

Ping if you care

Summary Results campaign 2017



Summary Results campaign 2017 Brussels Region

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Glossary

Ping button	The Ping button is a Bluetooth button that a cyclist can press to indicate a dangerous situation in traffic. The button can be attached to a bicycle handlebar and is connected to a smartphone app Bike Citizens.
To Ping / Pinging	Pinging is pressing the Ping button to indicate a dangerous situation
Ping location	The Ping location refers to a place (latitude / longitude) where someone was located when he or she pressed the Ping button
Ping category	The Ping categories are a set of types of dangerous traffic situations. The categories are divided into main and subcategories
A ping	A ping is a push on the ping button to indicate a dangerous situation
Participant	A person who has pinged at least once

1. Ping if you care in the Brussels region

Ping if you care is a Crowdsourcing citizens engagement campaign to make the Brussels region more cycle friendly. Ping if you care gave cyclists the opportunity to communicate and engage directly with the Government of Brussels in order to make cycling more comfortable and safer. Cyclists in Brussels received a Bluetooth button (the ping button) and a Bike Citizens app account. Users track their rides and push the PING button whenever there is something to share with the city government: flaws in the cycling infrastructure, unclear signage, a conflict with another road user or even the fear of dooring. Every Ping left a mark on the track. After the ride users could categorize the Ping. Results were visualized through heatmaps and turned into recommendations for policy and infrastructure.

2. Ping if you care: the button, the app, the campaign

Mobile 21 and BikeCitizens developed the Ping button to give cyclists the opportunity to launch dangerous situations without stopping and to deepen their phone to signal a situation. The button is linked to the Bike Citizens app on the smartphone via a Bluetooth signal. At the end of the ride, the cyclist can use the app to indicate why he was pinging. The different Ping categories can be found in Table 1.

Table 1: Ping categories

Road Surface
Pothole / crack
Humps
Pavement
Gravel/Dirt / glass / rubbish / plants
Slippery
Tram tracks
Cobble stones
Sight is blocked because of...
High plants and trees
Parked vehicles
Road signals
Vehicles standing still
Garage exit
Billboards / Advertisements
Fences
Infrastructural Design
No / unclear cycling infrastructure
Too narrow cycling path
Too large cross sections / confusing situations
Poles / obstacles on or near cycling paths
Shared with pedestrians
Dead angle at roundabout
Winding cycling infrastructure
Traffic lights
Short crossing time

Out of order
Posted behind waiting line
No conflict-free traffic lights
Unclear signalling
Conflicts on crossings / waitings
No yield
Other road users not looking at right turns
Unpredictable behaviour
Reduce passing space
Not enough space given
Cutting in
Blocking passage
Not enough waiting space
Conflicts during ride on street
Lack of distance when overtaken by a vehicle
Not enough space given
Cutting in
Blocking passage
Sudden braking by other road users / unpredictable behaviour
Phone use when driving
Speeding vehicles
Tailgating by vehicles
Conflicts during ride on cycle path / lane
Cyclists on a two way cycling path not giving each other space
Car parking on cycling path / lane
Car driving on cycling path
Front end of the car on cycling path to cross
Pedestrians on cycle paths
Cycling without lights
Cycling 3 next to each other
Stress and Emotions
Near accident
Dooring
Feeling of social unsafety
Confusion what / how to do
Speed
Road rage
Lack of orientation

Bike Citizens in Austria took care of the technical aspect of the project. The Bike Citizens app is an app that works in 450 cities around the world. The app works on the basis of open street maps and is built upon the input of cyclists in the cities involved. The navigation function is one of the most important parts of the application. It is also specifically designed for bicycle use and therefore often works better than other navigation apps that should work for different modes.

Cyclists who use the navigation are also tracked and thus supply data that can improve the navigation application. During the Ping campaign, more inhabitants in Brussels downloaded and used the app, even if they were not active participants.



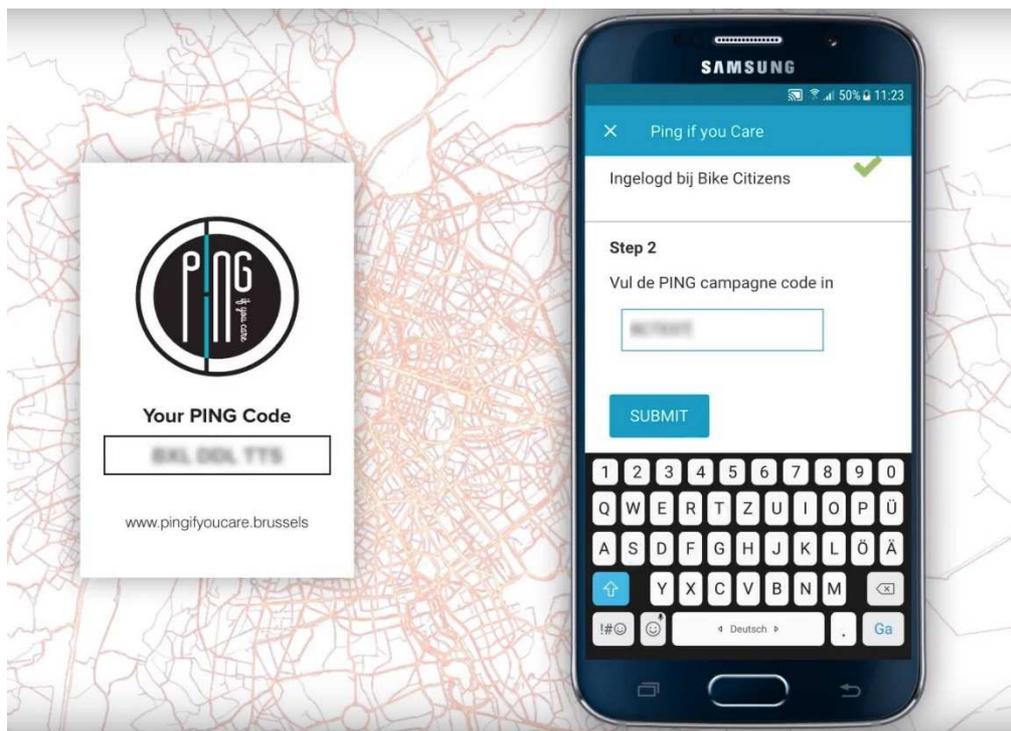


Figure 1: To pair the Ping-button

The ping button needed to be paired with the smartphone and BC app of the user. This way the Pings, when the user pushes the ping button, are automatically sent to the phone via blue tooth, and stored in the app.

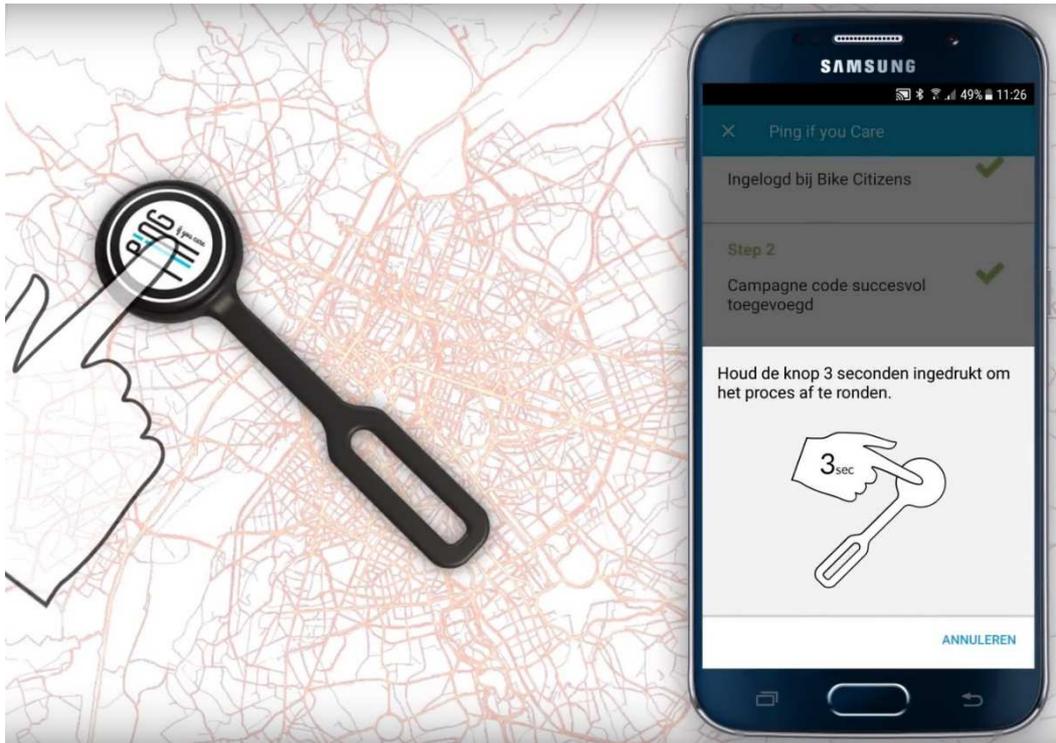
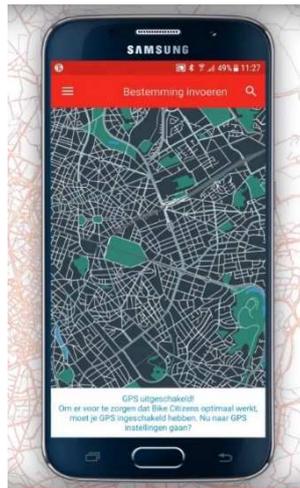


Figure 2: To pair the ping button



We have used a positive message about cycling in Brussels region. "Cycling in the Brussels region is the best and easiest way to get around. In the Brussels Region, the number of cyclists has increased by 50% in recent years. Ping if you like giving cyclists the opportunity to communicate directly with the government. We want to make cycling safer in the Brussels region with your help! "



JOIN PING FOR SAFER CYCLING IN BRUSSELS !

WHAT COULD BE BETTER AND SAFER ?
SHARE YOUR CYCLING EXPERIENCE WITH
OTHER CYCLISTS AND THE BRUSSELS
GOVERNMENT AND REGISTER FOR
PING IF YOU CARE !

REJOIGNEZ PING POUR AMÉLIORER LA SÉCURITÉ À VÉLO À BRUXELLES !

VOULEZ-VOUS PARTAGER AVEC D'AUTRES
CYCLISTES ET LE GOUVERNEMENT BRUXELLOIS
CE QUI PEUT ÊTRE AMÉLIORÉ ET PLUS SÛR ?
ENREGISTREZ-VOUS ALORS **PING IF YOU CARE !**

PING MEE VOOR VEILIGER FIETSEN IN BRUSSEL !

WAT KAN BETER EN VEILIGER?
DEEL JE FIETSERVARING MET
ANDERE FIETSERS EN DE BRUSSELSE
REGERING EN REGISTREER JE
VOOR **PING IF YOU CARE !**



Figure 3: Poster Ping if you care



3. Results campaign

During the campaign, 1.503 email addresses were collected and 1.435 people registered via the website. There were (at least) 769 ping buttons and download cards distributed and 577 participants created an account in the Bike Citizens app. A total of 463 people tracked at least one ride with the BC app and 404 people paged at least once. The project yielded 39.887 pings, of which 58% was assigned a category.

These figures show that there were a number of bottlenecks in this pilot project that registered users stumbled on to effectively compete. It mainly concerned logistical problems (not being able to retrieve the ping button, losing the ping button, dropping, simply forgetting to use, changing work, moving, falling and not being able to cycle ...) and technical problems (the app did not work on the smartphone, the pairing of the ping button did not work, etc. ...).

The heat maps give a first idea of the campaign's reach: the GPS points of the cycled routes are nicely spread over the region. We have analysed the profile of the participants in the campaign. We know the profile of 353 of the 404 participants. The other participants have received a ping button and download code without being registered on the website (the so-called 'ghost participants').

