

Increasing car prohibition in cities and promoting bicycle use: International Comparison of Mobility Policies in the Post-Covid Era

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Abstract:

As climate change has become an indisputable reality, cities around the world are facing a growing number of challenges to preserve - and even improve - the quality of life of their citizens, while minimizing their environmental footprint. There are many ways to achieve the latter goal, but it is in the area of mobility that municipalities have the best chance of rapidly reducing their carbon footprint. Cities have then different options: restrictive (or even punitive) policies, encouraging policies, or a combination of both. As restrictive policies, Low Emission Zones (LEZs) –areas where some vehicles are not allowed to get in depending on their emission of gas-, for example, have seen their number soar in recent years. Mainly deployed in European cities, these zones prohibit access to the most polluting vehicles. Even more recently, and especially during and after the Covid era, bicycles and other light means of transport (together called *Active Mobility*) seem to be gaining in popularity around the world. There are many reasons to explain this new popularity, but it does not necessarily appear to be a direct result of policies that benefit these transportation systems. On the contrary, the lack of infrastructure sometimes coupled with an apparent disorganization in policies still hinders some users from making the transition to light and non-polluting means of transport. This paper will study several cities through their policies and confront it to active mobility user's mind. By doing so, we will be able to reveal some contradictions between policies and user's reality, as well as inadequateness in even crucial areas such as road safety.

Keywords: *Low Emissions Zones (LEZ), bicycle, public policies, active mobility, sustainability*

1. Introduction

Being a European citizen during the Covid-Era was particularly surprising in term of everyday life scenery. For a time because of the lockdown, the streets and the roads seemed to be nothing more than deserted stretches of tarmac, abandoned by the cars that used to drive over them all the time. But when the lockdown was over, the tires that now rode the big black stripes were not the same: bikes and other electric scooters seemed to come out of nowhere to take over the streets and overturn a long-established order. However, this new phenomenon had its roots in many causes more or less related to Covid. As a direct cause of the pandemic, the attraction of exercise and fresh air

were, for example, arguments that played a major role in favor of cycling after several months of being cooped up at home.

Other factors such as rising petrol prices, the multiplication of restrictive policies for cars, or the awareness of the environmental emergency were other vectors of change, more or less linked to the territories and the policies applied. Between 2018 and 2020, almost 200 new Low Emission Zone have for example been planned around the world for the between 2022 and 2023 (Figure 1).

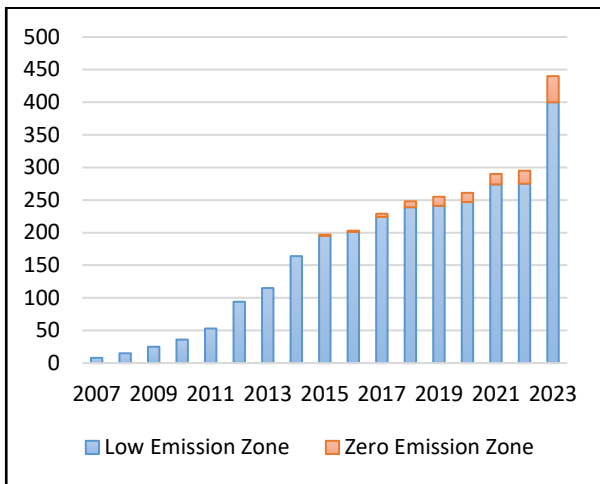
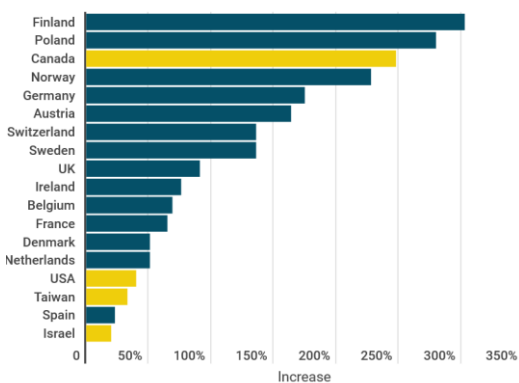


Figure 1 Anti-automobile policies rising through LEZ and Zero-EM across the world (Source: Belliard L)

But while active mobility (bicycles, light electric vehicles) seems to have the wind in its sails, as the evolution of number of requests for bicycles routes shows it very well (Figure 2), the question of how to sustain this new wave of mobility seems more and more pressing. Because even though active mobility presents a lot of advantages in term of environmental impact, social life, and quality living environment, many issues relating to road safety, mobility habits, and more generally, the future of urban transport, now seem particularly linked to active mobility.

