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Towards more just and inclusive streets:

Addressing the needs of Vulnerable Road Users (VRUs) with a focus on mobility justice

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Abstract

Considering streets only as infrastructures to get from point A to point B discredits their potential; streets are public space, and places of interaction between people, comparable to parks or squares. Streets are not just roads, but they have the capacity to host a variety of different uses and users, that means there are several types of road users which must be considered when designing public spaces. Notwithstanding, today most streets are dominated by cars, marginalizing and negatively impacting on those social groups that are less powerful in planning processes and street uses. These are often referred-to as Vulnerable Road Users (VRUs), although there is not universal definition or identification of which social group are included in this definition.

This thesis aims to provide insight on mobility justice and related concepts in street panning and use, the thesis focuses on who Vulnerable Road Users (VRUs) are, and how their contribution in collaboration with other stakeholders – municipalities, NGO's, policymakers, advocacy groups, etc. – is essential to develop plans and policies in the search to create healthier and more inclusive streets.

The main question that this study wants to address is: what are the needs of Vulnerable Road Users (VRUs) and how can these needs be prioritized in spatial and mobility planning? And in that sense, how can we develop more just and inclusive streets? The knowledge gathered is then applied to the analysis of the case study located in the Metropolitan City of Milan (MCM) and their Sustainable Urban Mobility Plan (SUMP), as part of the JUST STREETS project.

To gather the needed information, this thesis explores concepts related to mobility justice, shedding some light to the importance of justice achievement in urban environments. It also defines Vulnerable Road Users (VRUs) and examines recent research that targets them. To get practical insight about the needs of VRUs, qualitative knowledge was collected by: a) performing a series of 18 semi-structured interviews with academic research experts, policymakers/municipality members and advocates representing groups of users considered at risk in urban environments: b) contributing to the organization and analyzing the results of an international focus group done for the JUST STREETS project.

Ultimately this thesis sheds some light on the importance of justice achievement in urban environments for all road users by evaluating the outcomes of the qualitative data collection through a cross-coding process through the lens of three main dimensions of justice: distributional justice, procedural justice and recognition of justice.

The study offers conceptual and practical insights into the importances of including the needs of VRUs in urban planning, decision, policy and design making processes.

Keywords: mobility justice, vulnerable road users, just streets, mobility poverty, right to mobility, right to the street.

1. Introduction

This thesis stems from an internship at the LINKS Foundation, where I had the chance to collaborate on topics related to research on mobility justice and best practices regarding urban planning during the Covid-19 pandemic, and I contributed to the JUST STREETS project.

JUST STREETS is a Horizon Europe project proposed by the LINKS foundation along with 31 partners from 15 European and non-European countries seeking to implement strategies in 8 pilot cities – Milan (IT), Cugir (Ro), Kozani (GR), Westminster (UK), Riga (LV), Braga (PT), Amsterdam (NL), Vilnius (LT) – and 4 followers cities – Southwark (UK), Vratsa (BG), Zaragoza (ES), Haifa (IS)) – to shape with active mobility and a behavioral transformation, more inclusive and sustainable streets by implementing solution using innovative planning and design.

The priority of this project is to meet the needs of marginalized social groups, whose crucial contribution will shape the transformation and the systematic shift in the way public space is going to be developed from now on. The knowledge gathered from this multidisciplinary project ultimately seeks to be replicated, by sharing the results with as many urban decision makers as possible who may want to initiate transformation on their own, to develop initiatives that will make their cities more sustainable, inclusive and just, considering that each one will have different political, administrative and social barriers for them to overcome.

This thesis adresses a knowledge gap regarding the inclusion of Vulnerable Road Users (VRUs) in participatory, design and policy making processes as to the lack of

qualitative search targeting them, related to their role in urban environments, specifically in streets and mobility justice. In response, this research makes an effort to understand who VRUs are and what is their role in urban environments. The main questions that this thesis seeks to address is "What are the needs of Vulnerable Road Users (VRUs) and how can these needs be prioritized in spatial and mobility planning? And in that sense, how can we develop more just and inclusive streets?" To begin addressing these questions, I did a literature review focusing on mobility justice, VRUs and recent research that includes qualitative research methods and has VRUs as the target population.

To understand the role of VRUs and the relation it has with social justice and mobility justice, I gathered information from academic experts, policy makers and advocates by performing a series of semi-structured interviews. These helped me get insight about their perspective on who the term "VRUs" refers to, what are their needs and how to interpret their behaviors to know how they have been treated and how it should be, as they are considered at risk in urban environments. Simultaneously, I did an analysis and gathered outcomes of an international focus group done by the LINKS foundation for the JUST STREETS, which I contributed to organize during my internship. This focus group brought together various advocates from NGOs who represent marginalized groups, aiming to understand how social and physical justice can be prioritized in spatial and mobility planning in future developments.

In this study, the knowledge gathered is applied in a series of recommendations done by analyzing the pilot proposal that at the time of this thesis is being formulated in the Metropolitan City of Milan (MCM) for the JUST STEETS project, as well as for their

Sustainable Urban Mobility Plan (SUMP) to include concepts related to mobility justice and a focus on VRUs as their target population for future developments.