A total of 66% of the participants were male and 34% female. According to the Fietsobservatorium, this corresponds to the profile of cyclists in Brussels (64% men, 34% women and 2% children). Of all participants 88% of the participants lived in the Brussels region and 89% also work or study in the Brussels Region.





Figure 4: Heatmap Ping if you care Brussels Capital Region



Figure 5: Heatmap zoomed in

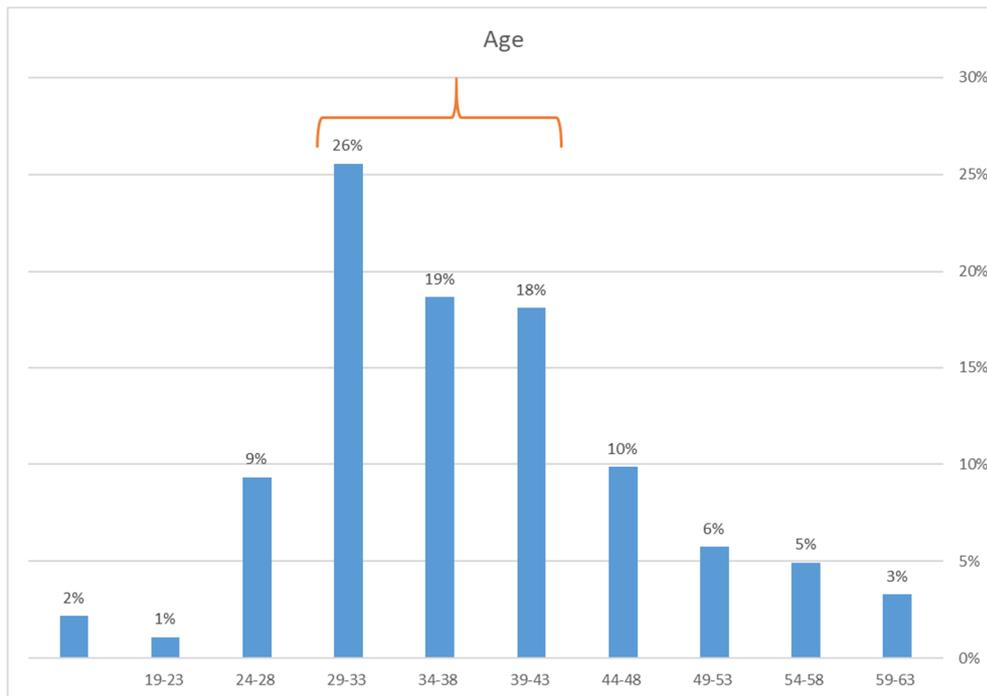


Figure 6: Age of participants

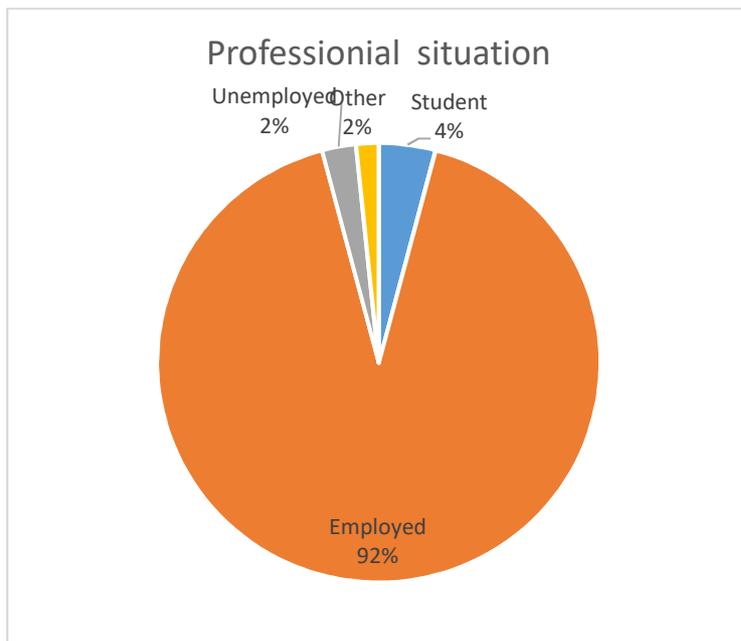


Figure 7: Professional situation participants

The majority of the participants cycle alone. 8% of them usually cycle with children.

Most participants already have a lot of cycling experience in BHG. 65% of them have been cycling in BHG for more than 3 years. The cycling experience is also demonstrated by the image of the cycling frequency of the participants. 74% of them cycle 2-3 days a week.

Table 2: Cycling experience

Cycling experience	
I have not cycled yet	4%
I cycle less than a year	5%
I cycle between 1 and 3 year	26%
I have been cycling longer than 3 years	65%

Table 3: Cycling frequency

Frequency of cycling – I cycle	
Less than once a month	1%
1-3 days a month	2%
More or less 1 day a week	14%

More or less 2 -3 days a week	74%
4 or more days a week	4%
Other	6%

4. Research results

We have 4 research questions within the Ping project in Brussels:

- **Research question 1:** What makes cycling in Brussels unsafe according to Brussels cyclists?
- **Research question 2:** What are hotspots for cyclists in Brussels? What is the cause of making these places a hotspot?
- **Research question 3:** Are different target groups sensitive to various problems regarding bicycle safety?
- **Research question 4:** How does the feeling of insecurity in cycling in Brussels vary according to different times of the day?

As mentioned earlier, there were 404 active participants. This resulted in a total of 39.887 pings, of which 58% was assigned a category. For each analysis, we indicate the data on which the results are based: the total number of pings (n = 39.887), the categorized pings (n = 22.891), or the number of participants pinging (n = 404).

6.1 Research question 1: What makes cycling in Brussels unsafe according to Brussels cyclists?

The first research question concerns the type of problems confronting the Brussels cyclists. We analyse why participants ping while cycling in Brussels. This analysis can be made thanks to the feedback that the participants give at the pinged location. In this section we only analyse the pings which are categorized.

The most popular ping category among our participants was Infrastructural design: 60% of the participants pinged at least one bad road design. The different types of conflicts (see next table) were also pinged by at least by 50% of the participants. The least popular categories were traffic lights, sight is blocked and stress and emotion. These categories were only used by a quarter to a third of the participants.

The most popular category in terms of number of pings was Road surface: 32% of all pings with category are related to problems with the road surface. Also in terms of number of pings, the categories Traffic Lights, Stress and Emotion and sight is blocked are less popular (each category less than 5% of the pings). Conflicts at crossings also has a low in number of pings (7% of all pings).

Table 4: Number of pings within each category and number of participants using the specific category

Category	Pings		Participants	
	n	%	n	%
Infrastructural design	4154	18%	242	60%
Road Surface	7217	32%	219	54%

Conflicts during ride on street	3627	16%	217	54%
Conflicts on crossings / waitings	1648	7%	215	53%
Conflicts during ride on cycle path / lane	4017	18%	200	50%
Stress and emotions	634	3%	130	32%
Sight is blocked because of...	1148	5%	103	25%
Traffic lights	446	2%	93	23%

A. Infrastructural design

The **absence of or unclear cycling infrastructure** is an aspect that makes cycling in Brussels difficult for half of the cyclists (51%, 2.691 pings). In terms of design of the public space, **poles and obstacles** on or along the cycle path, and **too large intersections** are problematic for a fourth of the cyclists (464 and 364 pings). **Too narrow cycle paths** were pinged by 1 in 5 of the participants (290 pings) and **shared infrastructure with pedestrians** by 1 in 7 of the participants.

B. Road Surface

The **quality of the road surface** also proved to be a strong concern for cyclists in Brussels. More than 40% of the participants pinged for one or more potholes or cracks in the road surface. This made the category '**Pothole / crack**' the most pinged category with 4.244 pings (19% of all pings). Other common problems were **dirt on the road, cobblestones, and humps** (each time 22% of the participants). **Tram tracks** were annoying for 1 in 7 participants.

C. Conflicts

Conflicts with other road users were pinged regularly. The most common conflict was a **parked car on the cycle lane** (40% of the participants, 9% of the pings). In addition, there were many **conflicts between cyclists and cars**, both when driving on the cycle path and when driving on the street. This mainly concerns car drivers who give too little space to cyclists. **Tailgating** was a problem for 1 in 10 of the participants.

Conflicts with non-motorized traffic were much lower and mainly affected pedestrians on the cycle path (24% participants, 2% of the pings). Conflicts with other cyclists were mainly on **two-way bicycle paths** (5% of the participants, <1% of the pings).

D. Stress and emotion

Almost-accidents were pinged by 16% of the participants. It involves 172 **near-accidents** in total. In addition, there were 81 cases of **road rage** (11% of participants). **Dooring** was a problem for 1 in 10 participants.

We also dare to say that stress and emotion can often be a second category of bottleneck. That stress and emotion is present with every reason for pinging, but that the main reason for pinging is often assigned to another category, for example conflict on right at a crossroads. We therefore suspect an underestimation in this category.

6.2 Research question 2: What are hotspots for cyclists in Brussels?

We investigated the unsafe hotspots for cyclists in Brussels and looked at what is making these places unsafe for cyclists. The 'road surface' category is omitted here and is passed on to Fix My Street. The

analysis of the unsafe hotspots are done at street level. We look at both (a) the number of pings and (b) the number of participants who have pinned in the street.

A. Sight is blocked

Three streets stand out because of a high number of pings (and a high number of pings per km) due to limited visibility for cyclists. However, further analysis indicates that the high number of pings in these streets has only been achieved by a limited number of individuals. These participants repeatedly ping at the same location.

Table 5: #pings sight is blocked

Street	#pings sight is blocked	#pings per km
Ducpétiauxlaan	104	128
Paepsemiaan	65	72
Amerikaanse straat	89	99

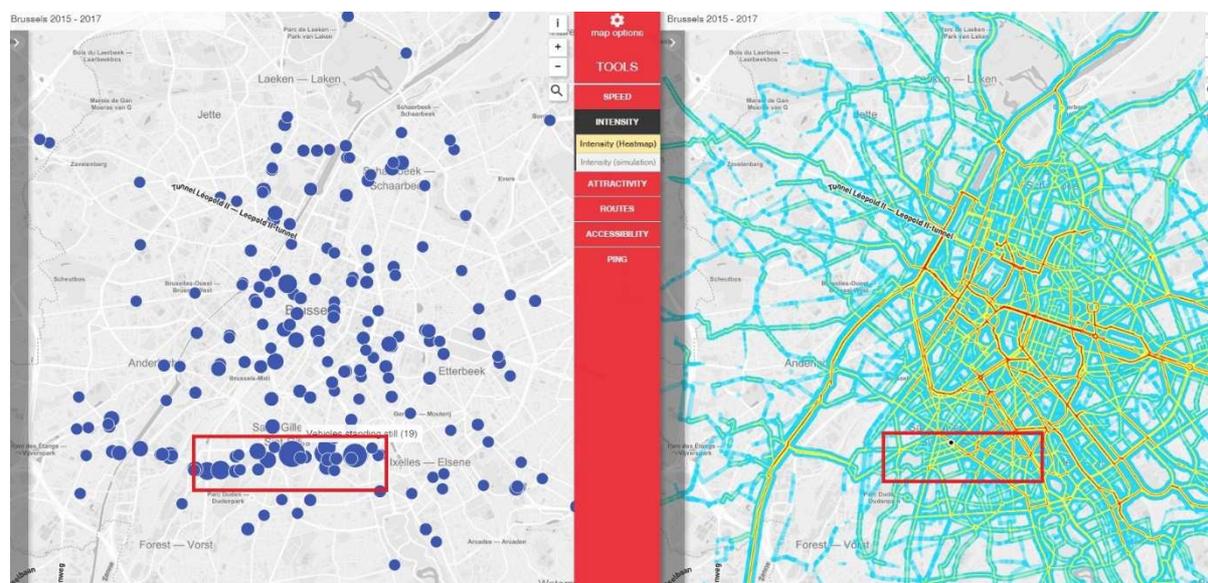


Figure 8: : #Pings sight is blocked Ducpétiauxlaan

In the **Ducpétiauxlaan** is mainly pinged within this category, because of limited visibility by parked vehicles (49% of the pings within the category of limited visibility) and stationary vehicles (42%).