Increase in requests for cycling directions on Google Maps, February to June 2020



dark blue: European countries, yellow: extra-European countries, Source: Google

Figure 2 Increase in requests for cycling directions on Google Maps, Feb to Jun 2020 (source: velo-city2021.com)

Recently, a lot of research and articles tend to deal with the mobility habit changes caused by the Covid crisis (Macharis C, 2021), (Dusong C, 2021), but very few are actually taking in count the perspective of the new users and use it as a crucial factor in the recent changes.

Thus, this paper will try to highlight some key points of the different policies in order to oppose

these to the perspective of the users and non-users. By doing so, we aim to improve the existing policies, in order to develop this active mobility boom, extend it, and consolidate a new paradigm, that might be crucial for a tomorrow's sustainable city.

2. Methodology

The first part of the study was focusing on the different mobility policies deployed before, during, and after the Covid crisis in different cities and territories (Paris, RBC, Stuttgart). Here, RBC means *Region Brussels Capital*, which designates the region surrounding the city of Brussels and the city itself. Although the three localities have different basic contexts, (the modal share of bicycles in Stuttgart was almost 15% while that of the others was less than 5%), all of these areas have been affected by a new boom in active mobility. In addition to the classic data collection work, interviews were conducted with three key figures in mobility in their respective cities in order to better understand the political strategies of the different territories. Boris Nasdrovisky, regional manager Active Mobility (Walloon, Belgium). Cécile Honoré, in Charge of Active mobility transition (Paris, France). Patrick Daude, Project Manager for Urban Mobility (Stuttgart, Germany). In order to put the different data and information collected during this first stage into perspective, I then carried out some basic cartographic studies on QGIS in parallel with a first analysis phase. Finally, a last part is consisting in a same questionnaire carried out in two different regions: Paris and RBC. The survey consists of 11 closed multiple choice or single choice questions, plus one last open question like shown on Table 1. The choice of Paris and RBC is explained by the fact that, after studying the interviews previously conducted, the two territories opt for quite different policies both in form and in substance concerning the development of active mobility. The questionnaires were then shared through local social networks and forums on internet. Finally, a semantic analysis will be done with the software Tropes 8.5 for the open questions.

3. Policies study

It appeared during the interviews and parallel studies, that the three territories studied could sometimes present quite different positions on the issue of integration and development of active

mobility.

(1) Paris

In Paris, the development of active mobility is openly pushed to a very high degree and coupled with very restrictive policies for cars, especially since the beginning of the Covid crisis:

- The entire city is being converted to a 30 km/h zone by 2021.
- An increasing number of streets are closed to cars since 2019.
- Public parking is becoming increasingly expensive and strikes are issued by private companies since 2020.
- Since early 2022, all motorbikes will have to pay for public parking spaces (previously free).
- In 2024, the Paris LEZ will prohibit access to diesel vehicles and in 2030 to petrol vehicles.

In addition to these more or less restrictive policies, the continuous development of active mobility lanes (figure 3) and infrastructure is also a break to cars because some roads are reduced or even sometimes exclusively reserved to active mobility, as it is already the case for the famous “Rue de Rivoli” in the center of the capital.

With almost 1200Km of bicycle lanes in 2022, Paris active mobility network is one of the most developed in Europe when these lanes actually represent almost 70% of the road network’s length (1625Km). Also, during the Covid Era (in 2021), the most important cycling infrastructure project in French history has been decided and work has even begun: the RER V (for Bicycle Express Regional Network). With 600 km of new or renewed runways, this project aims to efficiently link Paris to the nearby and distant suburbs (Figure 3). On the figure, the project concerns all the lines besides the ones inside Paris (clear grey).