The thesis follows the structure presented below:

After this first introductory part, chapter 2 presents the research questions, the research objectives, a graphic representation of the structure that guided the research and a description of the methodologies performed in this study as well as the expected results.

Chapter 3 develops the theoretical framework by performing a literature review on transport and mobility justice, transport and mobility poverty and the right to mobility connected to the right to the city; an introduction to VRUs as the target population and recent research that involves qualitative data collection and VRUs, as well as research on interventions done during the pandemic of COVID-19 related to public space and mobility that claim for a more just urban environment.

Chapter 4 focuses on qualitative analysis of the needs of VRUs, I did a series of 18 semi-structured interviews with academic experts, policymakers/municipality members and advocates representing groups of users considered at risk in urban environments. These interviews were focused on social justice and recommendations related to best practices. Subsequently, the outcomes of an international focus group organized as part of the activities of the JUST STREETS project are analyzed. The focus group included advocates from NGOs and their perspective on distributional justice, procedural justice and recognition of justice in urban environments.

Chapter 5 is about the case study of the Metropolitan City of Milan (MCM); it describes the pilot intervention for JUST STREETS and it contains a brief analysis of the

metropolitan SUMP to understand if there have been any efforts to address the needs of VRUs and if so what are they. As a result of this chapter, I made a series of recommendations to improve inclusion on VRUs and enhance their participation to overcome some present challenges.

Chapter 6 contains the discussion that seek to address the research questions by relating the conceptual knowledge to the information gathered in the qualitative data collection which is applied to the case study; it also contains the conclusion that provides the final thoughts of the research by highlighting some personal remarks on how to make streets more just for all, the limitations this study had and the open possibility of future research.

2. Aims and methods

This section outlines the aim of the thesis, the research objectives, and the research questions designed to achieve these objectives and fulfill the overall aim. Following this, the structure of the thesis is presented, along with a detailed explanation of the methodologies employed.

2.1. Aim, research objectives and research questions

The aim of this thesis is to gain an understanding on concepts related to mobility justice with a focus on the needs of Vulnerable Road Users (VRUs) and the importance of their contribution in collaboration with other stakeholders – municipalities, NGO's, policymakers, advocacy groups, etc. – to develop design policies in the search to create healthier and more inclusive streets.

Research objectives

- Understand the meaning of mobility justice and related concepts, who it benefits and how it involves all road users.
- Gather conclusions from experts and other stakeholders about their understanding on mobility justice, right to the street and the role of VRUs in participatory decision-making processes to understand how diverse needs are being addressed.
- Apply the concepts and needs identified in the research to the case study of the pilot in the Metropolitan City of Milan for the JUST STREETS project.

Research questions

To respond to the research objectives, this thesis addresses the following research question: What are the needs of Vulnerable Road Users (VRUs) and how can these needs be prioritized in spatial and mobility planning? And in that sense, how can we develop more just and inclusive streets?

This research questions come from a gap in the inclusion of citizen knowledge, more specifically VRUs in participatory processes for urban developments (policies, urban plans, mobility plans, public space interventions, etc.). To know their perspective, it is important to identify this population and perform qualitative research that targets them on research and innovate in the way to get this information and understand their needs as well as the reason for their behaviors.

To answer the research question, this thesis includes the following 3 questions that logically framed the steps to gather the information that was considered essential to arrive at a conclusion and achieve the overall aim.

- What is the current debate on transport and mobility Justice? This research question is addressed in section 3.1. Which is a proper literature review on the current debate on transport and mobility Justice and related concepts.
- What and who are Vulnerable Road Users (VRUs) and how have they been included in recent research? This research question is addressed in section 3.2. That has a focus on what are Vulnerable Road Users (VRUs) and mobility justice.
- What recent actions have improved mobility justice and how have research methods support VRUs inclusion? This research question is addressed in section 3.3. Which comprehends practices and methods that include qualitative in research focus on VRUs.

2.2. Structure and methodology

Figure 1 summarizes the content and structure of the thesis. The thesis begins with a broad research question followed by research questions addressed in the theoretical framework to continue with the data collection and case study research to arrive at the results, discussion and conclusions.

