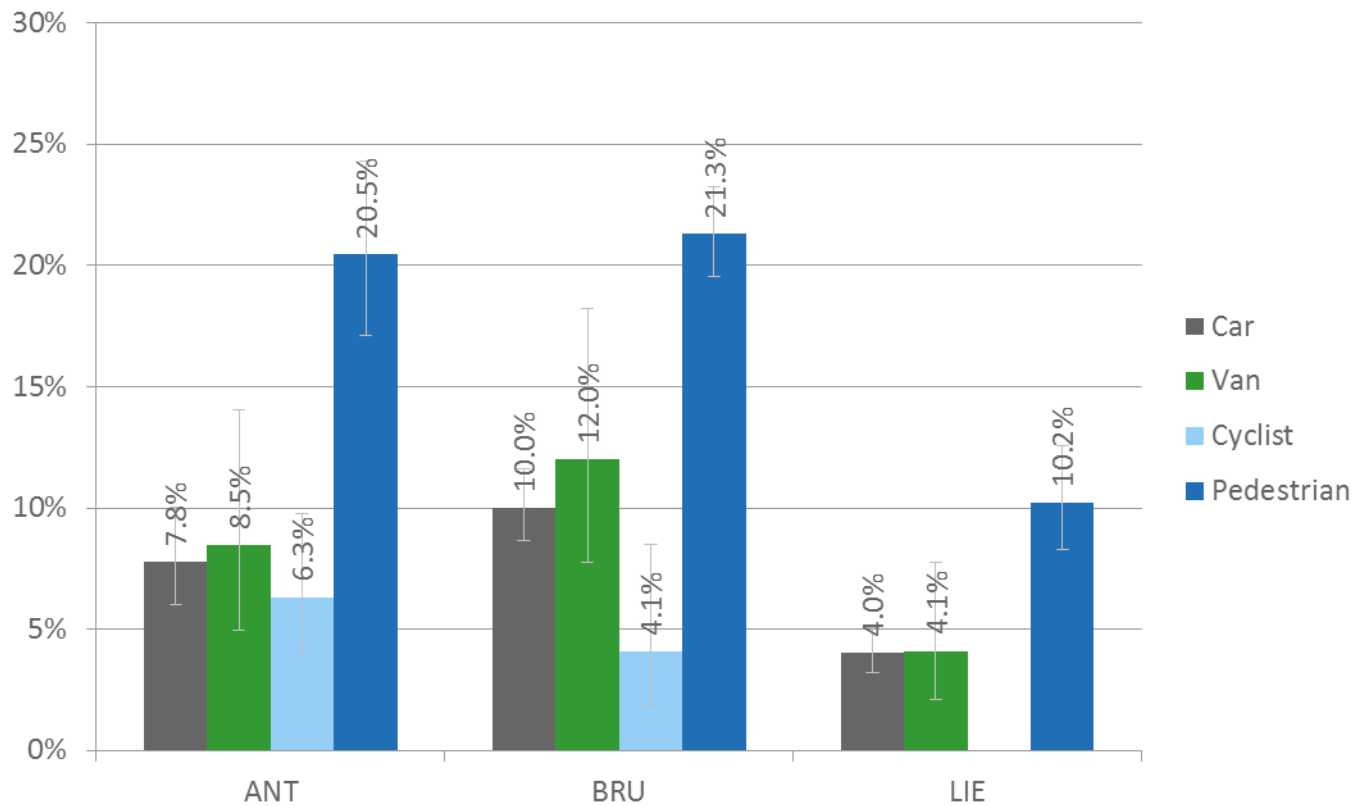


# Phone manipulation by crossing pedestrians

- ▶ *"One thing that was observed repeatedly was groups of young people looking at a smartphone together while crossing the street. In one case, the entire group actually collided with a cyclist."*
- ▶ *"A young girl stood in the middle of the road, got her cellphone out and started texting. It wasn't until a bus driver sounded his horn that she realized where she was standing and moved on."*
- ▶ ...