Figure 3 The map of RER V project

To deal with road safety, the policies are focusing on the different infrastructures able to protect more the active mobility users such as separate lines,

adapted signals, or reduce cars speed limits.

Clearly said and confirmed by Mrs. Honoré, the French capital is therefore adopting a very direct strategy, in which compromises are rarely made and in which the abandonment of the car in favor of public transport or active mobility - all the more so at a time when petrol prices are exploding - looks more and more like a matter of constraint than of a purely personal choice.

(2) Brussels Region Capital (RBC)

In Belgium, Mr. Nasdrovisky was much more measured in his approach to anti-car policies. He also insisted on the importance of the citizen's contribution in the transition towards active mobility. Indeed, the restrictive policies against the car are almost non-existing and even the Low Emission Zone deployed has a less restrictive pace: end of gasoline in 2025 and end of petrol in 2036. Meanwhile, a large number of pro-cycling policies have been deployed recently. For example, in addition to the usual subsidies for the purchase of a new bicycle (electric or not), the RBC created a bicycle grant plan for all company employees in 2020. This allows employees to earn money (paid by the company) for each kilometer they travel on their home-work and work-home journeys (0.27 cent/Km). If the company does not set up the plan, the cyclist can still benefit from a tax reduction of the same value as the plan. For a total of 10 Km par day, the cyclist would for example earn 550€/year. In terms of cycling infrastructure, too, RBC does not seem to be on the same level as Paris. With "only" 260 km of cycle paths in 2022, but quite a gap compared with 2018, the total still represents 15% of the road network (figure 4).

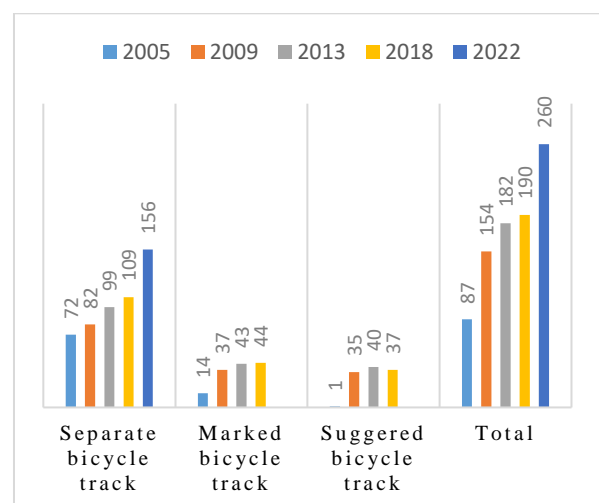


Figure 4 Evolution of RBC bicycle lanes length (in Km) (Source : RBC)

The development of separate bicycle tracks is defined, just like in France, as a priority in order to improve the use conditions and more importantly, the safety of active mobility users. Finally, the development of active mobility in RBC is much more a matter of democracy than in Paris: the public authorities work closely with various user and citizen associations to try to improve the system since the end of the Covid crisis. In parallel, several associations and organizations of cyclists are very involved in the development of active mobility in the European capital.

(3) Stuttgart

The case of Stuttgart will only be briefly considered here to give a quick overview of a third case, different in both basic context and policies. Indeed, the bicycle culture in Germany, just like in Holland or in Denmark, was way more developed even before the Covid crisis compared with many other European countries. But even though the goal of reaching 25% of bicycle in the modal share within the next 8 years, the policies are quite looking like the ones deployed in the rest of Europe: in 2018, the budget for developing active mobility has been doubled, the upgrade of existing bicycle lanes and installation of new infrastructures are the main goals. A part of the budget should also be used to financially support the families aiming to buy electric cargo bikes or other complex bicycles. Stuttgart's project finally includes an expansion of its "fast cycle tracks" by the 5 next years (figure 5).

