



# E-SCOOTER ACCIDENTS

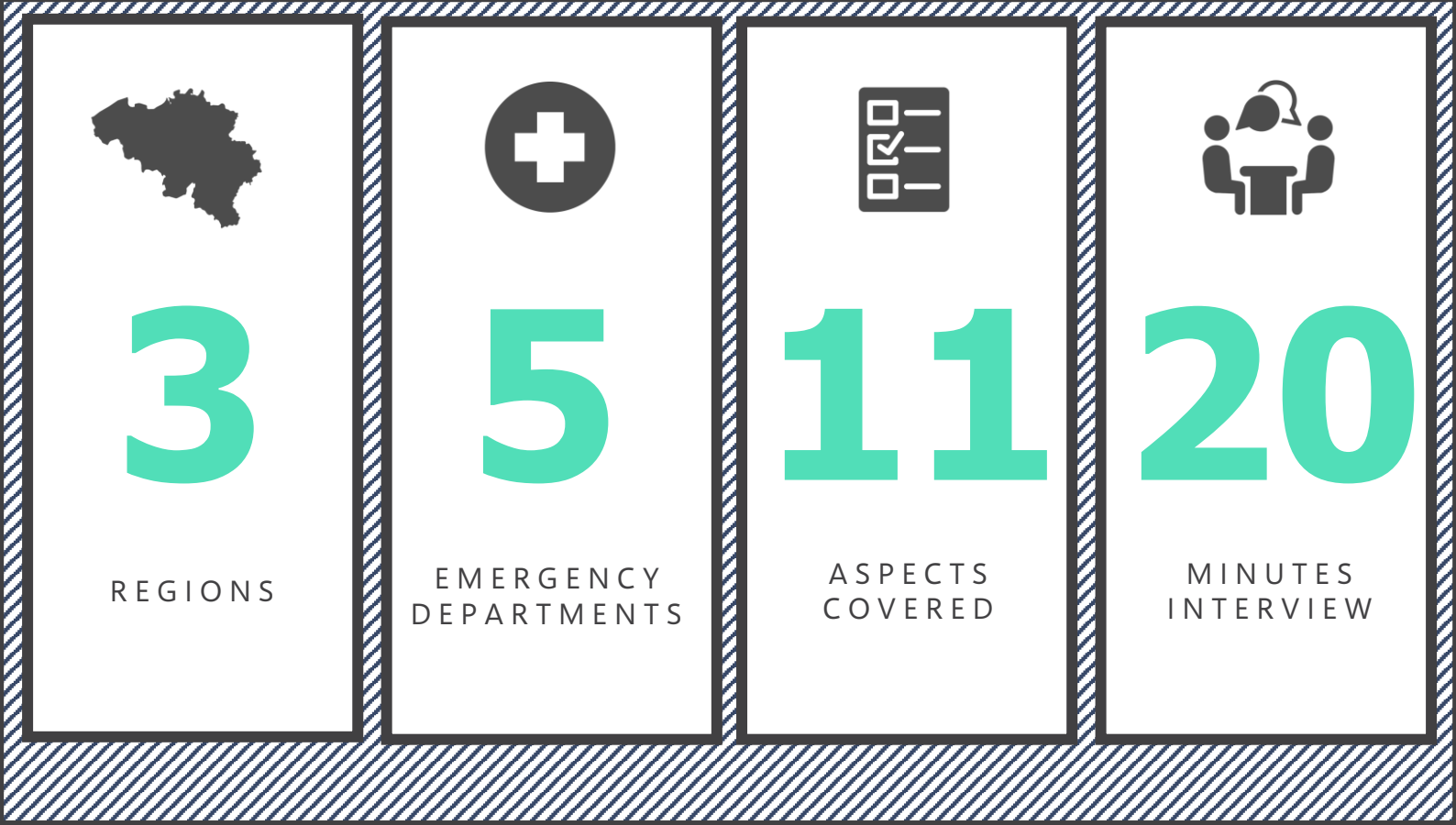
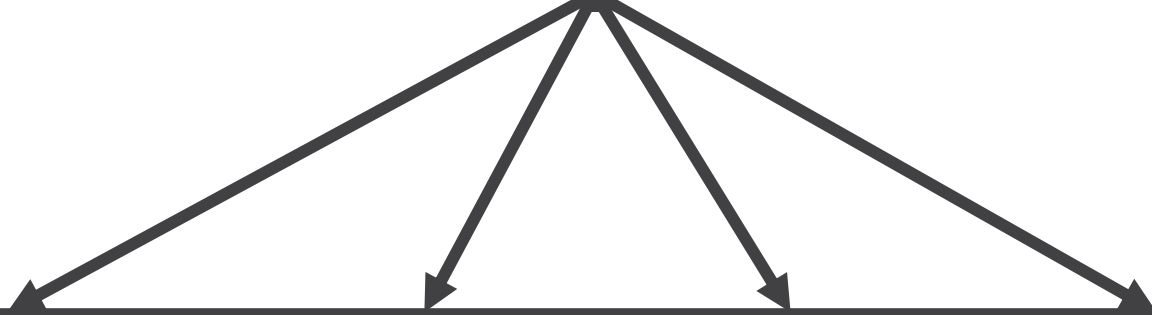
overview: BELGIUM