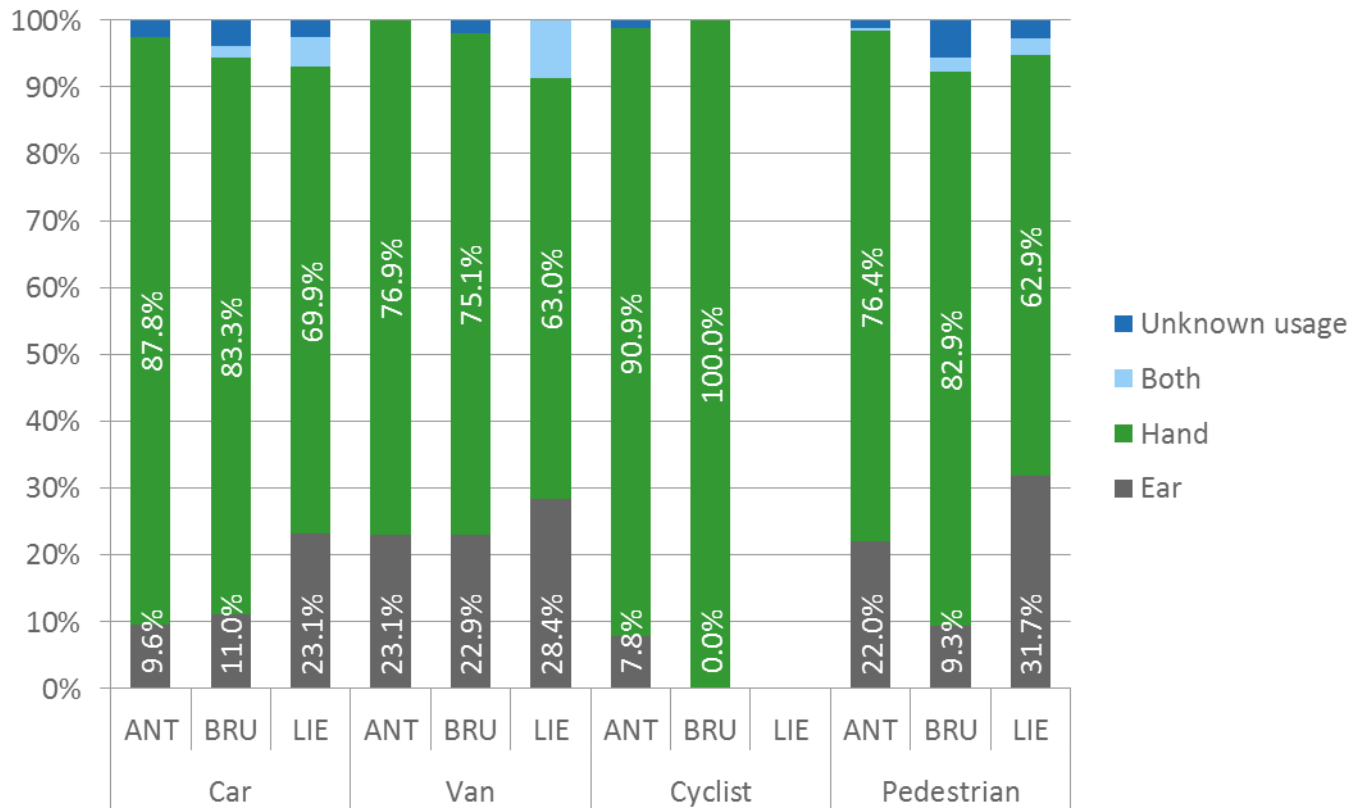
# Results

## ► Phone use



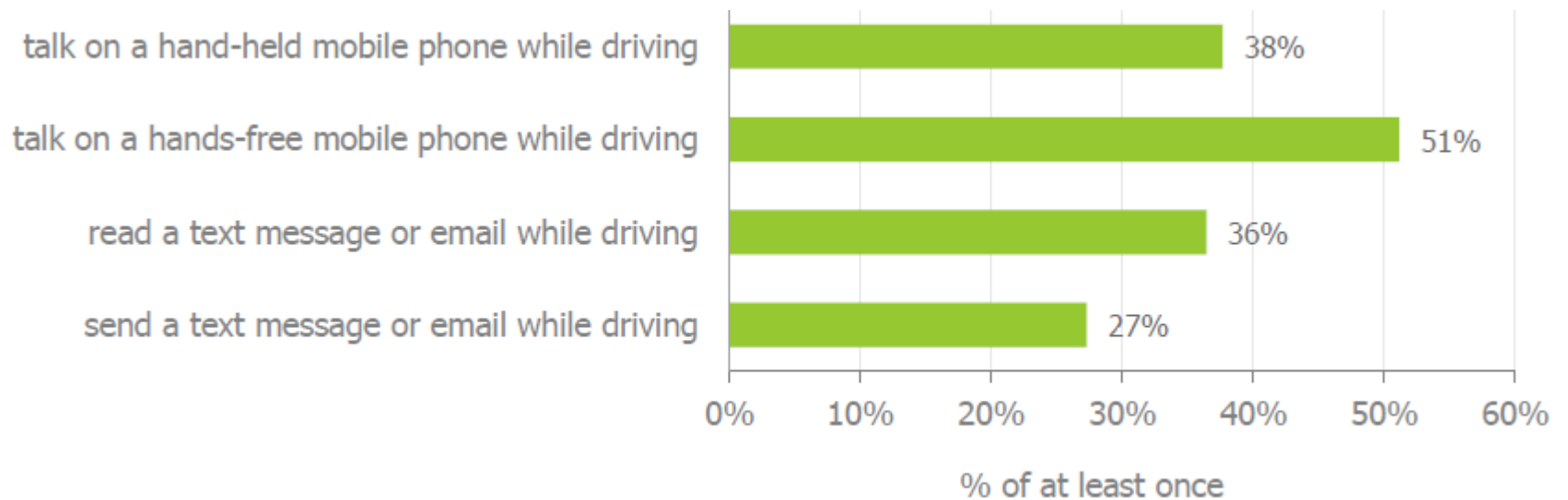
# Results

## Usage type