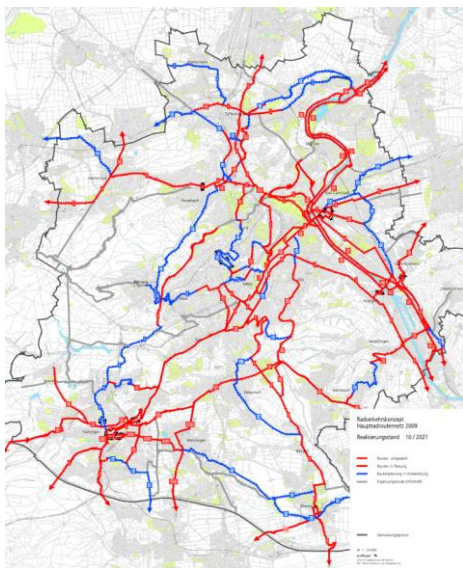


Figure 5 The full fast track project in Stuttgart

These new tracks (in blue on the map) will come in addition of the already existing more than 100 km

of express lanes (in red on the map) and connect the city with more distant suburbs. Stuttgart is also the only one of the three cases where part of the active mobility policy directly concerns public bicycle parking and storage areas, especially as "safe" and "protected" areas.

Finally, all of the cities surveyed took advantage of the crisis to offer "temporary" or "pop-up bicycle lanes" and then made most of them permanent. At first represented as alternatives to public transport to avoid the spread of the virus in enclosed spaces, these lanes have been a real launching pad for many new cyclists. Also, the three speakers all emphasized the need to extend the active mobility network beyond the borders of the "mother city": a political will that is concretely embodied in the RER V projects in Paris, "fast tracks" in Stuttgart, and which is naturally so by the nature of the CBR in Brussels.

4. Findings

Table 1 Questionnaire characteristics

<p>Conducted online between: 05/09/22 - 08/09/22 Total number of entries: 197 (117 for Paris, 80 for RBC) Total number of open question entries: 83 Questions :</p>
(1) Your age...
(2) Your gender...
(3) In which geographical area are you located?
(4) How often do you use active mobility (bicycle, electric scooter, electric bike, etc.)?
(5) Which mode of active mobility is important for your journeys?
(6) If active mobility is not enough to make the whole trip, what complementary means of transport do you use?
(7) How long have you been using active mobility?
(8) Do you think that the various policies in favor of cycling in Ile de France (or in RBC) have had/have/will have an impact on your use of active mobility?
(9) In your opinion, what are the ways (policies) to be used to improve the conditions of use of active mobility?
(10) How do you perceive the evolution of the conditions of active mobility users over the last three years?
(11) Could the rise of hydrocarbon prices and the development of anti-car policies lead you to stop using the car in favor of active mobility?
(12) Do you have any comments or ideas about the evolution of mobility towards a non-carbon model? Things to improve? New policies to implement? 150 words max. Optional. Open question.

The profile of the respondents is quietly the same in the two areas: 40% and 41% of women respectively in RBC and Paris. The age, however is quite different when 50% of the respondents in Paris are between 20 and 39 when the same age

group in RBC only represents 37%: the part of 40-49 is more important there (30% against 22%). It was also interesting to observe that, for the open question, 41 of the answers came from the RBC questionnaire (51% of the respondents), somehow showing a greater involvement, when only 35% of the Parisian respondents (42 answers) took the time to answer to it. This difference in involvement can be explained by the fact that the proportion of regular (more than 2 times a week) active mobility users is highly higher among RBC respondents than among Parisian respondents (Figure 6), question (4).

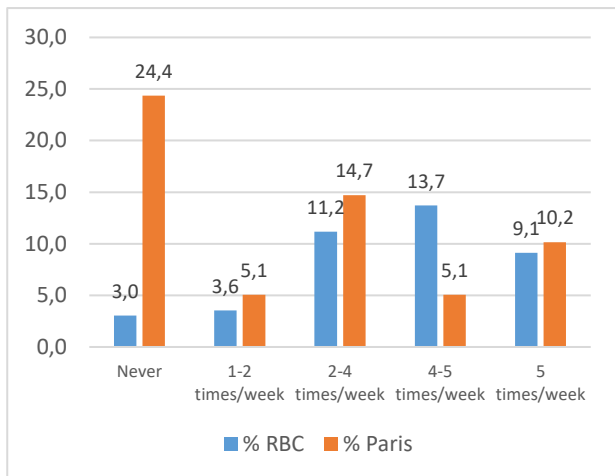


Figure 6 Profile of respondents in term of frequency of use of active mobility for work or school commuting (in %)