The Paepsemiaan in Anderlecht gives a completely different picture in this category. There is mainly pinged because of limited visibility through fences and plants and trees (66% of the pings within

category limited visibility) and limited visibility through traffic signs (22% of the pings).

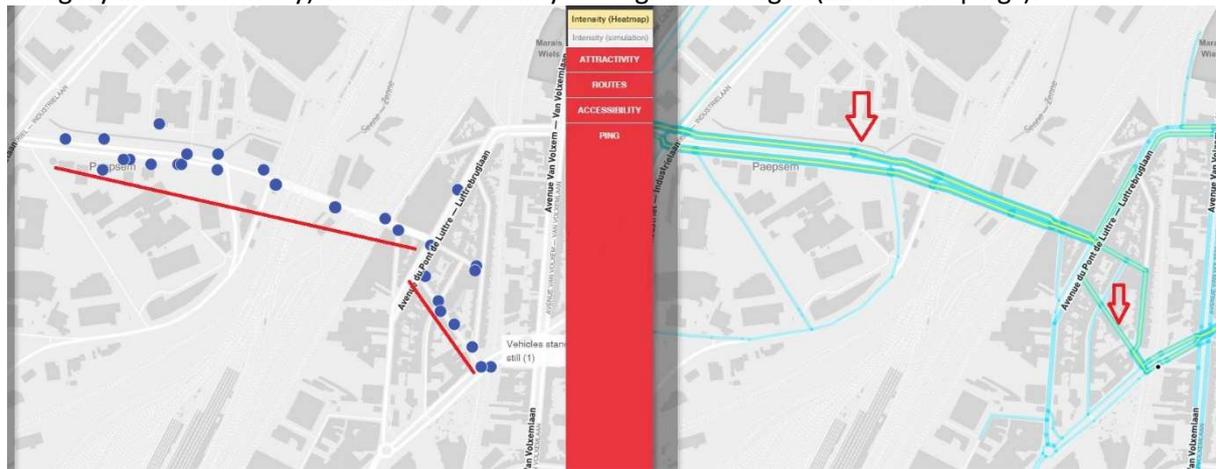


Figure 9: Sight is blocked - Gerijstraat and Paepsem in Anderlecht

In the Amerikaansestraat it is again about stationary vehicles that restrict visibility (96% of the pings in category limited visibility).

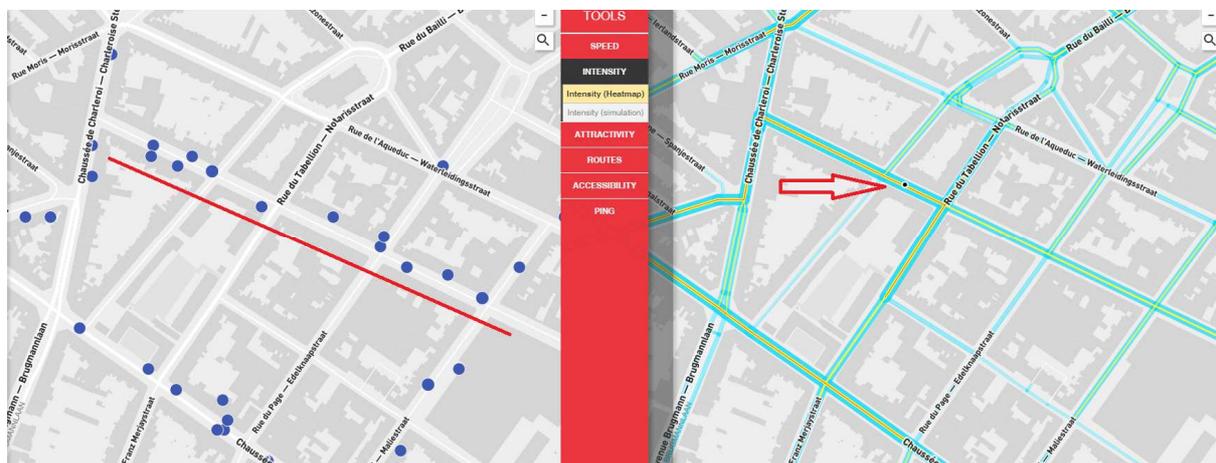


Figure 10: Sight is blocked - Amerikaanse straat

B. Infrastructural design

The following table shows the three streets where most was pinged because of Infrastructural design.

Table 6: #pings Infrastructural Design

Street	#pings Infrastructural Design
Sainteletteplaats	91
Louizalaan	87
Koningsstraat	84

The following table shows the number of people who pinged because of Infrastructural design (a unique count of the pings), and this gives the same 3 most important places, as in the previous table. Wetstraat is an important location in terms of unclear road design.

Table 7: #participants who pinged/ Infrastructural design

Street	#participants who pinged
Sainteletteplaats	23
Louizalaan	21
Wetstraat	21
Koningsstraat	19

At the **Sainteletteplaats** (and surroundings) people often pinged within the category of infrastructural design. Most pings were given the subcategory *No or unclear cycling infrastructure* (63% of the pings within the category infrastructural design), and *too large a crossroads / confusing situation* (37% of the pings).

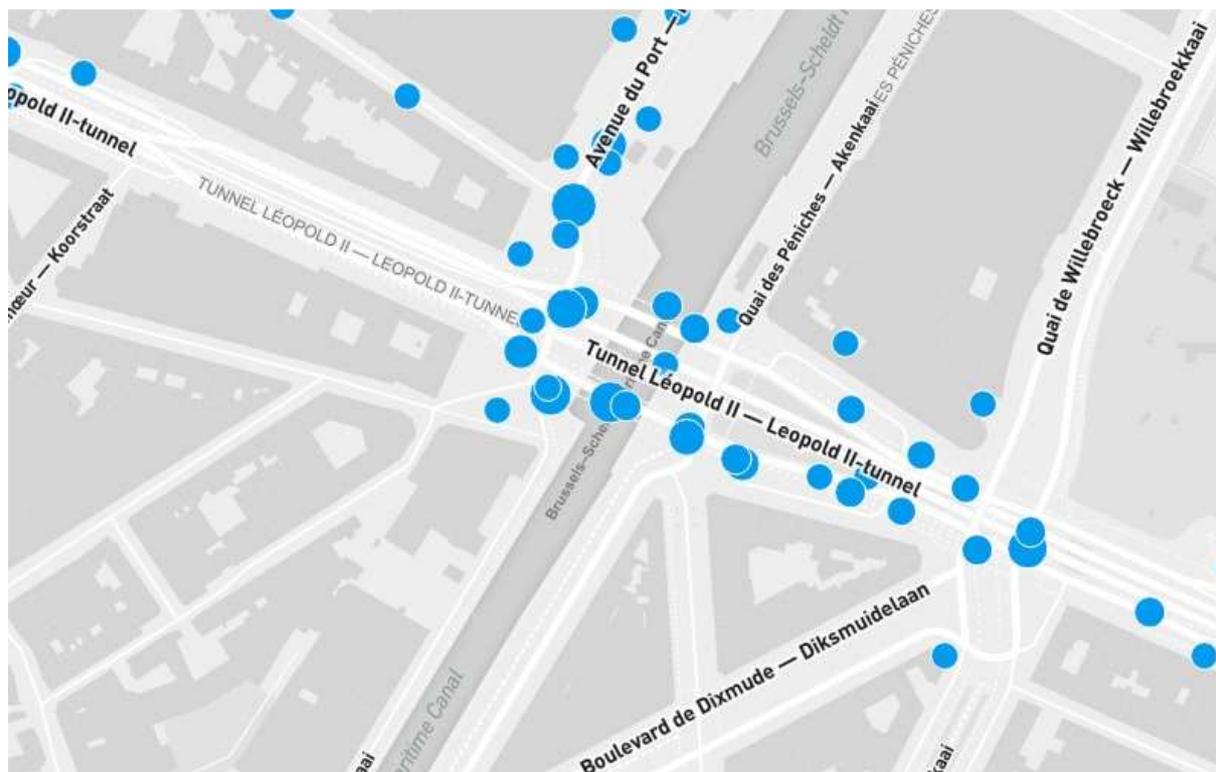


Figure 11: #pings infrastructural design Sainteletteplaats

Avenue Louise also counts a lot of pings within the category infrastructural design. Most pings were given the category *No or unclear cycling infrastructure* (61% of the pings), and *too large a crossroads / confusing situation* (34%).

In the **Koningsstraat**, the large majority of the pings is about *No or unclear cycling infrastructure*, namely 86% of the pings in the category infrastructural design.

People pinged in the **Wetstraat** within this category because of *obstacles on the cycle path*, such as poles and traffic signs (28% of the pings within the Design and Infrastructure category) and a *too narrow cycle path* (26% of the pings within the Design and Infrastructure category).

C. Traffic lights

There is a lot less pings and number of people who pinged within this category than within the other categories. The following figure gives an overview of the ping locations within this category.



Figure 12: Overview Ping-locations within category traffic lights

D. Conflicts on crossings / waitings

Conflicts on crossings were much more pinged than problems with traffic lights. The pings are spread over the entire region and there are no specific locations that immediately catch the eye. The

multiplicity of pinged crossings indicate that conflict-free intersections at many different locations in Brussels could increase the well-being of cyclists, as also shown in the category 'Traffic lights'.

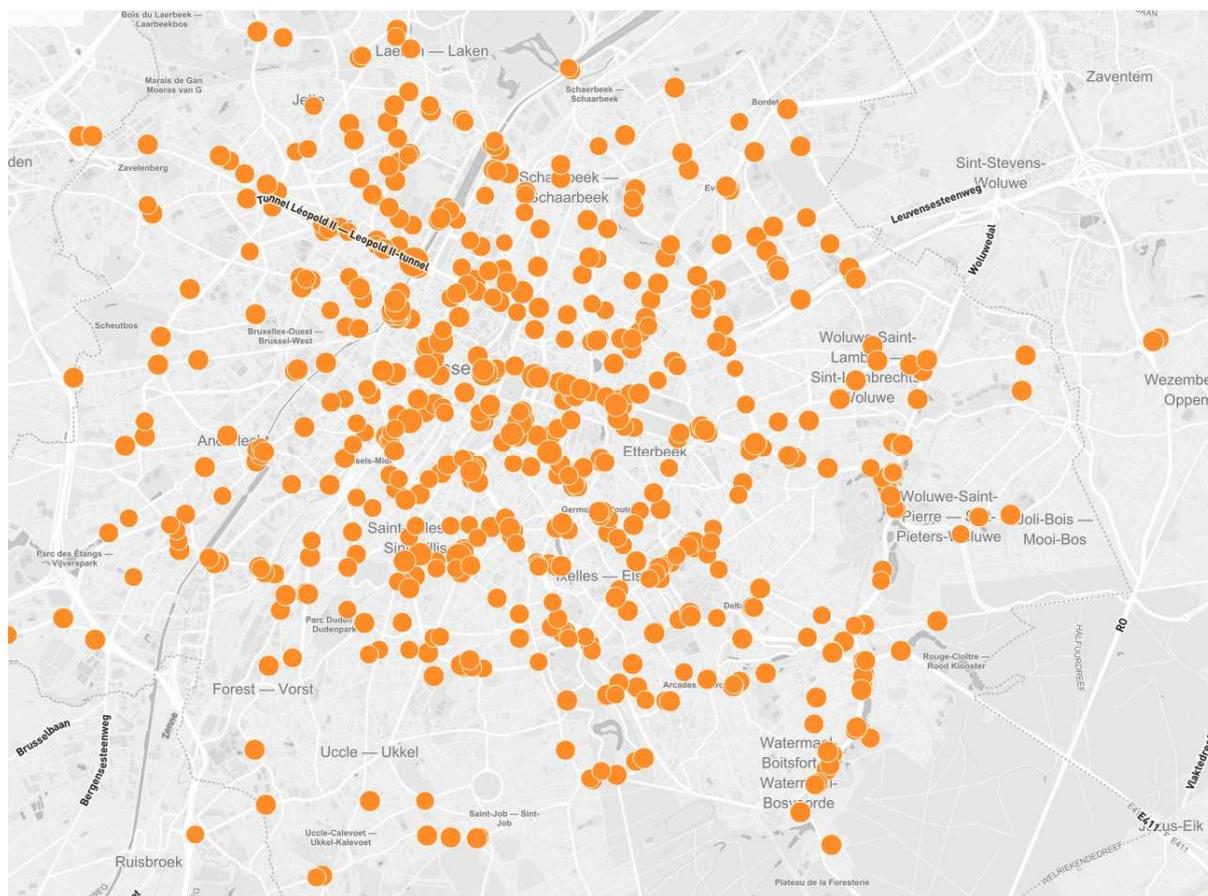


Figure 13: Overview conflict on crossings

The following table indicates where, in which street / intersection, the most is pinged because of conflict at crossings.