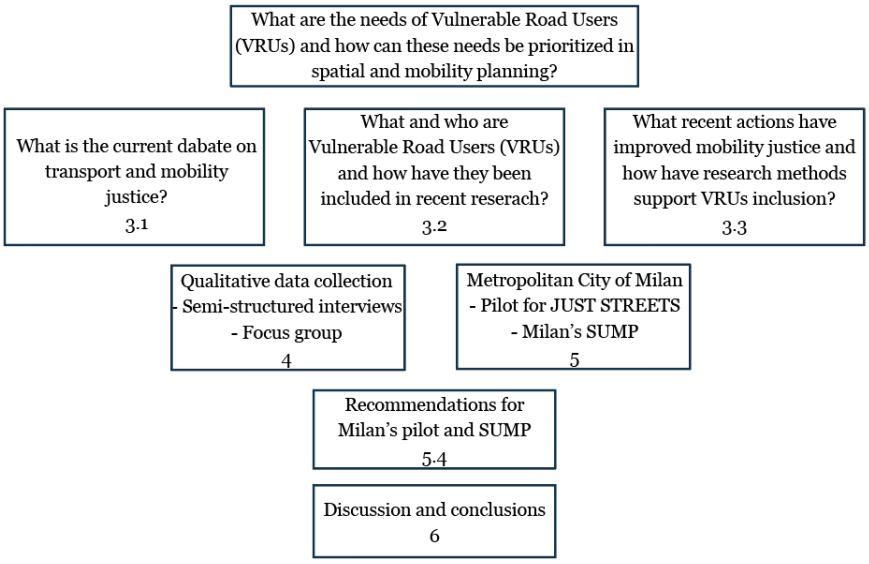


Figure 1: structure of the thesis

The Methodology performed in this thesis is composed by a literature review of concepts related to mobility justice, VRUs, and best practices. A qualitative data collection to get insight on perspectives of mobility justice related to social justice, VRUs needs and behavioral trends, which is composed of a series of semi-structure interviews with 3 different groups of people: Academic researchers/experts with knowledge on mobility justice, Policy makers/ Public Administration members of the pilot cities for the JUST STREETS project and advocates representing different NGOs related to individual considered at risk in urban environments. A review of the international focus group session for advocacy and expert organizations which I contributed to organize for the JUST STREETS project, as well as a revision of a case study in the Metropolitan city of Milan (MCM) which is correspondent to the pilot for the JUST STREETS project.

Literature Review

The literature review is divided on 3 aspects, the first one is focused on concept definition to get a better understanding of the concept of mobility justice, when searching for this definition other concept came about and the key words had to be broader, in this sense, the key words used to search were: Mobility justice, transport justice, mobility poverty, accessibility poverty, right to mobility, right to the city, right to the street and motility.

The second part is related to VRUs, the target group that this thesis is referring to, who they are and how have they been included in recent research regarding mobility and road safety, for this part the key words used to find information were: Vulnerable Road Users, VRU and projects related to VRU.

At last, the third part is related to practices and methods where I found some information on focus groups as an effective way to include VRUs as part of research, then there is a subsection related to my time at the LINKS Foundation where I did research on best practices during the pandemic of Covid-19 presenting some examples of interventions that have lasted through time and some lessons learned from diverse challenges that rose during that time, related to mobility and urban planning.

Individual interviews

A semi-structured interview method was chosen to allow for both general questions applicable to all participants, as well as the flexibility to ask more specific questions tailored to each group. This method facilitated a deeper understanding of key topics such as social justice, mobility, the right to the street, and the role of Vulnerable Road Users (VRUs) in urban environments. All participants were initially contacted via email, and upon acceptance, they were sent a PDF containing the questions for preparation. The questions were organized around six key topics of interest, four general questions applicable to all participants, and two additional questions tailored to their specific roles, whether as academic experts, public administrators-policymakers, or advocates from NGOs that represent groups of people considered at risk in urban environments.

The first part of the interview includes general questions focused on social justice and the role of transportation in urban environments, particularly concerning access, safety, and equity, as outlined in the table below:

N°	Question	Topic
1	What does "the right to the street" mean to you?	Right to the street

2	Do you believe access to public streets is important for all community members? Why?	Social Justice
3	How important do you think public awareness and education are in promoting safety on streets?	Awareness and Safety
4	What role do you believe transportation plays in achieving social equity in urban environments?	Transportation role

In the second part of the interview, questions were tailored to the specific roles of the participants. Academic researchers and experts were selected for their in-depth knowledge of mobility justice, urban planning, and research expertise. Policymakers and public administration members were chosen from pilot cities involved in the JUST STREETS project, while advocates, representing diverse at-risk groups in urban environments, brought valuable insight into the needs, behaviors, and challenges faced by these individuals in the built environment.

Academic researchers/experts

The additional questions for academic researchers/experts focused on defining the term 'Vulnerable Road Users (VRUs)' and identifying research gaps in the field of mobility, as outlined below:

N°	**Question**	**Topic**
1	How would you define Vulnerable Road Users (VRUs), and what characteristics make them particularly at risk in urban environments?	VRUs
2	What areas of research do you think are currently underexplored in relation to VRUs and mobility?	Research

Policymakers/public administrations

For policymakers and public administration members, the focus was on the inclusion of diverse perspectives in shaping policies aimed at improving justice in mobility, safety, and access as shown in the table below:

N°	Question	Topic
1	How do you assess the involvement of VRUs in the policy-making process? What improvements could be made?	Policy/design-making process
2	What role does citizen participation play in shaping policies that affect street access and safety?	Citizen participation

Advocates

The additional questions for advocates focus on stakeholder collaboration and lessons learned from diverse places and initiatives aimed at transforming streets worldwide, as outlined in the table below:

N°	Question	Topic
1	How can collaboration between different stakeholders (government, NGOs, civil society) be enhanced to support the rights of VRUs?	Stakeholders' collaboration
2	Are there countries or cities that you believe are exemplary in their treatment of VRUs? What can we learn from them?	Best practices

The responses are then analyzed through the lens of three dimensions of justice: distributional justice, procedural justice and recognition of justice.