(1) Road Safety issue

Whether the respondent is a regular active mobility user, an aspiring one, or a non-user, road safety seems to be the most important point to improve in the current conditions. To the question (9), 81% identified *improving safety conditions for active mobility users* as a "Very important" improvement (Figure 7).

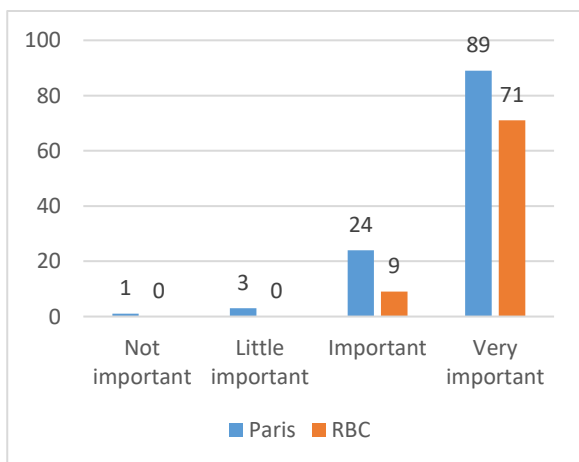


Figure 7 Importance of road safety improvement

A reflect of a feeling of insecurity for the road users, surely due to the explosion in the number of accidents in the two territories (Figure 8).

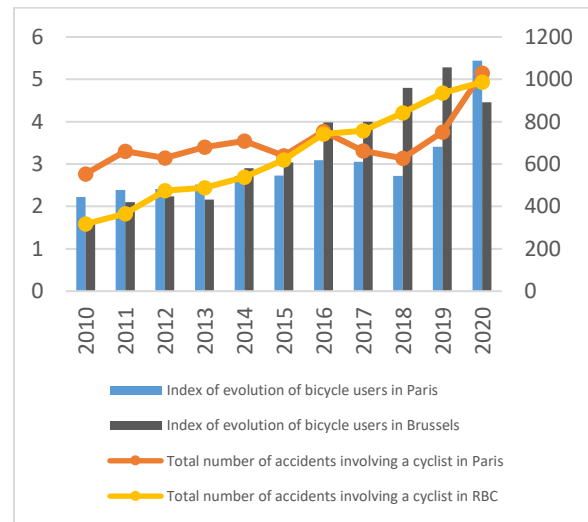


Figure 8 Evolution of bicycle users and accidents in RBC and Paris (Source: Paris, RBC data)

But while public policies mainly try to address the problems related to road incidents with safer infrastructure, such as segregated lanes, respondents prioritize another cause: behavior.

(2) Behavior and education

The open question (12) was very helpful in order to focus on the importance of behaviour in road safety and clearly spot the inadequation between the policies focusing on the infrastructures as an answer and the users pointing out a complete other issue. With 83 entires and an average of 28 words per answer, a semantic analysis revealed crucial points related to safety perception.

The analysis first revealed that "tracks", appeared 33 times in the answers. When shown on the graph (Figure 10), we can see that there is a light correlation with the concept of security and few linked concept beside "policy". On the other hand, 42 references to "behaviour" linked to notions such as disrespect, danger, highway code, and incivilities, were made. There is also a stronger correlation with the notion of safety (figure 11). More generally, "behaviour" is linked with many more words related to road safety than "tracks". Moreover, the analysis showed that out of 42 references to "behaviour", 11 people made a direct link with the need for education or awareness-raising among road users. This need is all the more relevant when one considers the new sharing of public space that is taking shape in view of the rise of active mobility. "Tracks" and "Behaviour" always appear on the right of the image because

these are complements in almost all the sentences: they are focused by the action.