Table 8: #pings Conflict crossings

Street	#pings conflict on crossing
Vorstlaan	55
Sainteletteplaats	48
Louizaplein	47

At the following intersections is often pinged because of conflict on crossing / intersection:

- Vorstlaan / Charle Albertlaan
- Vorstlaan / Hulstlaan
- Vorstlaan / Herrmann Debrouxlaan

42% of the pings within the category conflict on crossing in the **Vorstlaan** are dedicated to *Blocking passage* and 31% to *No priority given*.

The Sainteletteplaats is a square / place where is pinged often because of conflict on crossings. Cutting in (31% of the pings), Other road users not looking at right turns (17% of the pings), are the most common pings, within the category **Conflict at crossings**.



Figure 14: #pings conflict at crossings at Sainteletteplaats

Louizaplein is a large, busy and unclear crossing for cyclists, this is the reason why there are so many pings on conflicts. These pings are about Blocking passage (38% of the pings) and 'not looking at right-turn' (53% of the pings).

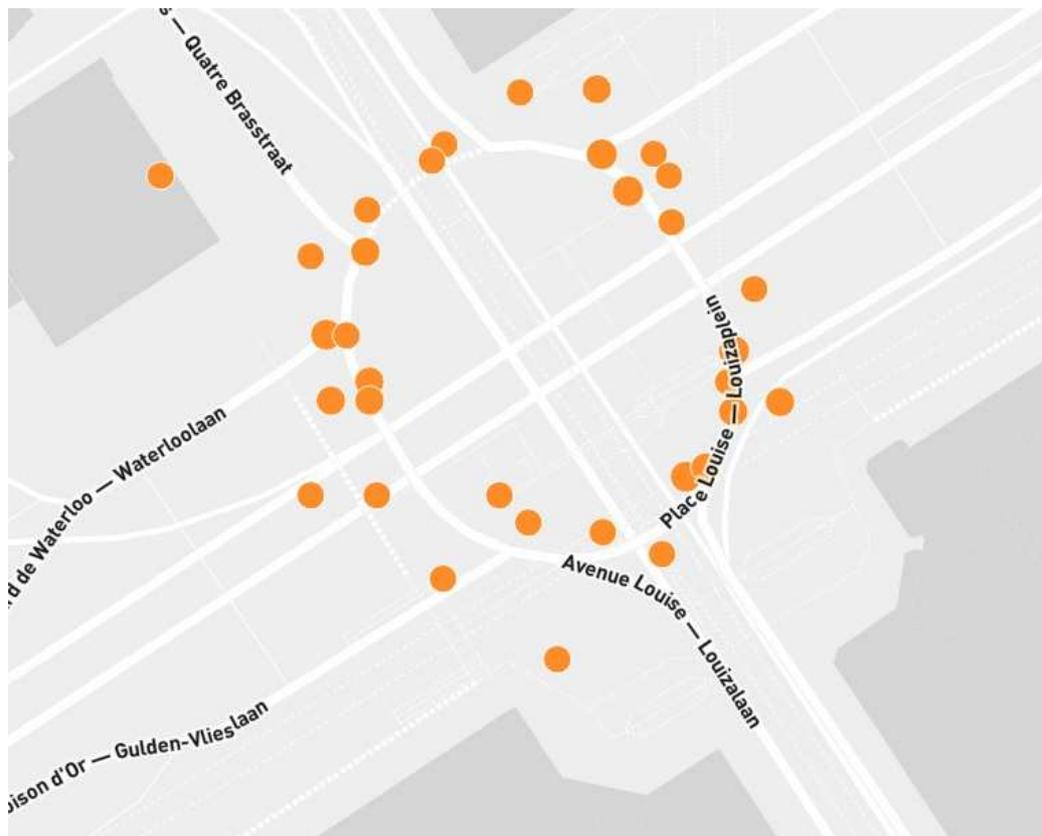


Figure 15: #pings conflict crossings Louizaplein

The following table gives a slightly different picture. This includes the top 3 of locations where most different people were pinging because of conflict on crossings. The Sainteletteplaats keeps coming back. In the Dansaerstraat, 36% of the unique pings were categorized as Other road users not looking at right turns.

Table 9: # participants who pinged on conflicts on crossings

Street	# participants who pinged
Sainteletteplaats	20
Louizalaan	14
Antoine Dansaertstraat	11

E. Conflicts during ride on street

Just like conflicts on crossings, conflicts during ride on street are also spread over the entire region. The next table indicates the streets in which most people pinged because of conflicts when driving on the road. These are a few known streets in Brussels: Avenue Louise, Dansaertstraat and Troonstraat.

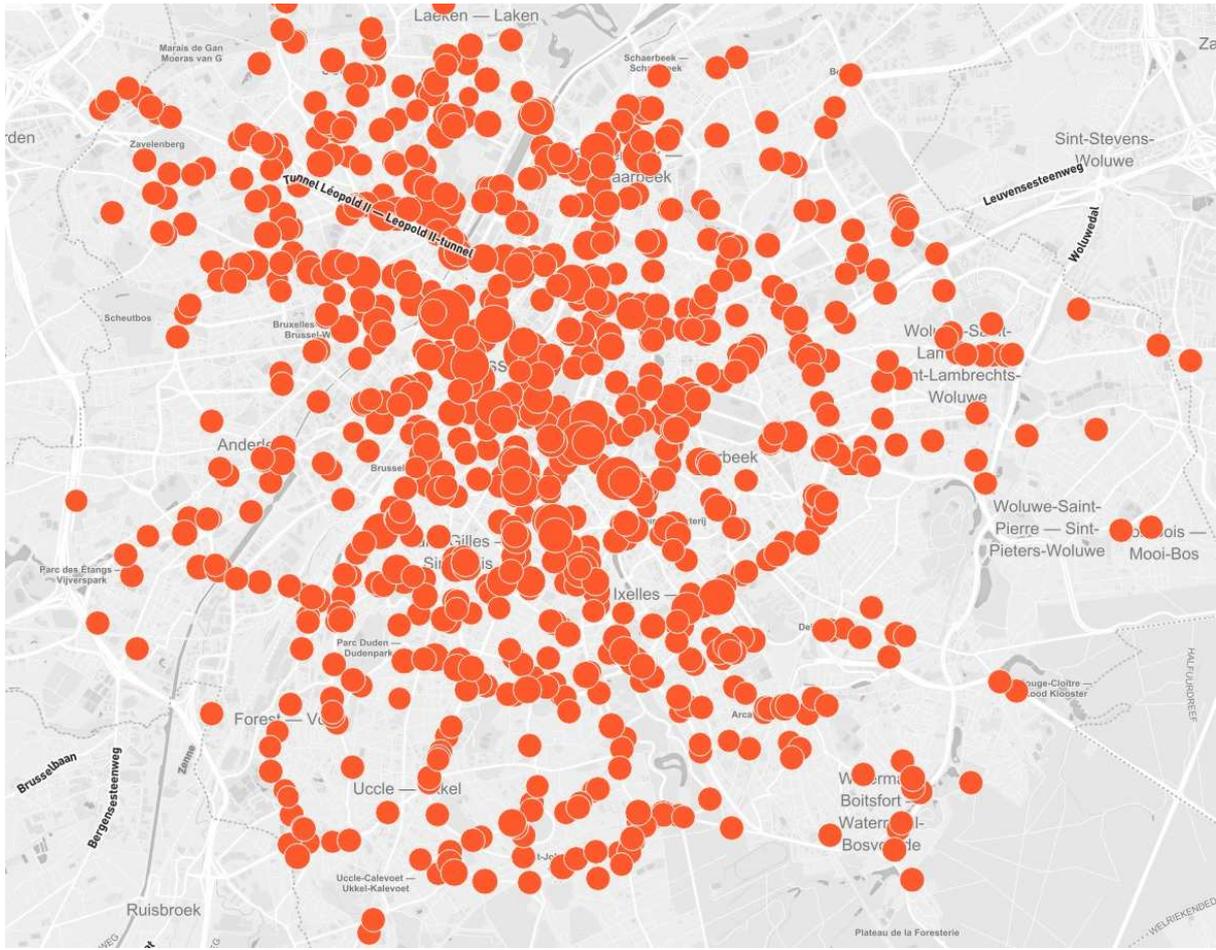


Figure 16: Conflict during ride on the street

Table 10: #pings Conflict during ride in the street

Street	#pings Conflict during ride on the street	#pings per km
Louizalaan	97	39
Antoine Dansaertstraat	52	80
Troonstraat	42	42

The following table shows the unique number of pings per street, ie the number of people who pinged. This gives approximately the same picture.

Table 11: # participants / conflict during ride on the street

Street	#participants who pinged
Louizalaan	24
Troonstraat	21
Antoine Dansaertstraat	19

In the Avenue Louise, there were many conflicts during a ride on the street. This mainly concerns Not enough space given (30% of the pings), Blocking passage (26% of the pings), and Lack of distance when overtaken by a vehicle (20% of the pings in this category).



Figure 17: #pings conflict during ride on the street Avenue Louise

The number of pings for conflicts during ride on the street is also very high in the Dansaertstraat. Again, this mainly concerns the Not enough space given (33% of the pings), and Blocking passage (37% of the pings).