explorative study



institute

# METHODOLOGY



# HOSPITALS INVITED TO THE STUDY

## BRUSSELS:

- *UMC Sint Pieter* claimed minor problem with no track.
- *CHIREC* has initially responded but did not participate due to lack of time.
- *UZBrussels* did not answer the invitation.

## WALLONIA:

- The remaining hospitals did not respond to the invitation.

## FLANDERS:

- *Jan Palfijn* an *Middelheim Antwerp* claimed no cases or minor incidents with no track.
- *Stuivenberg Antwerp* referred to *UZAntwerp*.
- *UZAntwerp* requested a permission from an ethical committee but did not participate regardless of providing one.
- All hospitals in Gent referred to *UZ Gent*.
- No hospital in Leuven answered the invitation.

BRUSSELS CAPITAL REGION	Laeken	CHU Brugmann - Victor Horta site*
	Schaerbeek	CHU Brugmann- Paul Brien site*
	Saint-Gilles	UMC Sint-Pieter Campus
	Jette	Universitair Ziekenhuis Brussel
	Auderghem	CHIREC Hôpital Delta
	Brussels	Clinique Saint Jean*
WALLONIA	Namur	Hospital Center Régional De Namur
	Namur	CHU UCL Namur De Sainte-Elisabeth
	Namur	Clinical Saint-Luc Bouge
	Liège	CHU de Liège*
	Liège	Centre Hospitalier Régional de la Citadelle
	Liège	Centre Hospitalier Chrétien Clinique Saint-Joseph
FLANDERS	Antwerp	Universitair Ziekenhuis Antwerpen
	Antwerp	ZNA Campus Stuivenberg
	Antwerp	ZNA Campus Middelheim
	Antwerp	ZNA Campus Jan Palfijn
	Leuven	Algemeen Ziekenhuis Heilig Hart
	Leuven	UZ Campus gasthuisberg
	Gent	UZ Gent*
	Gent	AZ Jan Palfijn
	Gent	AZ Sint-Lucas
	Gent	AZ Maria Middelaes: Campus Algemeen