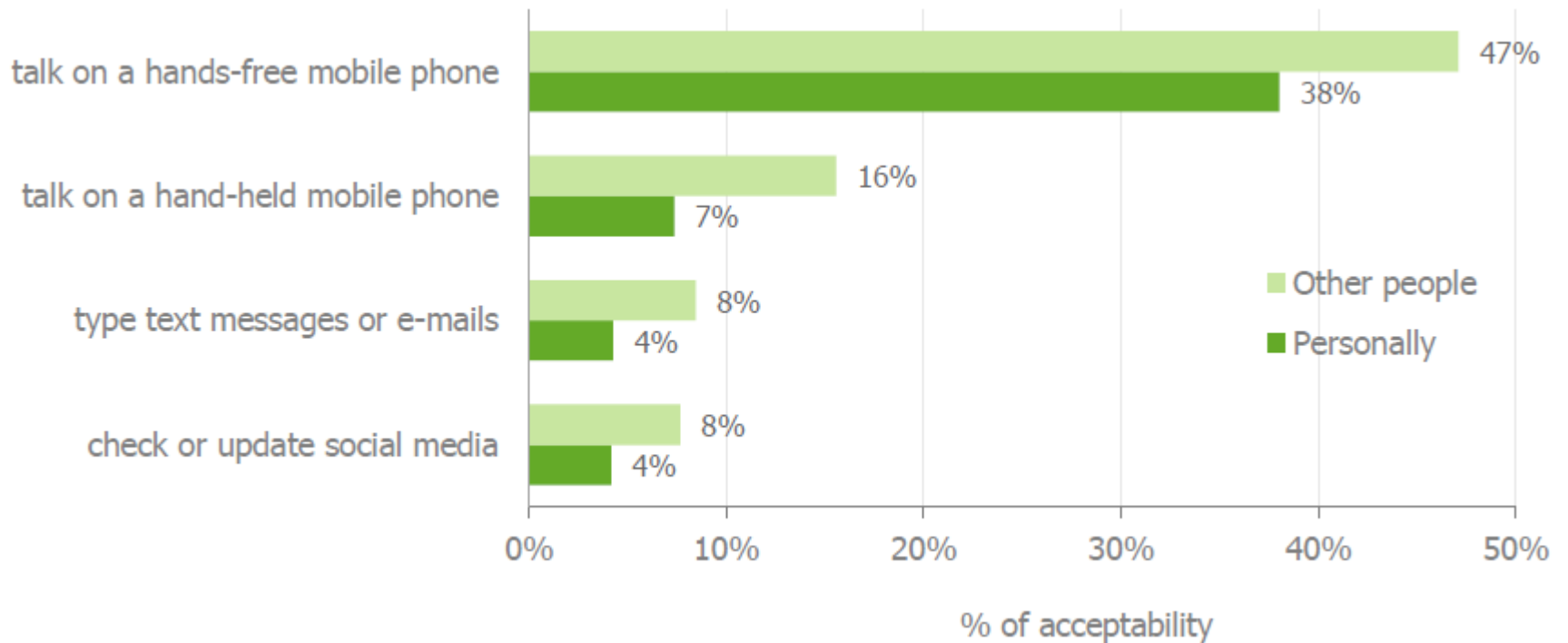




# Self-declared behaviour (ESRA 2015)

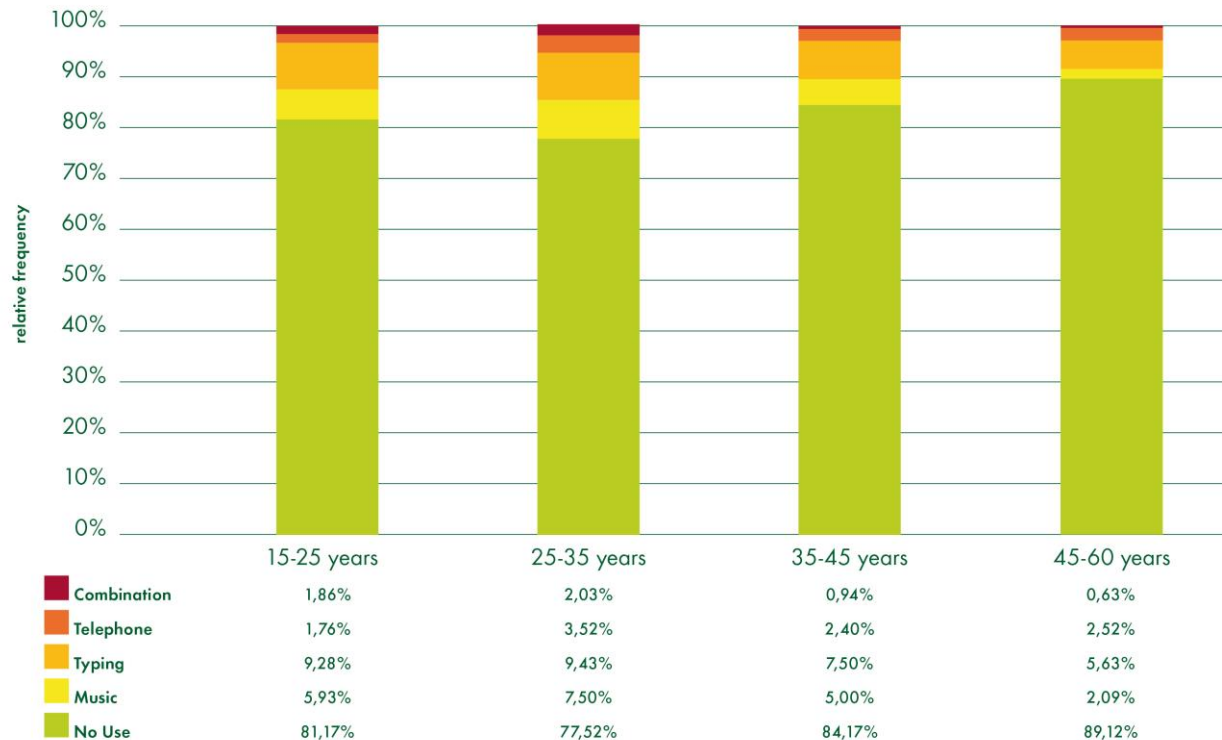


# Self-declared behaviour (ESRA)



# Phone manipulation by crossing pedestrians

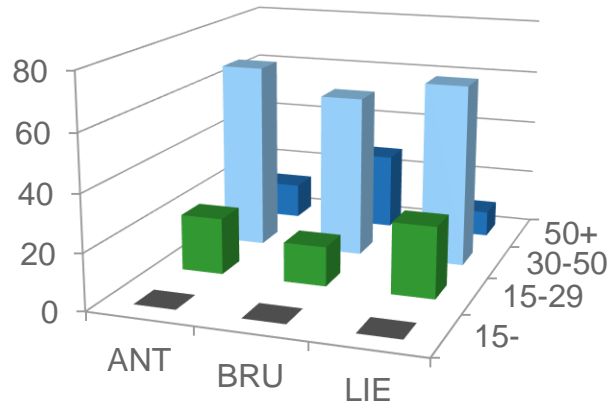
## Pedestrians' Smartphone Use Age Groups