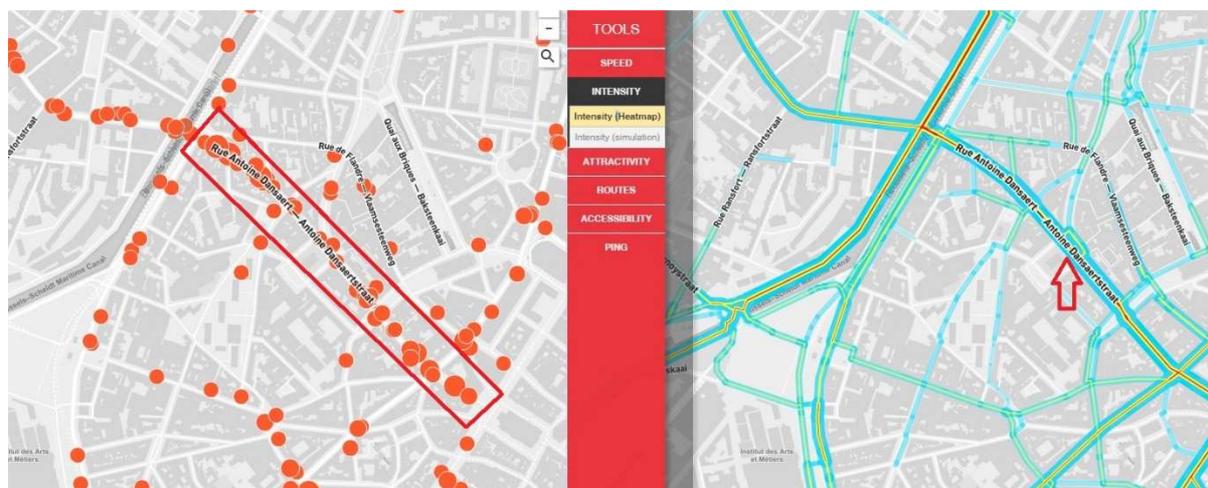
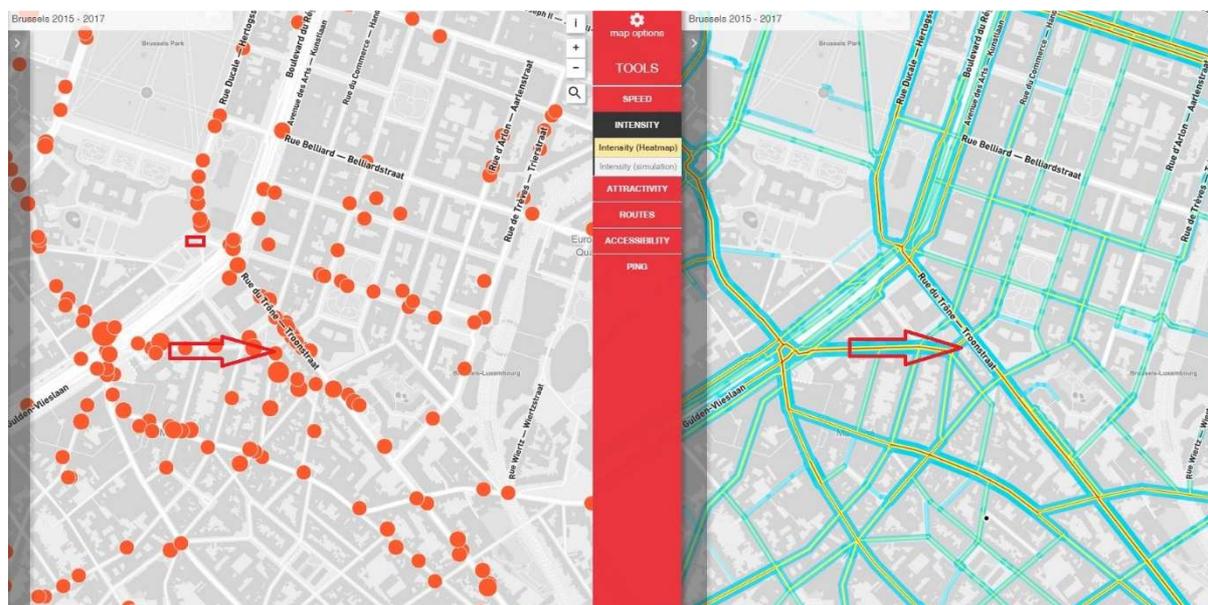


Figure 18: # pings Conflict during ride on the street – Dansaertstraat

The Troonstraat is a busy street (see heat map in the next figure) and also has a lot of conflicts during a ride on the street. It is about 42 pings per km within this category and 21 different people who pinged within this category. This mainly concerns Not enough space given as a cyclist on the road (48% of the pings), and Lack of distance when overtaken by a vehicle (19% of the pings).



Figuur 1: # pings Conflict rijden op straat – Troonstraat

What stands out within this category of pings is that it mainly concerns conflicts related to the behaviour of the car driver: giving insufficient space to the cyclist, driving too close when passing and blocking the passage.

F. Conflict during ride on cycle path

The streets where the most people pinged within the category Conflict during ride on cycle path are the Albertlaan, the Antwerpsesteenweg and the Ducpétiauxlaan.

Table 12: #pings Conflict during ride on cycle path

Street	#pings Conflict during ride on cycle path	#pings per km
Albertlaan	119	119
Antwerpsesteenweg	94	52
Ducpétiauxlaan	80	99

For both Albertlaan and Antwerpsesteenweg the main reasons to ping within category Conflict during ride on cycle path are parked cars on the cycle path (81% and 79% of the pings in these streets, respectively). In the Ducpétiauxlaan, the pings are dedicated to parked cars on the cycle path (35% of the pings) and cars driving on the cycle path (58% of the pings).

The next table shows the streets with the highest number of participants pinging there within category Conflict during ride on cycle path. This top-3 gives a different picture than the top 3 of the number of pings: De Wetstraat, Steenweg to Ghent and Dansaertstraat are the streets in which most people have pinged for conflicts during ride on cycle path. In the Wetstraat, the biggest source of conflict was pedestrians on the bike path (67% of the pings for conflicts on the cycle path in the Wetstraat). In the Steenweg on Ghent and in the Dansaertstraat, it is all about parked cars on the bike path (75% and 94% of the pings, respectively).

Table 13: # participants who pinged / conflict during ride on cycle path

Street	# participants who pinged
Wetstraat	27
Steenweg op Gent	20
Antoine Dansaertstraat	17

G. Stress and emotion

This category was not often used by the participants.

Table 14: #pings Stress and Emotion

Street	#pings stress and emotion
Maarschalk Montgomeryplein	14
Louizalaan	12
Louizaplein	10

At the Maarschalk Montgomeryplein, lack of orientation and speed were the two main reasons for pinging within this category (each time 29% of the number of pings in this category). On the Avenue Louise, the two main subcategories were Road rage (42% of the number of pings) and near-accidents (25%). On the Place Louise, the same two subcategories were the most common.

6.3 Research question 3: Are different target groups sensitive to various problems regarding bicycle safety?

We analyse how socio-demographic variables, such as gender and age, and bicycle-related person variables (e.g. level of experience with cycling in Brussels) are related to ping behaviour. In these analyses, we look at the distribution of the number of target group's pinged locations across the eight main categories for each target group. When two pings fall within 100 meters of each other, they were considered to belong to the same location. By taking the number of pinged locations as a level of analysis, we exclude other possible differences between target groups, such as differences in the number of times pinging at the same location for the same problem.

A. Gender

In total, 2.847 locations were pinged by 119 women and 9.484 locations were pinged by 234 men. The average number of pings was therefore higher for men (an average of 41 pinged locations per person) than for women (an average of 24 pinged locations per person). However, we found no evidence that men and women experience road safety in a different way: There were no clear gender differences in the reasons why men and women pinged. For example, the proportion of conflicts in the total number of locations pinged for men was roughly the same as the share of conflicts in the total number of pinged locations for women.

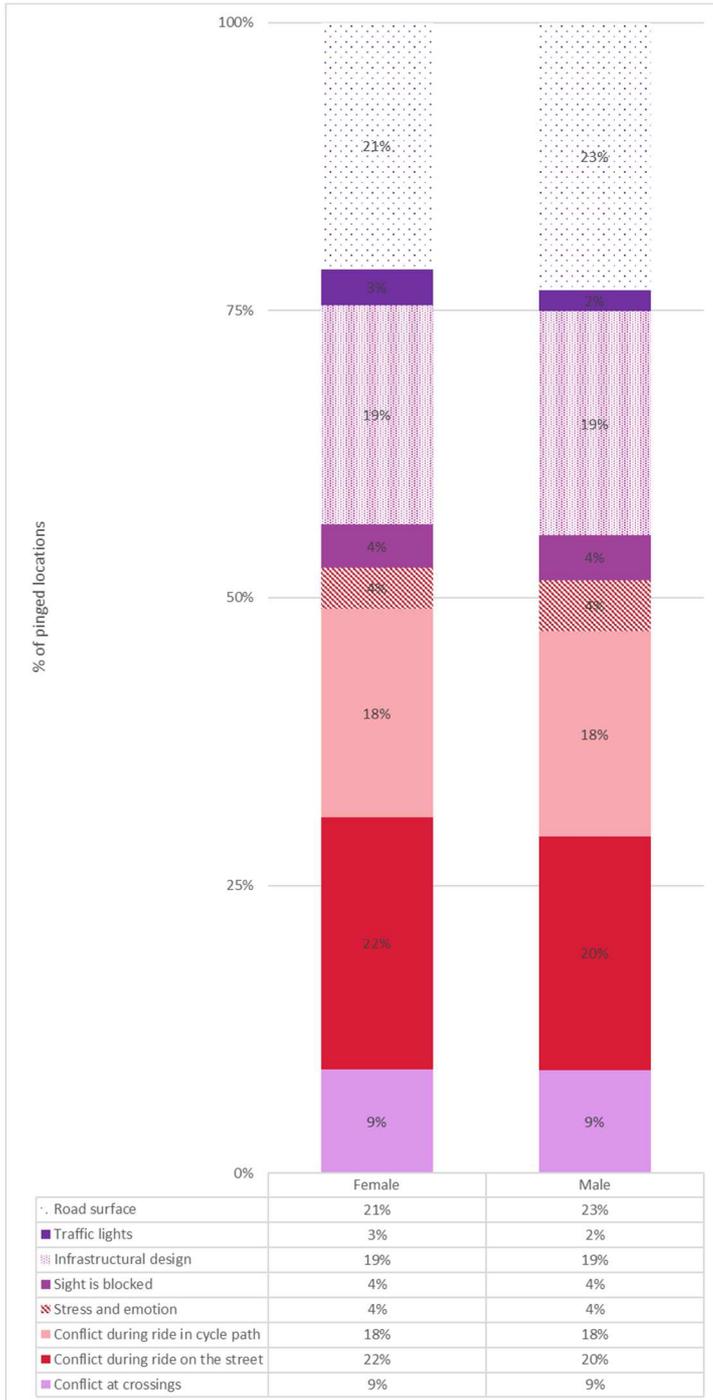


Figure 19: Gender difference in pinging behaviour

B. Age

Just as for gender, there were no clear differences in the perception of road safety for the different age categories. The share of conflicts and stress and emotion fluctuated for each age category around 50% of the pinged locations.