Focus Group

The focus group was done with advocates from diverse organizations who represent different groups of people considered at risk in urban environments, most of these organizations are part of the consortium that conform the JUST STREETS project.

The focus group was organized into three sections to gather insights on distributional justice, procedural justice, and recognition of justice. Participants were assigned to three breakout rooms, each designed to be as diverse as possible while maintaining a controlled number of individuals. This ensured that everyone had an opportunity to participate and be heard.

The outcomes are presented by section, these sections correspond to three dimensions of justice:

- Distributional justice
  - What are the needs of different street user groups?
  - Why do street design and uses of the street are creating social injustices?
- Procedural Justice
  - How can we incorporate the needs of different street users into design and planning?
- Recognition of justice
  - What kinds of knowledge is needed to support just and inclusive planning and design?

Case study

It is a revision of the pilot intervention which is organized by the Metropolitan City of Milan (MCM) for the JUST STREETS project in terms of location, purpose and

proposal. The analysis is performed by a series of maps and images, to understand why the place chosen for the pilot, the timing of this thesis made it unlikely to perform interviews in the intervention site, that in this case is Corsico, as an alternative, I chose to do a brief revision of the Sustainable Urban Mobility Plan (SUMP) of the MCM to understand the relation it has with the area chosen for the pilot, the finding of the concept *Luoghi Urbani della Mobilità* (*Mobility Urban Places*) (LUM) has direct relation to Corsico, these research and the analysis of the plan intervention reveals the reasons and impacts in terms of mobility justice for the area.

2.3. Expected results

This thesis ponders the knowledge gathered in the theoretical framework on mobility justice, VRUs, best practices and recent research as well as the outcomes of the qualitative data collection where researchers, advocates and policy makers answer from their position and perspective questions related to mobility justice, behavioral transformation, social justice, best practices and participatory processes, to discuss the role of VRUs on urban environments today, as well as the things we should be prioritizing to achieve justice for all road users.

The knowledge gathered from the literature review and qualitative data collection is then applied to the case study of the Milan pilot for JUST STREETS and their SUMP as it highlights the most mentioned aspects related to inclusion of VRUs and comes up with a series of recommendations seeking to include VRU's needs as a priority on the implementation of future urban developments and policy making processes.

In the end this study aims to address the main research question by summarizing the information gathered and shed some light to the importance of mobility justice, the

role that diverse individual play on streets and related topics to hopefully encourage further research.

3. Theoretical framework

This chapter presents the theoretical framework adopted for this thesis, the first part is a literature review focus in the current debate on transport and mobility justice, which seeks to understand the general needs of transportation nowadays, the people that should be prioritize to achieve justice for all and toward the end opens the debate to focus on the right to the city and the right to the street to know how to achieve justice in urban spaces. The second part focuses on VRUs to find out who they are and how they have been included in recent research. The last section includes a brief review of best practices performed during the pandemic of Covid-19 to improve urban life, this is part of my internship at the LINKS foundation and it also includes a brief revision on qualitative methodologies that include VRUs in research.

3.1. Current debate on transport and mobility Justice

This section contains the literature review on mobility justice, mobility and transport poverty and the right to mobility which comes from the right to the city and is connected to the right to the street.

3.1.1. Mobility justice

When referring to *Mobility Justice* Sheller, M. (2018) defines the term as a way to think between the micro, meso and macro scales searching for a more just mobility, it also gives thought to how some people can move more easily than others through spaces, related to gender, race, class, ethnicity, sexuality and physical abilities, the restricted

spatial mobility that a wheelchair can provide and the limited mobility of racialized minorities in white supremacist governments and women in patriarchal systems. *Mobility justice* also regards everything in the so-called built environment (Buildings, streets, every form of transport infrastructure and public space) that have taken part in the perpetration of racial segregation, sexually unsafe areas and places of class exclusion and the intend is to give back the "right to the city" to the poor, the women and LGBTIQ+ community in public spaces.

Justice in mobility seeks equity and inclusion and should have a feminist, critical race, disability and queer perspective on accessibility, Lubitow et. Al. (2020) brings light to the experience of gender minorities, by performing qualitative research to gain comprehensive understanding of the spectrum of gendered experiences that impact mobility and accessibility, to finally come up with policy recommendations in this regard. Justice in mobility can also be seen through a multispecies perspective, as Scott, N. (2020) argues, when humans utilize the space as if there were no other there, expand cities and neglect earth, air and water with the automobile system we live on today.