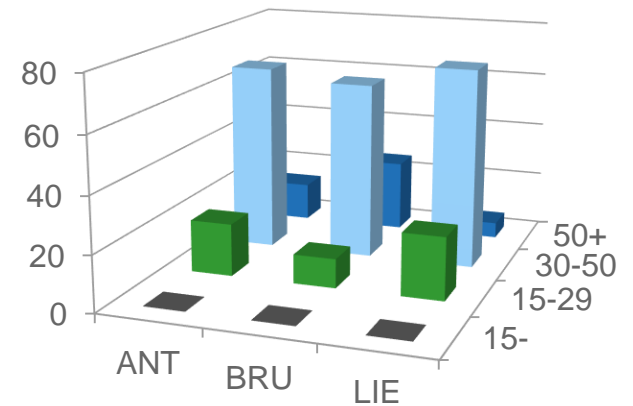
Source: DEKRA Accident Research  
Survey of 13,822 pedestrians (in total) in Amsterdam, Berlin, Brussels, Paris, Rome and Stockholm

# Age (%)

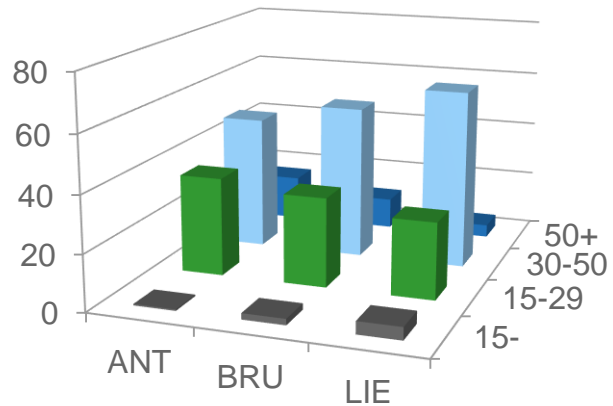
## Car drivers



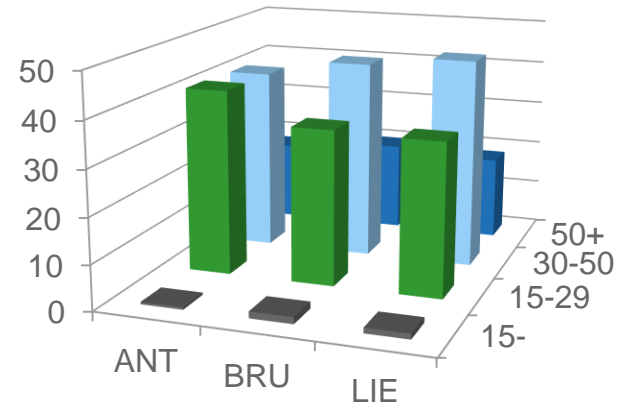
## Van drivers



## Cyclists

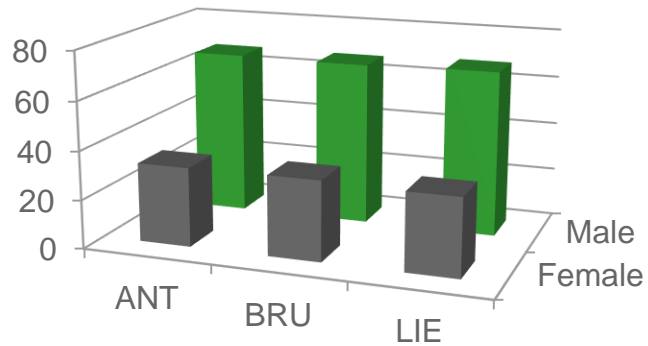