Finally, while politicians seem to forget the challenge of educating road users, a study (Billot-Grasse, 2015) reminds us of the link between the beginner nature of a cyclist and the (higher) probability of an accident. Given the recent evolution of the number of active mobility users in Europe and the profile of the respondents (Figure 12), it seems crucial to address this gap as soon as possible.

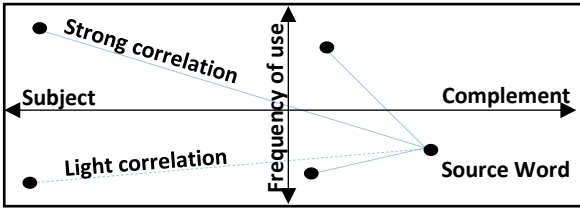


Figure 9 How to read graph

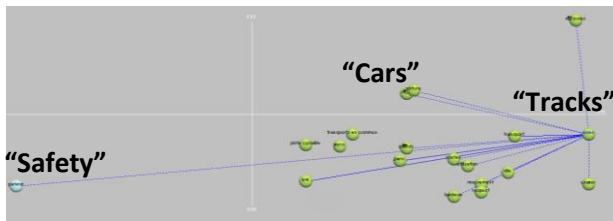


Figure 10 "Tracks" appearance and connections with other themes and terms (Paris and RBC)

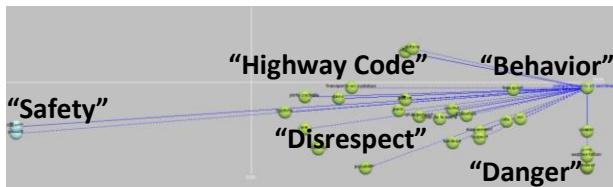


Figure 11 "Behavior" appearance and connections with other themes and terms (Paris and RBC)

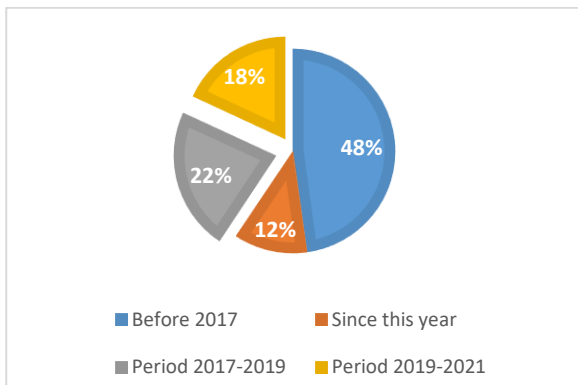


Figure 12 Experience of the respondents (Paris and RBC)

(3) Crime and theft

Another point that was particularly raised by respondents (especially from Paris and its suburbs) was crime and the risk of bicycle theft. 15 respondents mentioned the fear of having one's bike stolen, and this was even considered as an obstacle to making a transition to active mobility by five of them. In the diagram, it can be seen that the lack of "policy", "Bicycle" or "limit" (or "reduce") the act of theft have a strong correlation with "stealing". And while one respondent explicitly asked for parking boxes, it is also interesting that bicycle is the only vehicle are afraid to see stolen.

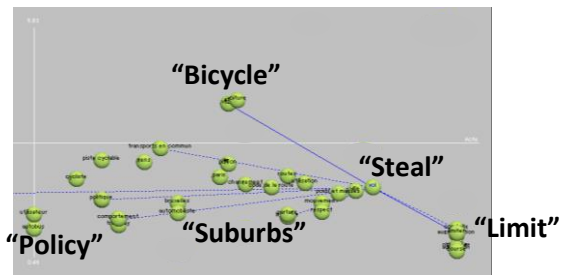


Figure 13 "Stealing" appearance and connections with other themes and terms (Paris and RBC)

Indeed, where a personal electric scooter is often foldable, less cumbersome and can therefore easily fit inside a building, bicycles are almost constantly left outside buildings, in the street, open to thieves. This is another issue that urgently needs to be addressed, especially when bicycle theft has never been as high in Europe as it has been in the last three years (Pizzardini Eddy, 2022). Solutions such as the small protected areas deployed in Germany or in many northern European countries could, for example, be used to protect bicycles.