Other studies focus on distributional justice related to accessibility to transport, (Martens, K. 2012; Nazarabadian, M. 2024; Attard, M. 2020; Pereira, R. H., et. Al 2017) by putting transport at the same level of money and power defending that these key goods should be distributed independently from each other in the urban and suburban areas with policies, urban planning interventions and infrastructure development that seek equity and equality. Meanwhile some studies focus on how space between different modes of transport, discriminatory transport systems are favoring those in a car and neglect

active mobility users and how public investment does not meet distribution needs in practice (Randal, E., et. Al., 2020; Guzman, L. A., et. Al., 2021).

In this sense distribution of justice regarding mobility is directly linked to the space given to diverse modes of transportation, Cook, S., et. Al., (2022) argued for a wider definition of active travel which is commonly known as just walking and cycling and wants to extend the definition and transform the way we see it, as modes of travel where the motion is directly connected to the sustained physical motion, using "directly" as a way to

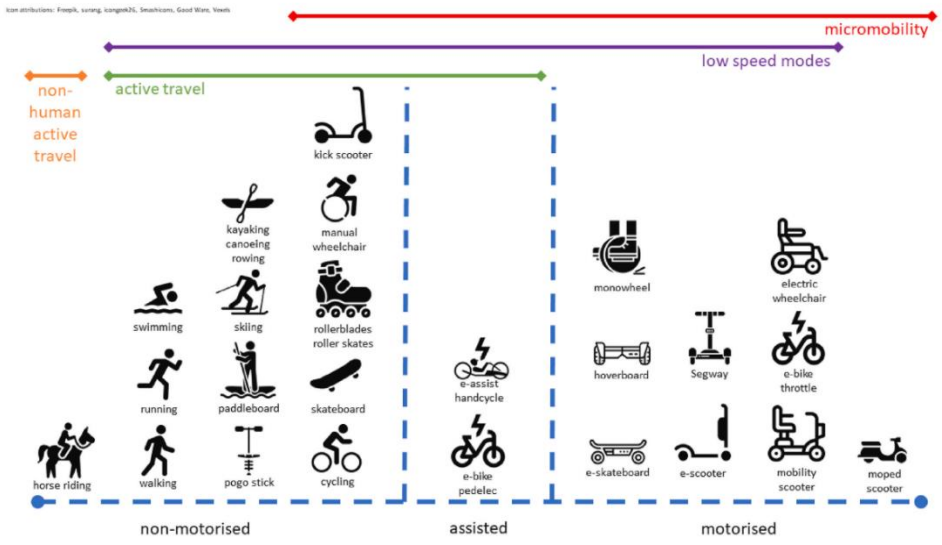


Figure 2: collection of active travel modes
Source: Cook, S., et. Al., (2022)

exclude driving and travel by motorized collective transport, this will include swimming, using a manual wheelchair, cycling by using a power assisted bicycle, roller skating, among others as shown in figure 2.

Amplifying the modes of transport considered as active travel will contribute in a meaningful way to transport patterns and mobility justice overall, it has also the potential to be included in policies and practices as well as gain importance on transport research. (Cook, S., et. Al., 2022)

Mobility justice is directly linked to transport equity and education equity as Bierbaum, A. H., et. Al., (2020) argues, several developments of infrastructure and the expansion of cities are the reason why travel behaviors shift from active mobility to car dependency, a way to see it is that the closer the schools to residential area most likely students are walking or cycling to them, suburban schools are typically located in fields near major roads that limit access to pedestrian and bicycles. Bierbaum research contributes by acknowledging the difference between actual physical access to schools and just access to information of the available options.

Automobility also restricts the freedom of the non-automobile, this can include all the modes mentioned before, as well as other activities that can be done in public space like playing or resting. Automobility reduces physical safety as is the major cause of fatal incidents on roads and enforces constraints of alternative socio-spatial configurations on public space. (Cass, N., & Manderscheid, K., 2010)

In another opportunity Sheller (2018a) considers that *mobility Justice* should be focused on looking for universal access, bringing attention to the injustices on the current communication and transportation systems as well as in urban environments and public spaces. In that sense, to reach *Mobility justice* is important to include all affected communities in all planning processes by performing meaningful epistemic inclusion, to go beyond access to transport and understand the ways in which uneven mobilities are produced and work for different people and spaces, as well as to applied distributional justice so that every users have chance to choose and utilize public space at its fullest.

The concept of *Spatial Justice* brought by Sheller (2020) concerns the ways in which easier access for some makes life harder for others given that sometimes the built

environment is designed to exclude some and benefit others. An example of this is the hostile architecture approach that some cities tend to choose for the sake of keeping homeless individuals far from certain spaces.

To arrive at a more just mobility is essential to make a priority the accessibility on walking environments, Caroline Mullen (2021) argues that to achieve accessible walking environments it is necessary to have mobility justice and by extension sustainable mobility, 'accessible' should be understood as the characteristics and conditions that a place have in which anyone is able to move around safely and freely on foot or by using a wheelchair, mobility scooter or other aids to walking, and 'walking' understood as a travel mode as long or short as wanted and needed. Mullen also uses the term "mobility justice" in its environmental, social and economic implications.