\* Hospitals that have participated

# STUDY SCOPE

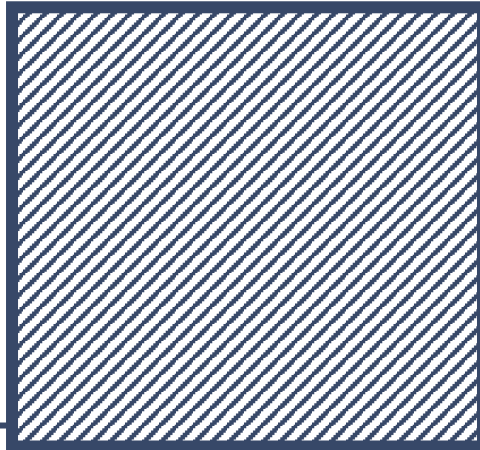
INJURY TYPE	1	<ul style="list-style-type: none"> <li>minor</li> <li>major</li> </ul>	<ul style="list-style-type: none"> <li>musculoskeletal</li> <li>craniofacial</li> <li>soft tissues</li> </ul>
ADMISSION	2	<ul style="list-style-type: none"> <li>by ambulance</li> <li>by one's own</li> </ul>	
TIME	3	<ul style="list-style-type: none"> <li>morning</li> <li>during the day</li> </ul>	<ul style="list-style-type: none"> <li>evening</li> <li>night</li> </ul>
LOCATION	4	<ul style="list-style-type: none"> <li>bicycle path</li> <li>road</li> <li>pavement</li> </ul>	
OWNERSHIP	5	<ul style="list-style-type: none"> <li>private</li> <li>shared</li> </ul>	
AGE	6	<ul style="list-style-type: none"> <li>&lt;18</li> <li>18-30</li> <li>31-40</li> </ul>	<ul style="list-style-type: none"> <li>41-50</li> <li>&gt;50</li> </ul>
HELMET	7	<ul style="list-style-type: none"> <li>yes</li> <li>no</li> </ul>	
INTOXICATION	8	<ul style="list-style-type: none"> <li>yes</li> <li>no</li> </ul>	
3rd PARTY INVOLVEMENT	9	<ul style="list-style-type: none"> <li>yes</li> <li>no</li> </ul>	<ul style="list-style-type: none"> <li>pedestrian</li> <li>bicycle</li> <li>car</li> <li>van / truck</li> <li>bus / tram</li> <li>other</li> </ul>
CAUSE	10	<i>Maneuver that lead to the accident</i>	
FREQUENCY	11	<i>General pattern of admission frequency</i>	



# RESULTS

## overview

The results of this explorative study are **different** to the information published in the Belgian media



most of the accidents happen to  
**OCCASIONAL USERS**

**1 person/week**  
on average arrives at the emergency room following an e-scooter accident

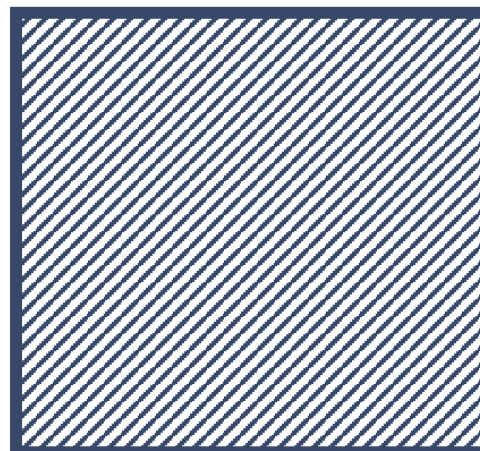
**2-3 persons**  
in higher-level penetration areas

**20-40**  
years old

the most affected age group



Most of accidents involve no  
**3rd PARTIES**  
accidents occur mostly due to fault of the user



**MINOR PROBLEM**  
in Wallonia and Flanders

**NO TRACK**  
of e-scooter related accidents is being kept



# RESULTS

## time, space & weather

SOME OF THE VICTIMS HAD AN ACCIDENTS ON THE ROAD EVEN THOUGH **THE BICYCLE PATH WAS AVAILABLE**

# ROAD

is the most common place where accidents occur



significantly more accidents occur during the

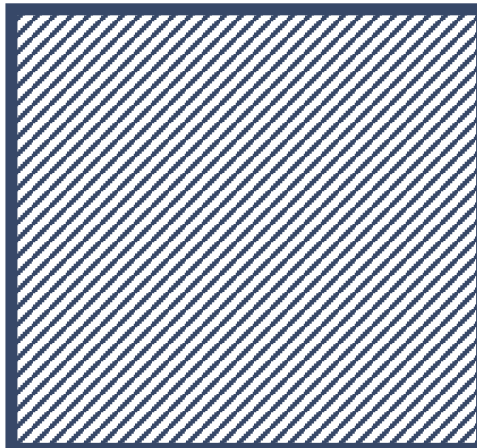
# DAY

due to higher volume of traffic



# BUSY & DENSE AREAS

are the most common locations of accidents



number of accidents varies depending on

# WEATHER CONDITIONS



# RESULTS

## user behavior



surgeons alert:  
**E-SCOOTERS**  
**ABANDONED**  
 on the pavement and the risk it  
 entails on pedestrians