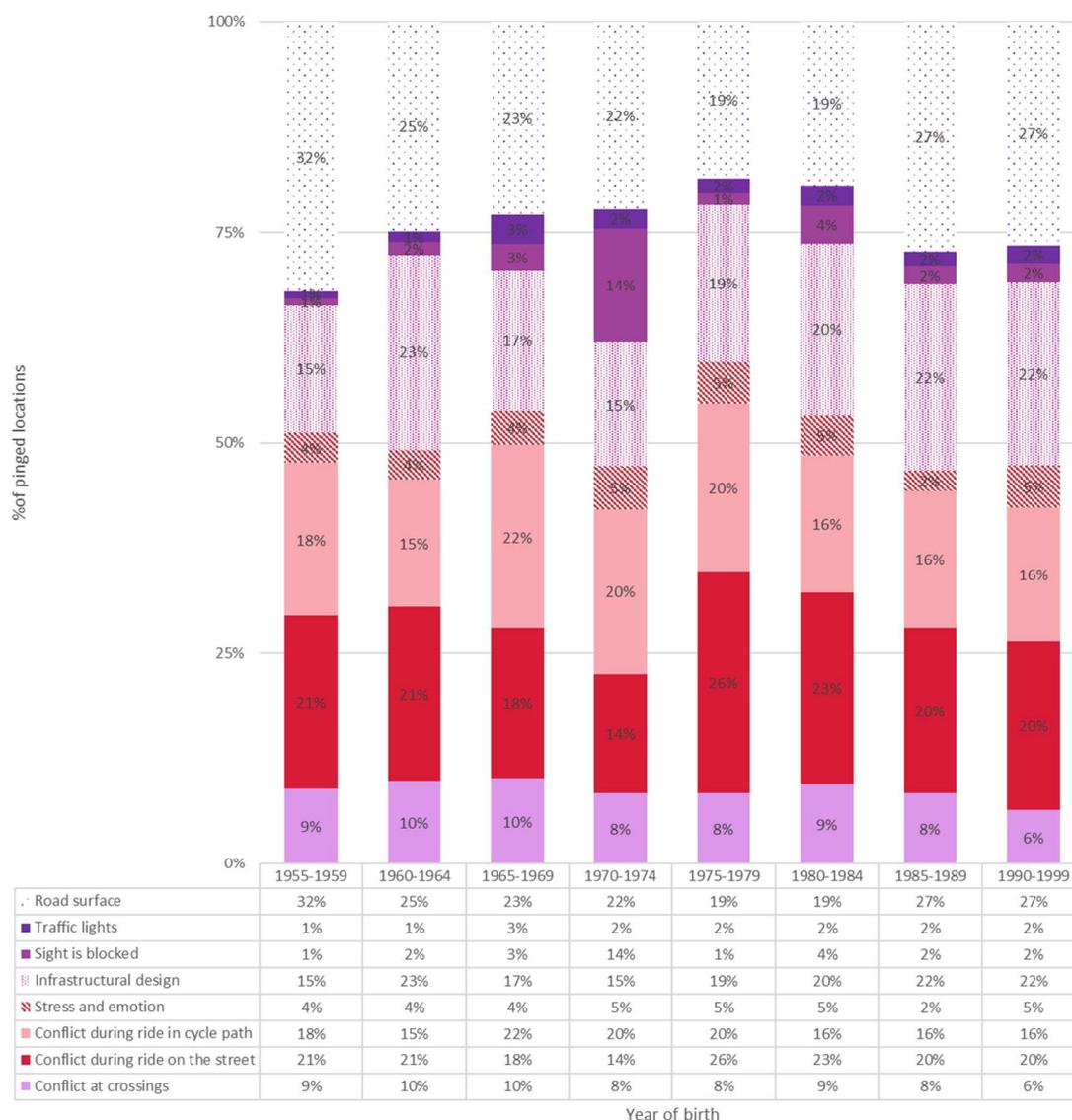


Figure 20: Age differences in pinging behaviour

C. Cycling experience

Our sample included mainly cyclists with more than three years of experience with cycling in the BCR. The results for inexperienced cyclists should therefore be interpreted with some caution. The next figure shows that for inexperienced cyclists conflicts may have a relatively smaller share in their experience of road safety (45% of the pinged locations are about conflicts and stress and emotion) than cyclists with 1 to 3 years cycling experience (55% of the pinged locations are about conflicts and stress and emotion). Among experienced cyclists, the proportion of conflicts and stress was in between (51% of the pinged locations are about conflicts and stress and emotion). It would be

interesting to investigate what this difference is. A possible explanation is that inexperienced cyclists initially cycle more careful and avoid conflicts very carefully, but after a while they are more assertive and therefore also confronted with more conflicts. After three years of cycling experience, cyclists may be able to cycle better proactively or they may not find some conflicts sufficiently bad to ping ahead.

Table 15: Pinging behaviour related to cycling experience

	Cycling experience		
	< 1 year	> 1 year < 3 years	> 3 years
Number of persons	19	93	228
Number of pinged locations	302	2797	8744
Number of pinged locations per person	16	30	38

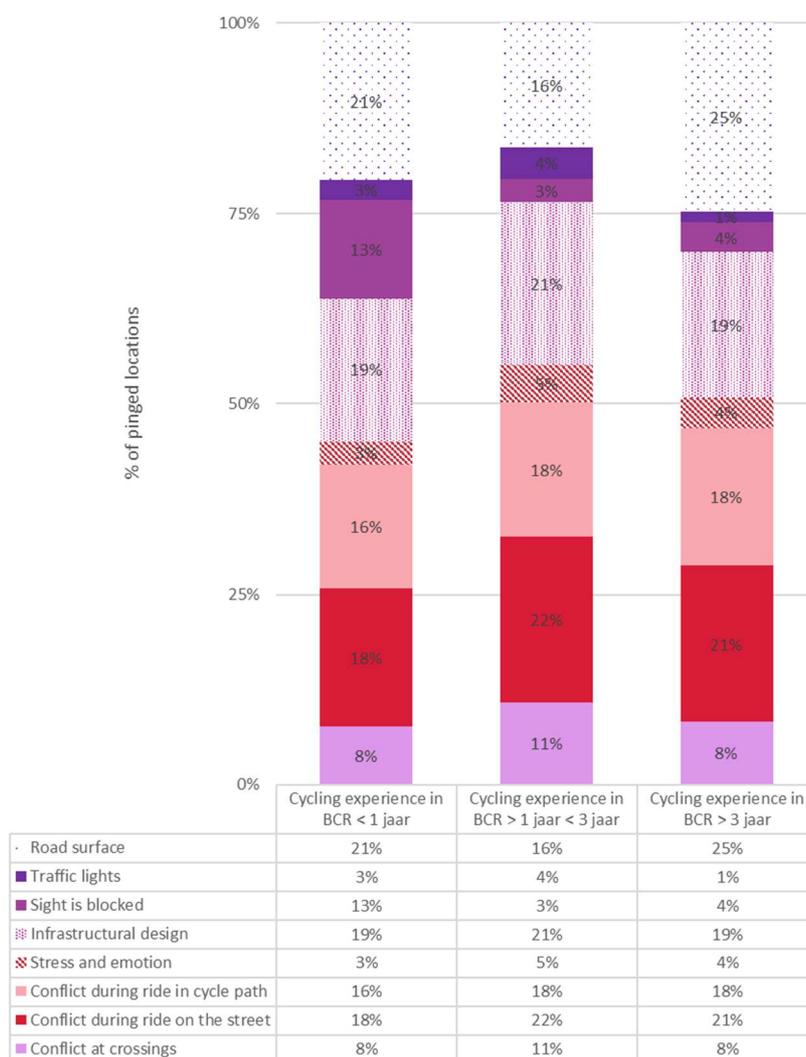


Figure 21: Pinging behaviour related to cycling experience

D. Place of living and working

Finally, we look at the differences related to the home and workplace. For students this is the place where the students study. Most participants lived **and** worked / studied within BCR, so again some caution is required with interpreting the results. Next table shows that participants who do not live in Brussels were equally active within the Ping project as participants who live in Brussels (average 37 vs. 35 pinged locations per person). The experience of road safety was also fairly similar for both groups. Those who do not live in BCR have relatively more locations where the infrastructural design was an issue (24% of the pinged locations are about infrastructure for non-residents versus 19% of the pinged locations for residents). Even those who did not work in BCR had relatively more problems with the infrastructure than those who did work in BCR (28% of the pinged locations of employees / students outside BCR versus 18% of employees / students within BCR). A possible explanation is that people who often come outside of BCR compare the infrastructure for cyclists with other places in Belgium.

Table 16: Pinging behaviour related to home and work place

	Living		Working/Studying	
	In BCR	Outside BCR	In BCR	Outside BCR
<i>Number of persons</i>	309	44	314	39
<i>Number of pinged locations</i>	10698	1633	11003	1328
<i>Number of pinged locations per person</i>	35	37	35	34