Mobility as we know it now is the result of uneven developments, violence of profiling, and diverse tendencies of governance, Enright, T. (2019) research conclude that justice is a participatory and productive matter that depends on the physical characteristics of a city to create urban life in ways that refuse domination and segregation, while this strategy aims for a redistribution that will repair historic disadvantages is not possible for fully satisfied that with just inclusion, to achieve justice in every matter of life is necessary to radically transforms the social and spatial relations constitutive of transit, and by doing that, generate greater conditions for equity and freedom.

Mobility justice is also related to *Motility* first brought by Flamm, M., & Kaufmann, V. (2006), also mention by Sheller (2018a) as the capacity to be mobile, motility is the way in which an individual or a group of people measure their capabilities for movement,

claim them and then make use of it, also brings attention to the ones that depend on the environment in combination with our own abilities.

The research on mobility Justice comprehends the mobile practice which include physical accessibility concerning how some groups of people have different experiences than others reaching destinations and services knowing that some policies can change that, a more just mobility will change the typical assumptions on mobility, value and human subjectivity, mobility helps to reach the virtue of justice for all (Verlinghieri, E. et al 2020; Cresswell, T. 2010). The concept of Mobility Justice gives meaning and hope at the thought on how wrongly used power shapes inequal mobility patterns in the circulation of people, resources and information (Sheller, 2018).

3.1.2. Mobility and transport poverty

Mobility poverty can be comprehended as the systematic lack of transport that generates difficulties in moving, connected to the lack of services and/or infrastructure. There is a relation between low income and mobility poverty where some mobility problems are the result of a poverty situation, the prices are so high that some people can't afford to make use of public transport, and that can be combine with the possibility that the lack of resources is the reason why people live far from urban areas and can't access public transportation by lack of infrastructure near their homes, although is known that major investment in infrastructure does not necessarily address the need of the poorest (Lucas, K. et al., 2016).

The European Commission did a report that conceptualized transport poverty and its similarity with other concepts such as mobility poverty and transport justice as a part of transport poverty, they considered the socio-economical dimension and the spatial

dimension to come up with the relation it has with availability, accessibility and affordability to finally arrive to “adequacy” which refers to the usability of the transport system, this means that a household or individual is affected by the transport poverty dimension and this happens when the transport system is nor readily usable for them, this could mean: a lack of barrier-free travel opportunities, low levels of safety and/or security and/or unavailability of information about travel possibilities, this characteristics only apply as a hazard if we assume that the transport system is generally readily available and affordable. (Cludius, J., et. Al., 2024)

The concept of *mobility poverty* is also related to transport affordability, accessibility poverty and disproportionate exposure to transport alternatives. Lucas, K. et al. (2016) focused their research on transport poverty and proposes a distinction and definition of the term as a combination of transport affordability -inability to meet the cost of transport-, mobility poverty -the lack of (motorized) transport-, accessibility poverty -the difficulty of reaching certain key activities such as employment, education, healthcare, shops, etc.- and exposure to transport alternatives.

In places like the UK and Germany, there is something called Forced Car Owners (FCO) that are defined as households who own at least one car but are materially deprive which means they trade-off motoring expenditure against expenditure in other essential areas linked to not having the capacity to keep their house warm or having problems paying utility bills. At the end, he found that if public transport services are poor quality and expensive, even those with easy access to stops may be ‘forced’ into car ownership, even more in suburban areas. (Mattioli, G., 2017)

The existence of gated communities can be granted to the success of automobility and rich people, who were the first ones that could afford to move longer distances with the idea to protect themselves (Cass, N., & Manderscheid, K., 2010). This idea became popular and is replicated all over, some of its consequences are the decline of infrastructure and the disconnection of peripheries from social resources as is less attractive for investment.

Another perspective of mobility poverty given by Kuttler, T., & Moraglio, M. (2021) relates mobility poverty to the liberty to move or to not move, the decision to be mobile or to stay immobile, an example of that has to do with age, the opportunities and the capacity to move as an elderly individual don't meet the desire and need to do it. Pereira, R. H., et. Al (2017) argues that, in order to understand the potential of individuals in terms of mobility and their capacity for choice, it's crucial to distinguish between the places people have to go and the places they actually want to go, from the range of places they are able to reach.

The implication of the existence of transport poverty falls harder on households located in rural and suburban areas as mentioned before, they suffer of reduced access to jobs, longer distances to access essential services and higher expenditures on travel, local authorities have the role to support areas most likely to have transport poverty (Kong, W., et. Al., 2021; Kelly, J. A., et. Al., 2023)

The decisions made to address the mobility needs depend on who participates in the political agenda, a process which is participatory and inclusive is crucial for solution development. This means that whoever does not have access to the political decision-making process is most likely to not have the chance to express their mobility needs and

get a chance for them to be addressed, especially for groups who are considered vulnerable, where the political decisions often seek to primarily cover the basis of mobility: health, education and work but leave out leisure, family and friendships (Kuttler, T., & Moraglio, M., 2021).