ACCIDENTS DUE TO THAT ARE  
**NOT FREQUENT**  
 BUT THEY HAPPEN

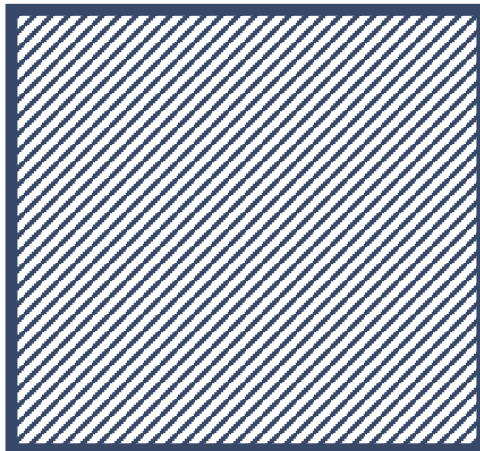
THE FORMER ARE GENERALLY  
**WELL EQUIPPED**  
 WHILE THE OTHERS  
 UNDERESTIMATE THE RISKS  
 AND RIDE **MORE RISKY**

**BIG**  
**DIFFERENCE**  
 in the behavior between  
 users who own a scooter  
 and others who use  
**sharing schemes**



**ALCOHOL & DRUG**  
**INTOXICATION**  
 is not a major problem

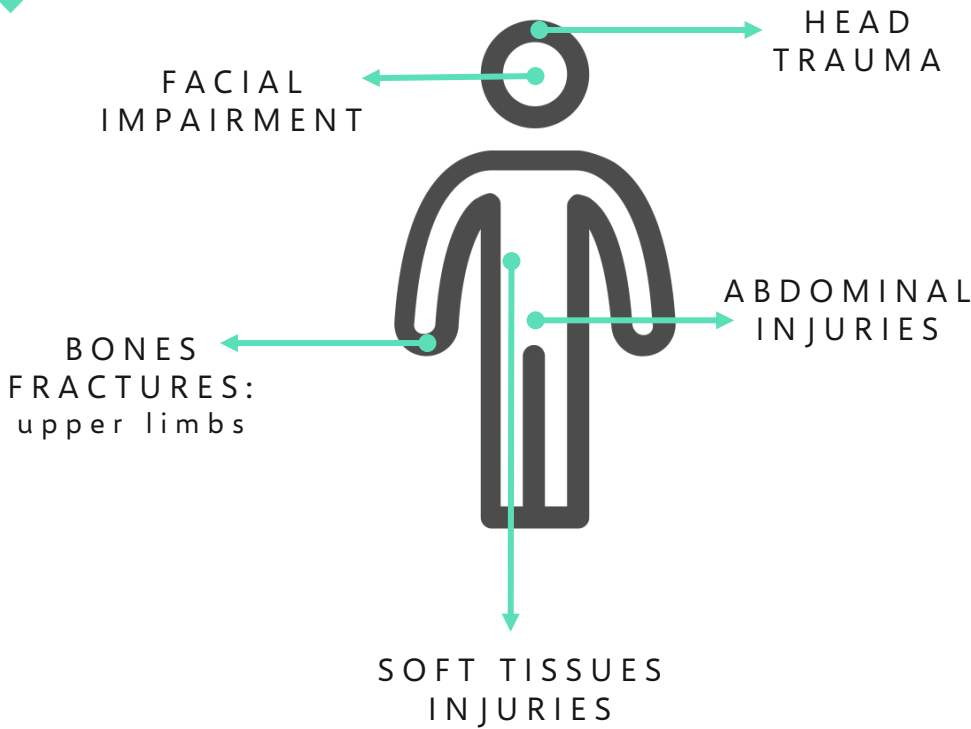
**BUT** after a certain time, a  
 larger proportion of injured  
 users is under influence