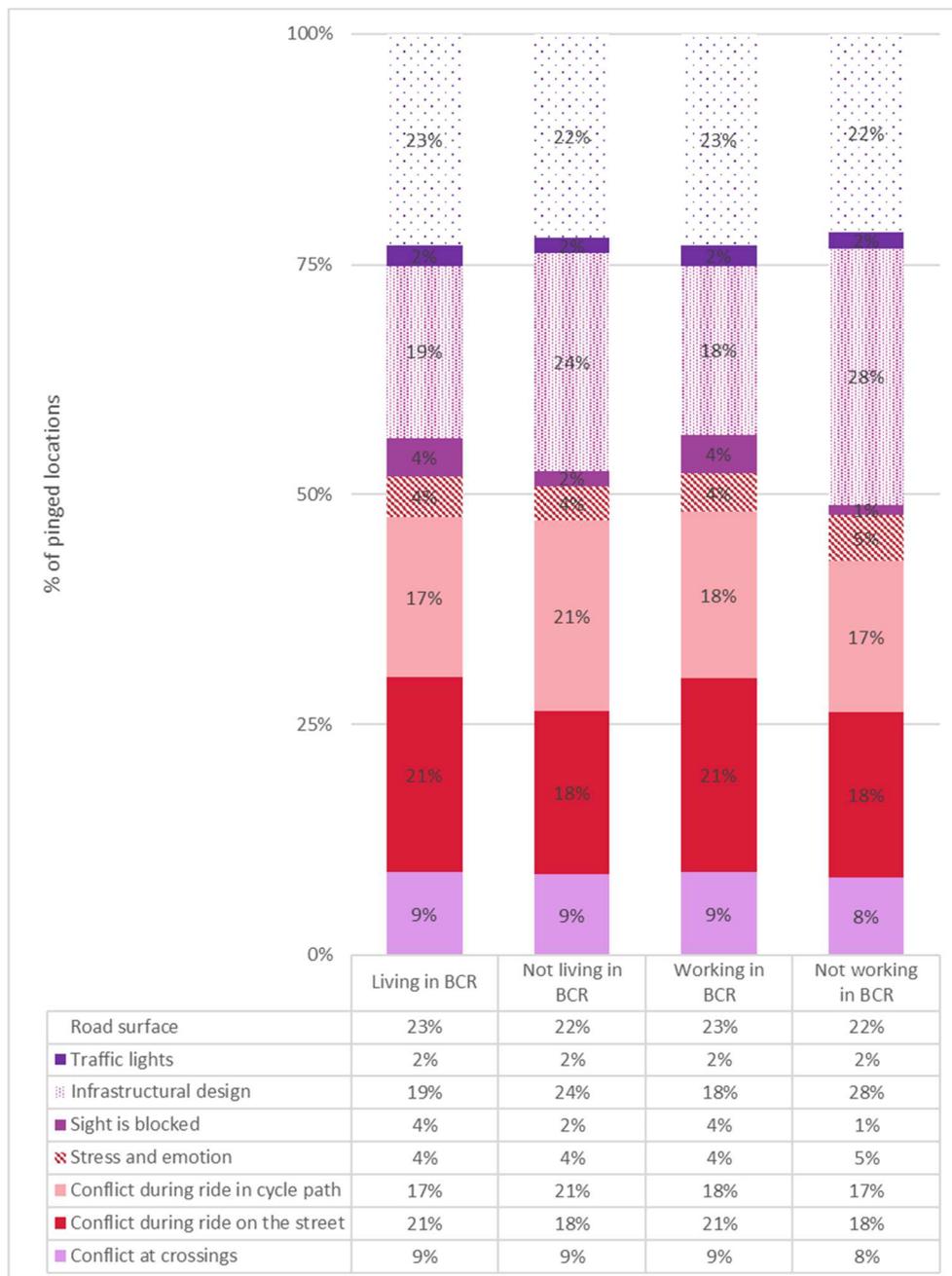


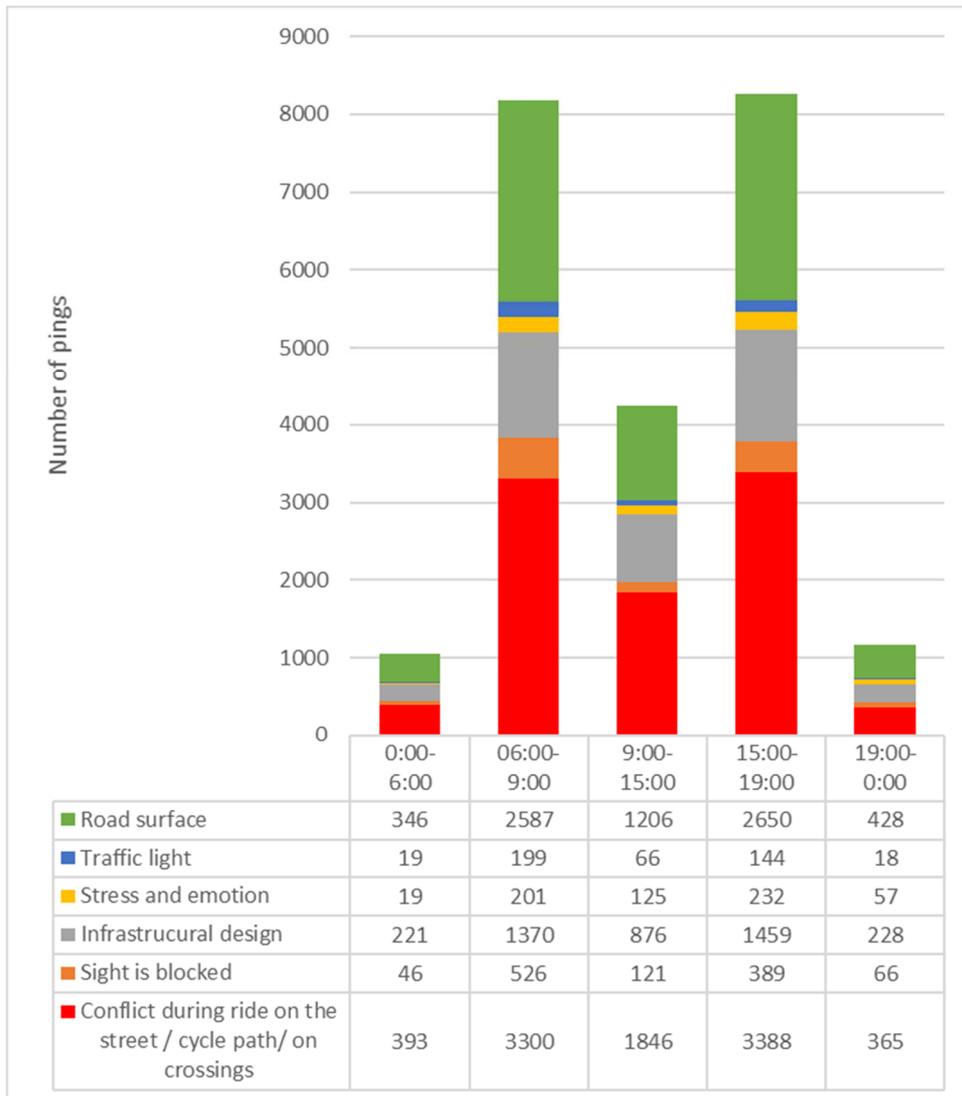
Figure 22: Differences in pinging behaviour related to home and work place

6.4 Research question 4: How does the feeling of insecurity in cycling in Brussels vary according to different times of the day?

To check whether there are other safety problems for cyclists when cycling inside and outside the rush hour and during the day at night, the ping data were analysed on the course of the day.

The total number of pings peaks in the morning between 6.00 and 9.00 and in the evening between 15.00 and 19.00. In general, the problems were not dependent on the time of day: The lack of (clear) cycling infrastructure, problems with traffic lights and sight is blocked are problems that are identified

at any time of the day. After 7 pm, traffic is of course less busier: In addition to a general decrease in the number of pings, relatively fewer conflicts are pinged (conflicts make up 30% of the pings after 7 pm versus 40% of the pings during the rush hour).



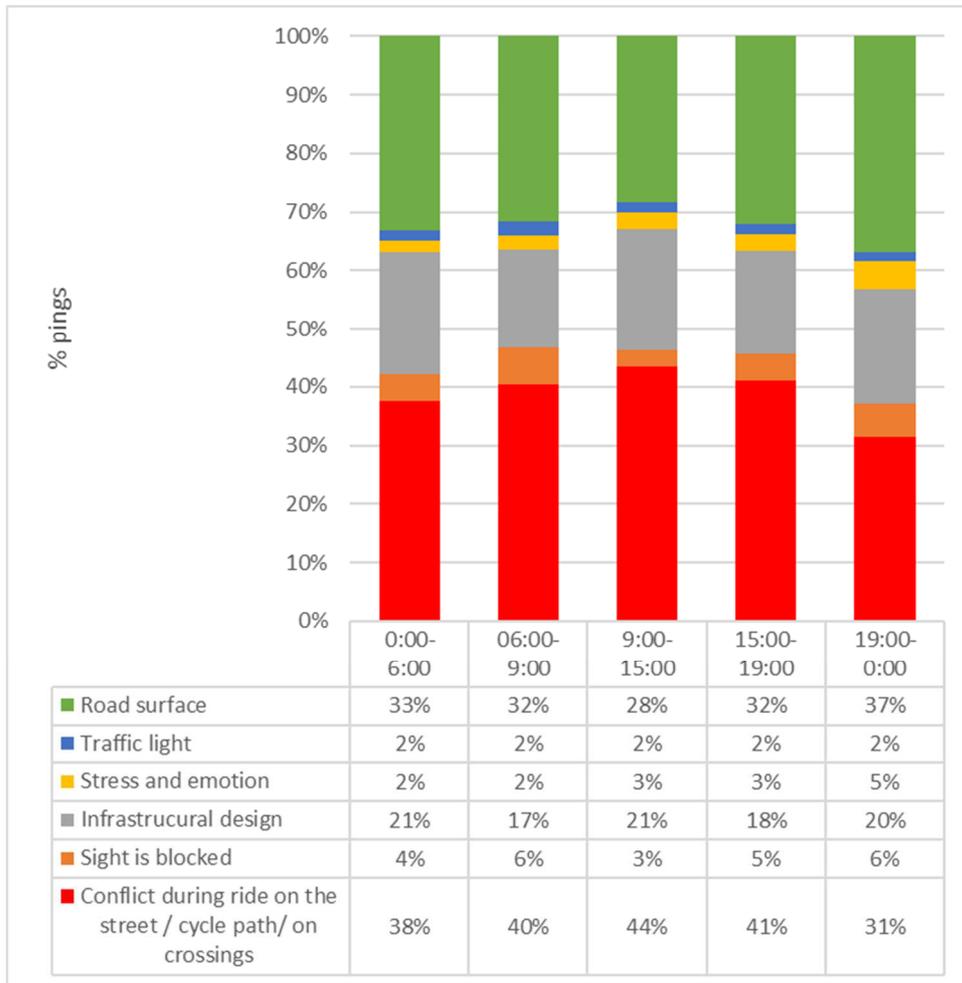


Figure 23: Pings related to the time of the day

5. Recommendations

7.1 Road surface

The category of road surface was the most pinged category, in number of pings. Potholes and cracks in the road surface were a major concern for the participants. These data are forwarded to Fix My Street. In order to recognize the participants in this, it is advisable to observe the follow up with Fix My Street and to communicate about this with the participants.

7.2 Conflicts on crossings

The combination of car and bicycle traffic at intersections creates many conflicts. The three most common types of conflict are Cutting in, blocking passage and turning right without looking.

We recommend enforcing cyclists' priority on other road users at intersections using visually separated or protected bicycle facilities. These measures make the bicycle network not only safer, but also more visible and attractive for new cyclists.



Figure 24: Figuur 32: Vorstlaan / Charle Albertlaan: difficult to see the sign indicating the two-way cycle path.

The crossroad between the Vorstlaan and the Charle Albertlaan is a point with many conflicts. In the Vorstlaan, 42% of the pings within this category are about 'blocking passage' and 31% about 'no priority (other road users who wrongfully enforce priority)'. Car drivers should be warned about a two-way cycle path when crossing them, with extra, clear and easily visible signs. Motorists tend to be surprised by cyclists cycling against the direction, even if it is permitted. Vertical signs, bicycle symbols and arrow markings on the road and a center line help to warn drivers of cyclists riding in both directions when crossing them.



Figuur 2: Voorbeeld van een afgeschermd kruisingen voor fietsers

As far as tackling conflicts on crossings are concerned, there are clear guidelines and recommendations in the Brussels bicycle vademecum (<https://mobilite-mobiliteit.brussels/nl>).

There is also a great deal of expertise available in the Brussels Region to tackle bottlenecks in the various bicycle organizations: Fietsersbond, Gracq, Pro Velo. They have already issued ready-made recommendations for various bottlenecks in the Brussels Region.

7.3 Conflicts during ride on the street

Cyclists in Brussels do not only experience conflicts on crossings, but also during a ride on the street. Again, it concerns motorists who do not give the cyclist the necessary place in traffic or do not notice the cyclist during a manoeuvre.

These challenges can be tackled by means of road markings (Van Houten & Seiderman, 2005). For example, in mixed-traffic bicycles, use can be made of shared lane markings that clearly indicate the position of cyclists. Road markings can also help reduce accidents with sliding car doors.

The Troonstraat has a high number of cyclist passing, but also has a lot of conflicts. It concerns 42 pings per km within the category 'conflict during a ride on the street' (21 participants pinged this category). This mainly concerns the lack of space as a cyclist on the road (48% of the pings), and Lack of distance when overtaken by a vehicle (19% of the pings).



Figure 25: Current situation Troonstraat



The next edited photo shows the idea of increasing the visibility of cyclists by other road users by using lane colours to help to reduce the conflict between different road users.



Figure 26: Troonstraat – possible solution

Road markings can reduce conflicts when driving on the street by:

- increase the distance between the cyclist and adjacent parked cars
- increasing the distance between cyclists and moving cars.
- reduce the aggressive behaviour of car drivers.
- encourage correct behaviour of cyclists and good positioning on the road

As far as tackling conflicts during a ride on the street is concerned, there are clear guidelines and recommendations which are suitable for the situation in Brussels in the Brussels bicycle vademecum (<https://mobilite-mobiliteit.brussels/nl>).

There is also a great deal of expertise available in the Brussels Region to tackle bottlenecks in the various bicycle organizations: Fietsersbond, Gracq, Pro Velo. They have already issued ready-made recommendations for various bottlenecks in the Brussels Region.

7.4 Speed-inhibiting measures

Cyclists are more vulnerable (less protected and slower) than other road users. We therefore recommend limiting the speed of traffic, especially at intersections and important bicycle routes, to the speed of cyclists. The more places where there is a limit of 30km/h, the better for road safety for everyone (Pucher & Buehler, 2008).

7.5 Conflict during ride on a cycle path

Cyclists experience a lot of conflicts when driving on the bike path. This concerns the improper use of the bicycle path by other road users. We recommend not only to focus on addressing these conflicts via infrastructural measures but also through **courtesy campaigns** where respect for the other road users is central.

As far as tackling conflicts during a ride on the cycle path is concerned, there are clear guidelines and recommendations which are suitable for the situation in Brussels in the Brussels bicycle vademecum (<https://mobilite-mobiliteit.brussels/nl>).

There is also a great deal of expertise available in the Brussels Region to tackle bottlenecks in the various bicycle organizations: Fietsersbond, Gracq, Pro Velo. They have already issued ready-made recommendations for various bottlenecks in the Brussels Region.

A. Niveauverschil of gebruik duidelijk verschillende materialen

Making a difference in level between cycle path and footpath, or between bicycle path and car lane, or using clearly different materials can prevent conflict between pedestrians and cyclists, but also ensures that car drivers will not be able to park on a bike path, etc .. It makes it more clear to road users when they leave their own 'zone' and are on the zone of another type of road user.

67% of the people who pinged the Wetstraat within this Conflict category did so for pedestrians on the bike path. 75% of the people in this category on the Steenweg to Ghent and 94% of the people in the Dansaertstraat pinged because of a parked car on the bike path.

A photo of Google streetview even gives a good example of a conflict when driving on a cycle path in the Wetstraat. There is no clear difference between footpath and bike path. It is also clear that both pedestrians and cyclists in the Wetstraat have insufficient space.