To tackle transport poverty, countries members of the EU have adopted national, regional and local strategies, action plans, as well as policy measures to respond to people's mobility needs and socio-economic wellbeing. The areas of policy intervention include evaluation of prices, financial aids, social aspects, identification of various types of users, legislative actions, improvement on infrastructure to guarantee accessibility and National Master Plans to give clear guidelines on transport poverty that target VRUs, and that will only be achieve as they have in mind availability, accessibility and affordability. (Cludius, J., et. Al., 2024)

By addressing transport poverty, it is possible that overall social exclusion is also addressed given that it can promote access to employment opportunities, education and healthcare services, it is also a positive solution toward sustainability as it seeks to reduce the carbon footprint improving overall health to citizens and ecosystems. (Cludius, J., et. Al., 2024)

3.1.3. Right to mobility, right to the city and right to the street

Rights are directly related with the place where people are citizens, rights are given by authorities of all levels, those from the United Nations (UN) apply to citizens of the world while the ones from the European Union (EU) are just for citizens of Europe. Cresswell, T., (2006) studied the right to mobility and citizens as mobile entities, the right to mobility is included in many constitutional documents, from the United Nations

Universal Declaration of Human Rights (1948) to constitutional documents of many countries, Cresswell focus on the United States of America and argued that they didn't have a "right to mobility" *per se*, but suggests that the right to mobility is linked to the liberty of which citizens cannot be deprived unless they are under a process of law.

Mobility is associated with progress and freedom, however, these two have a conflict with sustainability as it has meant to be a threat linked to climate change because of the use of fossil fuels and other non-renewable energy sources, capitalism and economic growth is directly linked to growth of motorized transport and traffic, the current automobile world we live in, prioritizes privately owned cars that people use to move through public space while protected be a metal structure, which makes the entire experience of being outside a complete absurdity as you disassociate yourself from the space and the social aspects that entitles. (Cass, N., & Manderscheid, K., 2010)

The right to mobility is also a pre-condition to other rights, as is the key to access work, a home, education, culture, leisure and family. It is a human right and seeks to ensure dignity for all (Saif, M. A. et al 2019). The right to movement encompasses the Habeas Corpus understood as the right to freedom of bodily movement without the constraint imposed from outside. The right to mobility related to the right to the city can be restricted by mobility regimes that include some people but exclude others, controlled via policing, by gates, borders, surveillance systems or gentrification on city centers that push whoever doesn't have a place in that system to the margins. These restrictions are manifested in architecture and everyday practices which contribute to making inaccessible the right to the city. (Sheller, 2018a)

Creating more centralities to fight the job offer concentration on the downtown area has followed a Transit Oriented Development (TOD) approach focused on increasing the mobility infrastructure, Cass, N., & Manderscheid, K., (2010) argued that people are now expected to take on jobs that involve travelling a significant distance. By time, it has been shown that the peripheries that had greater mobility offer are now lacking employment and services that correspond to daily urban life making these well served areas into dormitory peripheries, revealing a poor distribution management.

On the other hand, areas that have less mobility offer can avoid direct competition with the attractiveness of the city center, that way local economies are able to progress and create less economic dependence and a better sense of community that at the end preserves the area and is less likely to be transformed into a dormitory zone. This keeps the population in place and provides an effective "right to the city" not just a "right to mobility" (Lassance, G., & Figueira, P., 2020).

"The right to the city" (Lefebvre, 1968.) is not given but gained and to claim it is to claim any kind of power over the ways in which our cities are made and re-made (Harvey, 2015). Lefebvre manifested that -the right to the city- is a compilation of many rights: right to freedom, to individualization in socialization, to habitat and to inhabit, the right to participation and to appropriation, all those implied in the right to the city. Lefebvre notes that the right to the city must be understood as the right to urban life, to places of encounter and exchange that enables full use of moments and places.

Rights can be formal when they are granted by any kind of authority or government, as well as informal like the "right to the city" which has been granted by

social contestation over define boundaries, these rights derived through social processes (Pierce, J., & Lawhon, M., 2018).

The right to the city as seen by Marcuse P. (2009), is of those who have the power to re shaped the city we have today, is also a compilation of rights as Lefebvre manifested earlier, and is a demand not only in a legal sense but also in a moral sense, a claim to not only a right as to justice but a right on a higher moral plane, that claims a better system and it is not the right to the existing city that is demanded, but the right to a future city. The right to the city is directly linked to the appropriation of public space (Mitchell, D. 2003), which comprehends the streets at the same level as parks or plazas intending all as public spaces on the city.

The street as a focal site of political contestation: ultimately, the right to the city depends upon the right to the street (Mitchell 2011). The street is a site of interaction, encounter, and the support of strangers for each other; the square as a place of gathering and vigil; the corner store as a communicator of information and interchange, these spaces define an urban culture. (Vidler, 2002)

The right to the street should be intended as a sense of belonging and the success of constructing urban space, which includes public streets as stages of power, art and civil order where we do social activities, move and fight for our rights making our voices heard. (Kwarteng, I. A., 2020; Li, A., 2021)

3.2. Vulnerable Road Users (VRUs) and mobility justice

This section presents the definition of VRUs given by some organizations, as well as recent research that has focused on them. The outcome reveals that there is a gap in

the kind of research that targets this population as it has a focus on travel modes over the actual needs of VRUs in urban environments.