(4) Restrictive policies

The question 11 has shown that the influence of restrictive policies for cars has a rather limited impact on the choices made by Parisian road users (Figure 14). The simple fact of rising petrol prices seems to have a greater impact, and the two factors combined are the main argument. In the open question some people blamed LEZs and their purely punitive aspect, regretting the lack of alternative modes.

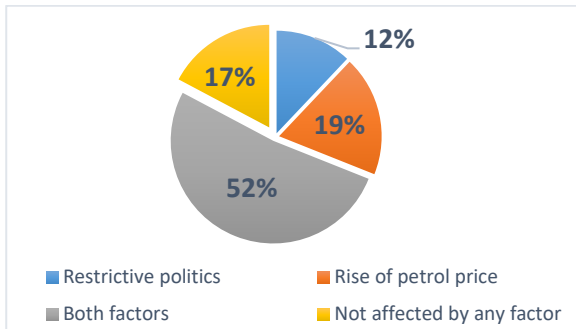


Figure 14 Main factors that could lead to the shift to active mobility or public transport (Paris)

(5) Democracy and satisfaction

In question 10, 92% of RBC respondents using active mobility at least 2 times a week for work or school commuting are defining as “good” or “very good” the evolution of using conditions since 2017. In France, only 73% of the same category of regular active mobility users define it as “good” or “very good” (Figure 15). A fact that echoes relatively well the pronounced desire for democracy and inclusiveness in the RBC mobility policy: the users, -even if there is still a lot to do like they liked to recall it in their open answers-, feel a tangible improvement in the development of their conditions.

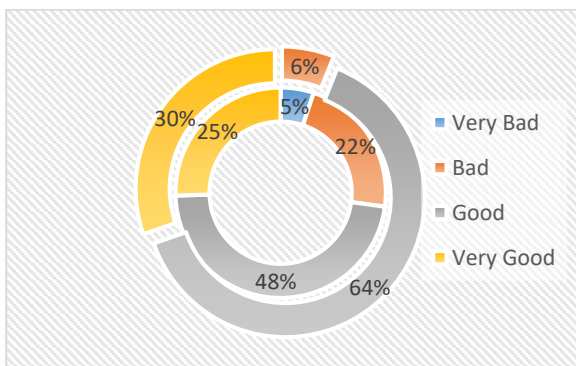


Figure 15 Perception of evolution of active mobility users (RBC in the exterior, Paris in the interior)

5. Conclusion

While in several European cities, notably RBC, the bicycle boom seems to be taking hold and continuing to develop a new movement based on active mobility, Paris is experiencing a drop in the number of cyclists: -27.4% in the number of cyclists in the first quarter of 2022 compared to the first quarter of 2021. Yet Paris is one of the cities that builds the most bicycle paths in Europe, and it is Paris that seems to make life difficult for cars... But by opposing the policies deployed to the user’s opinion, it looked quite clear that to do a lot is not to do well. Through their various answers, the road users have pointed out in a very relevant way several factors necessary for the sustainability of the development of active mobility: increased safety thanks to training and teaching of drivers and all road users, reduction of the risk of theft, etc. It also appeared clear that, since cycling or riding any light mobility system is a very personal experience, a more democratic and inclusive system is necessary in order to develop a judicious and efficient active mobility network.

6. Future research

Since this work has been realized in a brief laps of time, the author has not been able to collect a lot of data and the range of the questionnaire was quite limited. However, this first study proved the importance of having the opinion of active mobility users, notably when their perception might be opposed to some basic policies and bring another perspective to the different options we have to develop more the new and sustainable mobility habits. A second and way more important part is now remaining: an in-depth study focusing especially on active mobility user’s opinions on the infrastructure and services at a world-large scale. Also called cyclability (walkability for active mobility), this tool will then constitute the next step of my studies in order to finally, get an accurate view on the needs of active mobility users and fit this recent shift in the long term.

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