**NONE** of the  
 patients wore a  
**HELMET**  
 during the accident

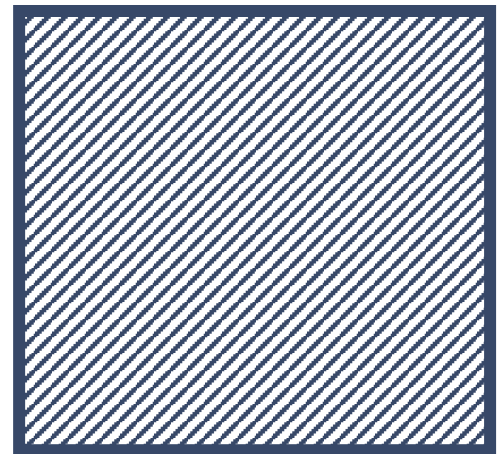
# RESULTS

scope of injuries



## AESTHETIC DAMAGES

are very common consequences of the accident with e-scooters (facial injuries)



patients usually admit themselves in the ER with no involvement of an

## AMBULANCE

while most injuries are minor, some accidents have **very serious consequences**

(e.g. head trauma)



## LOWER LIMBS

very rarely affected

## MOST OF THE ACCIDENTS

even minor, require a

## SIGNIFICANT TIME OF SICK-LEAVE

up to 8 weeks for a wrist fraction (the most common injury)

the scope of the injuries is usually

## MINOR

bones fractures with no life threat, lacerations of soft tissues

occasional

## ABDOMINAL INJURIES

after hitting the handlebar



# RESULTS

doctors recommendation



Mandatory

## HELMETS

with chin protection  
and additional protection for wrists and elbows



Rising awareness of risk and good practices by

## USERS TRAINING & EDUCATION



Adapt

## INFRASTRUCTURE

with the e-scooter structure in mind  
(small wheels, weight/power ratio)

# REVIEW

## good practices in Europe

	Austria	Belgium	Denmark	Finland	France	Germany	Italy	Norway	Portugal	Spain	Sweden	Switzerland
Max. speed <20 km/h			X			X		X				X
Speed regulator required							X					
Mandatory helmet				X					X			
Reflective clothing					X							
Headphones forbidden					X					X		
Lights on 24/7			X									
No riding on the sidewalk	X		X	X	X	X			X		X	
If roads, only up to 30km/h							X					
If roads, only up to 50km/h					X							X
Only urban areas					X		X			X		
No riding under influence			X			X						
Wild parking regulation					X	X						
Allowed above 18 y.o.							X					
No passengers	X	X	X	X	X	X	X		X	X	X	X



# SUMMARY

The results of this explorative study are different to the information published over the last months in the Belgian media. However, our findings are in line with the results of the survey conducted by *Bruxelles Mobilité* (summer'19) in terms of differences between users who own a private device and those who use rental schemes; the nature of accidents (minor involvement of 3rd parties) and the significance of the problem (13% who encountered an accident in the sample of 1176 users, 2,5% of users who required medical intervention).

## Possible discrepancy in the results might be due to:

- **STRONG LOCATION FACTOR:** the number of accidents can vary significantly between hospitals (e.g. *Brugmann Laeken* report on average 1 person per week, while *Brugmann Schaerbeek* 2-3 persons per week).

This is relevant also for the time of the accident and alcohol intoxication- a recent study from *St. Pierre\** (Brussels) discovered that over half of e- scooter accidents take place after 8:00 PM, often when users have consumed alcohol, which was not confirmed by findings from other hospitals.

- **DATA SOURCE:** a more in-depth interview with the patient might be conducted only after one is admitted to the hospital ward. Cognately, these patients would encounter more serious injuries, therefore the information coming from the ward rather than the emergency room might vary in terms of seriousness of the problem.

However, some of contacted hospital claimed the problem is not significant and there has not been enough cases to investigate it and therefore they declined their participation. This insight and the interviews conducted in Liège and Ghent confirm that the problem is valid mainly in Brussels, with larger scale in highly-penetrated areas, which suggests a correlation with an availability of sharing schemes.

The injuries, even if mostly minor, require a considerable recovery time. Furthermore, rare, but serious head traumas (craniofacial injuries) have a severe consequence. All interviewed doctors urged for actions toward increasing awareness of the importance of helmets and the relevance of the practical training before riding in urban environment.

The study was conducted in the between August and October 2019.

NOVEMBER 2019

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