## Pedestrians

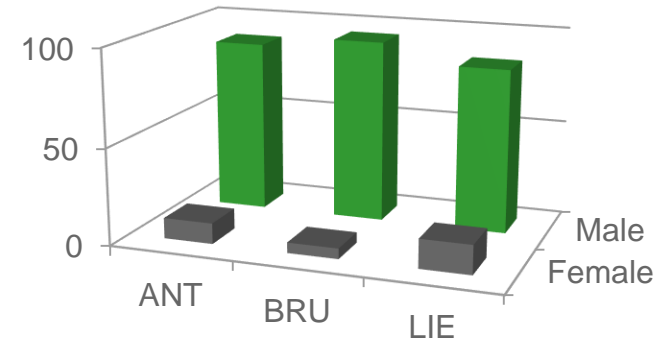


# Gender (%)

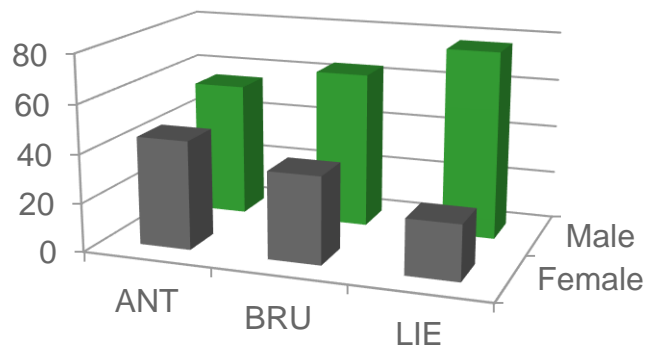
## Car drivers



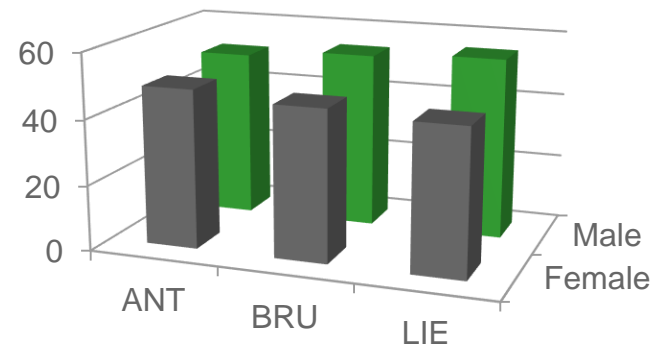
## Van drivers



## Cyclists

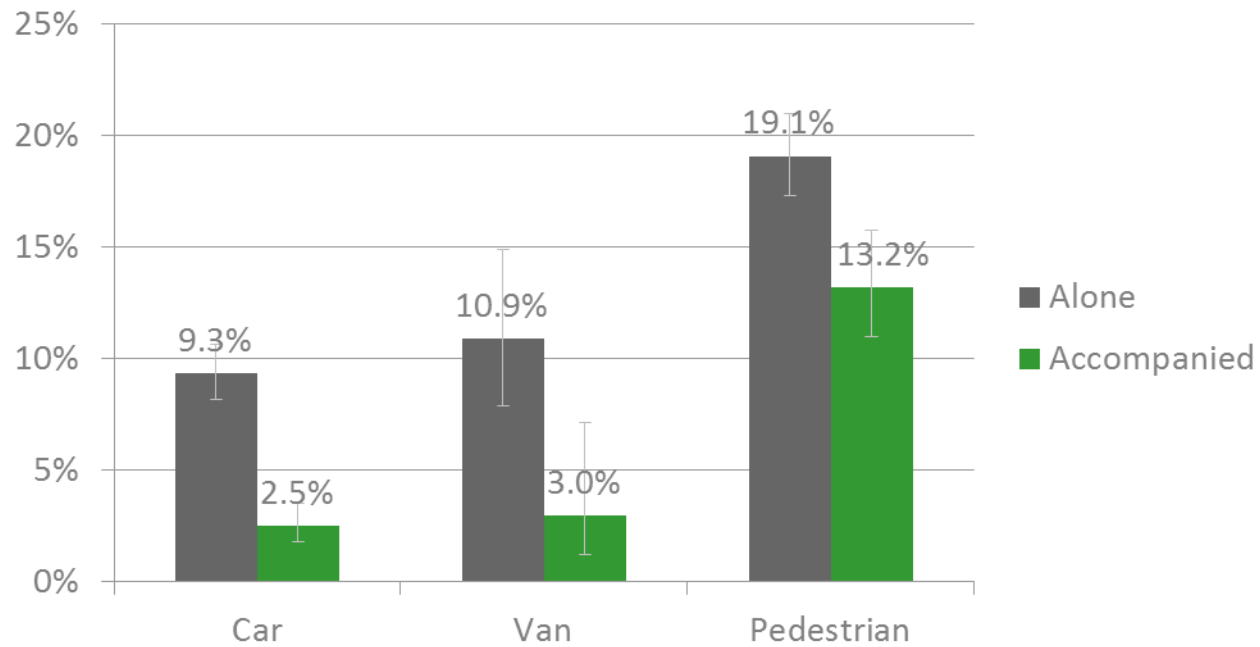


## Pedestrians

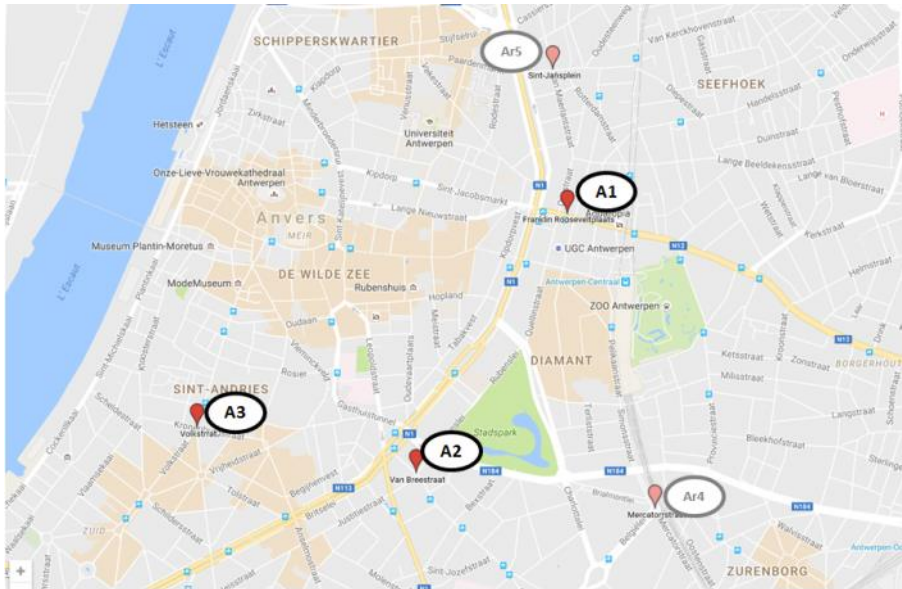


# Results

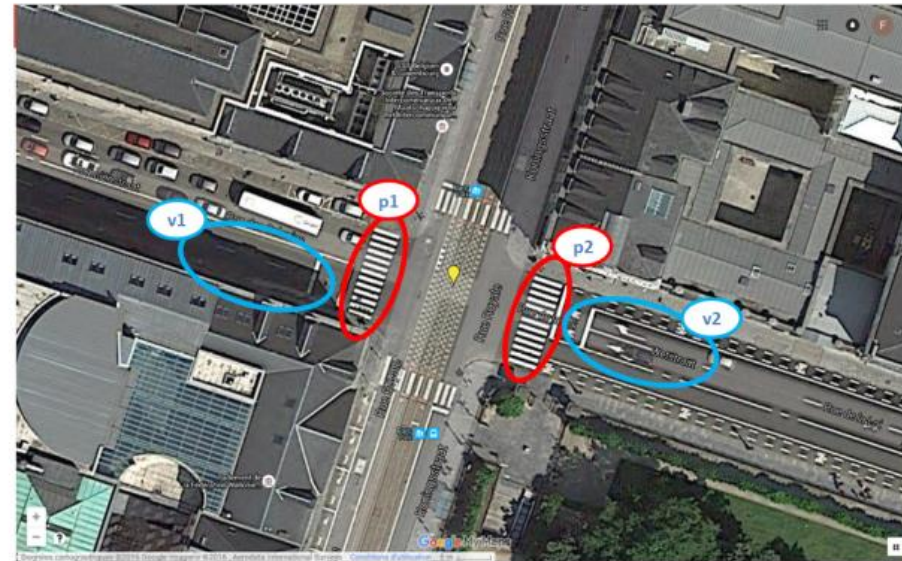
- ▶ Group effect



# Where and when?



**B1** Rue Royale – Rue de la Loi – Rue des Colonies  
Koningsstraat – Wetstraat - Koloniënstraat



BRUSSEL/BRUXELLES

		9h-11h	11h45-12h45 13h15-14h15	15h-17h
<b>Mardi 16/08</b>	Jour 1	2	3	1
<b>Mercredi 17/08</b>	Jour 2	3	1	2
<b>Jeuudi 18/08</b>	Jour 3	1	2	3
<b>Vendredi 19/08</b>	Jour 4	2	3	1
<b>Lundi 22/08</b>	Jour 5	3	1	2
<b>Mardi 23/08</b>	Jour 6	1	2	3