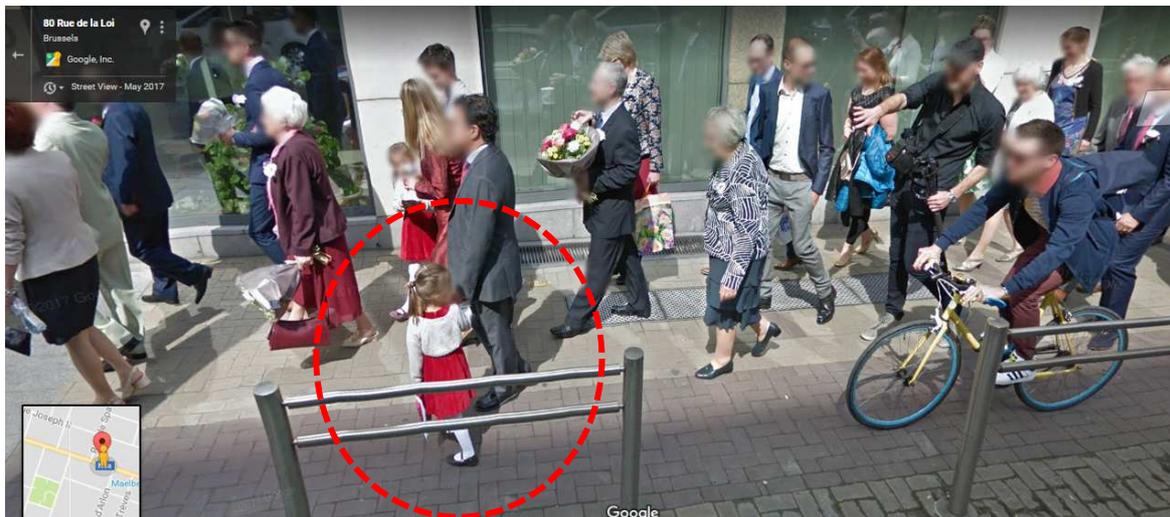


Figure 27: Google streetview picture Wetstraat

The following photos provide possible solutions that can prevent or reduce conflicts.



Figure 28: Level difference



Figure 29: Use clear different materials / colors.

The following photo gives an idea of how defining a footpath can take place next to a bicycle path. One way to achieve this is to create a difference in surface level between the two zones.

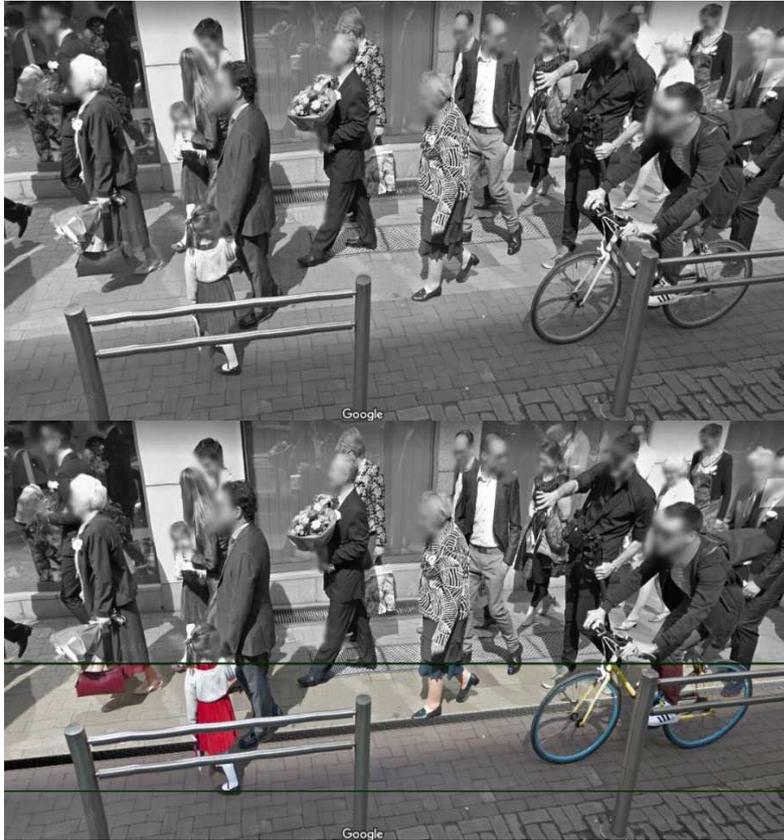


Figure 30: Difference level footpath and bike path in the Wetstraat

B. Effective width bicycle path

Effective width refers to the usable width of a bicycle facility and depends on how the space of the cycle path is limited. It is important to make this distinction because the cycling experience depends more on the effective width than the actual width. Designers have to take into account sufficient effective width, so that all cyclists (experienced and less experienced) feel that they have the appropriate space to cycle comfortably. The presence of effective width also contributes to reducing stress during cycling. The photographs of the Wetstraat above speak for themselves.

On the Steenweg to Ghent, cyclists have to cycle just next to the tramway, with a clearly too limited effective width.



Figure 31: Steenweg to Ghent

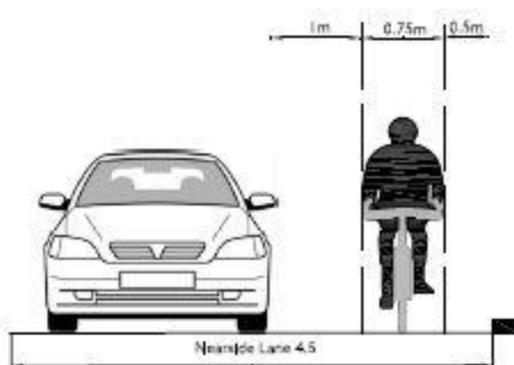


Figure 32: Effective width / distance with other road users

C. Create soft boundaries

The parking on the bike path was pretty much pinged when it was about conflict on a bike path. Separating cyclists from motorized traffic with soft boundaries is a practical way to offer cyclists safety, reduce stress during cycling and increase the visibility of cyclists by other road users. Moreover, it helps to prevent cars from parking on the bike path.

This can be solved by creating a clear soft boundary or a distinction between parking and bicycle zones. This can be achieved by using different barrier-like (road markings, low speed bumps, reflective plastic pylons), making a differentiation on the pavement material, etc.



Figure 33: No clearly defined parking lane in the Antoine Dansaertstraat

The next edited photo shows how parking zones can be defined and made clear by using different road surface textures and road markings.



Figure 34: Example marked parking zone next to cycle path Dansaertstraat

7.6 Campaigns and enforcement

In addition to speed-reducing measures and other infrastructural measures to increase road safety for cyclists, behavioural change campaigns can also increase road safety for cyclists. Thanks to the ping project, the locations where this kind of campaigns were most useful were identified. One of the most frequent peed conflicts was a parked car on the bike path. An annual awareness campaign linked to a

targeted police action in which parking on the bike path is punished is a very effective method to reduce the number of cases where a car driver parks on the bike path.

HOW WOULD YOU LIKE IT IF A BIKE WAS PARKED IN YOUR LANE?

Help share our roads. Please don't park your car in a bike lane.



Figure 35: Example campaign material awareness about parking on the bike path (Source: Spacing)

Another important conflict was Not enough space given. Here, a campaign with temporary road markings that indicate the cyclist's place can be a good solution, as is remembering people to the legislation on how much space there should be between a car and a cyclist according to the law. In a campaign, with temporary road markings, test settings with bicycle streets can also be considered, in which it is made clear that cars are not allowed to overtake cyclists. A good starting point for such a campaign are those streets in which there is not enough space to overtake cyclists in a safe way. By evaluating the test set-ups, it can be decided in an evidence-based manner whether the temporary markings or bicycle streets increase road safety for cyclists before they are finally made.



Figure 36: Example campaign material sensitization around the provision of space (Source: City of New Brunswick)

7.7 Tram tracks on the road

According to our study, 1 in 7 participants were annoyed by the tram tracks. In the design of tram tracks on the road, special attention must be paid to the safety of the cyclist, because this contributes to the risk of a bicycle crash. Physically separated tram tracks (own bedding) are preferred over tram tracks on the road. It is not only advantageous for cyclists, but also for public transport companies, because it can improve the commercial speed of the vehicles (Vanparijs, Panis, Meeusen, & de Geus, 2015).



Figuur 3: Vorstlaan / Herrmann Debrouxlaan: tramsporen

Be sure to check out the possible design solution proposed by Roderick Buijs' and Ward Kuiters (<http://road.cc/content/news/215067-device-answer-tram-track-danger-cyclists>).

7.8 New Ping campaigns

A. Expand with the same group

The enthusiasm to participate and ping of the Ping participants was big. This enthusiasm must be maintained. The unique project in Brussels receives much attention in Brussels, Belgium and abroad. The use of feedback from residents, crowd-sourcing in combination with the collection of data ensures that evidence-based policy is possible in the Brussels-Capital Region.

With a continuation of the Ping project, we can check whether it is a reconstruction, a campaign, a better information flow or the pushing of certain routes, that has an influence on the cycling experience and the subjective road safety.

The Ping pilot project was started with the idea of learning from it, tackling road safety and adjusting the follow-up process. It was never the ambition of the Secretary of State Debaets' cabinet to launch a one-off project without a follow-up. We recommend that Ping if you care is included as a regular part of an annually recurring campaign. Ping if you care fits within the ambition of the BCR to work on 'Smart cities' and the wide 'Bike for Brussels' campaign, which focuses on a liveable and accessible environment.

B. New target group

Further research into the objective and subjective road safety for specific target groups is recommended. A Ping campaign with new target groups, e.g. Ping with e-cyclists, or specifically with people who cycle with children, can help the policy to expand an integrated (road safety) policy in the Region. A subsequent Ping campaign can focus on under-represented groups from the past campaign.

Ping can also be used to measure appreciation in pedestrians. Appreciation of the public space, of the pavements, of road safety ...

C. New categories

The emphasis in the current campaign was on road safety for the cyclist. Participants pinged when something did not meet in terms of safety for the cyclists. Based on this, the categories were chosen and added to the app. These used categories are not at all fixed. Completely different categories can be created, depending on the objective of a campaign. Ping can be used to learn from positive feedback, for example when evaluating a redesign: this is fine, beautiful, safe, positive

Ping can also be used to keep the community warm and use it in a playful manner. Ping when you heard a cyclist singing on the bike - Today there were 800 singing cyclists in the Brussels Region!

7.9 Further research

There is much more information to be gained from the pings and the tracks that were collected, which was not included in this assignment, certainly linked to existing research and projects. That is why we are happy to present the following research questions for the next research.

- In order to objectify the (subjective) insecurity of the ping data, it is interesting to be able to place these figures next to the accident figures. Is the feeling correct with the numbers?
- Several figures indicate an increase in bicycle crashes, related to an increase in bicycle use. What about the e-bikers at the pingers? What is their sense of insecurity? Are they pinging more? Different?
- There is a regional bicycle network. This network could be placed next to the heat map to see how this bicycle network is used. And whether a lot or little is being pinned there.
- Intensively used bicycle routes also have some pings. What about the less used routes? What are the reasons for this? Is this unsafe? Or is it not the shortest way? Or the most pleasant way? Where else should extra be invested?

References

Pro Velo. (2017). *Het Brussels fietsobservatorium*.

VIAS. (2018). *Verkeersveiligheidbarometer 2017*.

Pucher, J., & Buehler, R. (2008). Making Cycling Irresistible: Lessons from The Netherlands, Denmark and Germany. *Transport Reviews*, 28(4), 495-528. doi:10.1080/01441640701806612

Van Houten, R., & Seiderman, C. (2005). Part 1: Bicycles: How Pavement Markings Influence Bicycle and Motor Vehicle Positioning: Case Study in Cambridge, Massachusetts. *Transportation Research Record: Journal of the Transportation Research Board*, 1939, 1-14. doi:10.3141/1939-01

Vanparijs, J., Panis, L. I., Meeusen, R., & de Geus, B. (2015). Exposure measurement in bicycle safety analysis: A review of the literature. *Accident Analysis & Prevention*, 84, 9-19.

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