3.2.1. Definition and needs of Vulnerable Road Users (VRUs)

The target population is chosen for its importance in mobility justice: by targeting VRUs you are essentially prioritizing people in all conditions rather than motorized vehicles for the development of streets and the built environment. In that sense, different organizations with global influence have tried to define who are included in this population.

The European Commission describes VRUs as "non-motorized road users, such as pedestrians and cyclists as well as motorcyclists and people with disabilities or reduced mobility and orientation". (European Commission. *ITS & vulnerable Road Users*.)

The Organization for Economic Co-operation and Development (OECD) considers VRUs as a term applied to those most at risk in traffic. Consequently, VRUs are the ones unprotected by an outside shield, these means, pedestrians, and two-wheelers as they are most likely to be injured in a collision with a vehicle, for that, they are highly in need of protection against collisions. “Among these, pedestrians and cyclists are those most unlikely to inflict injury on any other road user, while motorized (or powered) two-wheelers, with heavier machines and higher speeds, may present a danger to others.” (OECD, 1998)

The definition of VRUs varies, as in some countries,mopeds are assimilated to bicycles in the law, in statistics and in the determination on the space they can occupied on the road infrastructure, while in others they are treated like motorcycles.

Therefore, VRUs can be divided into two main groups: pedestrians and cyclists.

Pedestrians

- Pedestrians are a heterogeneous group of road users, they can be men, women, kids and elderly, any of these individuals can be in a walk with their dog or pushing a stroller or a wheelchair, doing care tasks or window shopping. People walk for pleasure and for exercise but also to arrive at a destination. There are many hazards for them, some examples nowadays can be pollution from traffic, fear of violence or robbery in night hours, darkness especially for women and a potential lack of eyes on the street encouraging fear to be outside.

Cyclists

- Cyclists are individuals who cycle in a two-wheel vehicle that is only powered by the muscular energy of the person, can be pedals or hand-cranks. They are a more homogeneous group but still there are differences in between whoever is cycling. They can represent a hazard related to the law and infrastructure if they have to share space with pedestrians, counter to the times they have to share space with cars, where they are at risk of being injured in an accident and are exposed to traffic pollution.

Amid those two groups, some sub-groups consider VRUs are more at risk than others, particularly the elderly, the disabled the kids.

The elderly

- They have a greater risk of being involved in an accident as they may not have the ability to put themselves in a safe position in difficult traffic situations. They

have also become more fragile, that means that the injury would be more impactful, consequently more times than not they and their care takers tend to restrict their participation in public life which reduces their mobility.

The disabled

- Disable people include any individual with physical, intellectual, cognitive, sensory or mental impairment affecting their ability to move or to understand the environment they are in, they can be pedestrians with or without any aid or in a wheelchair as well as cyclists or play any role in the urban environment. They are also at risk in difficult traffic situations but also in parts of the infrastructure that are not adapted to their needs.

Kids

- Kids are most likely to be accompanied by a care taker, they are limited in their ability to understand difficult traffic situations, making them at risk in situations where there are motorized vehicles that can go fast, their visibility is limited and/or drivers focus just on other vehicles and forget about pedestrians or cyclists.

VRUs are a gathering of different groups of people with different characteristics, needs, travel habits and behavioral patterns, they have in common their difficulties coping with difficult traffic situations in an environment that is not designed for them. (OECD, 1998)

3.2.2. Recent research

Recent projects researching VRUs safety have mainly focused on detecting pedestrians and avoiding accidents with the use of cameras and/or radar but are not found effective in all cases, the approach to improve the safety of VRUs is to allow them to communicate with other cooperative road users and the infrastructure itself (Scholliers, J. et al., 2017). These studies have failed in the understanding of users' needs, most Intelligent Transport Systems (ITS) are focused on vehicles and not on VRUs needs.

An example of this is the EU-sponsored VRUITS project which had as a main objective to provide recommendations for policy and industry on ITS application to improve safety and mobility of VRUs, (Scholliers, J. et al., 2016a). The project made the SAFECROSS system (Smart Pedestrian Crossing for People with Reduce Mobility) smarter by integrating 3G/Wi-Fi mobile communication into the traffic regulator making a possibility that if a car is allowed to turn right but there may be pedestrians crossing a zebra and there is not or limited visibility then thanks to the SAFECROSS system, the vehicle can be told whether any pedestrians are crossing the street where they can't see making the ITS system be focused directly on VRU safety (POLIS Network, 2014).

Other studies included moped riders as part of VRUs in their statistics. Considering that VRUs constitute 46% of all traffic fatalities and 52% of all seriously injured accident victims, this paper focused their investigation on the Horizon project InDeV, that developed a toolbox for the analysis of accident causations for VRUs based on a combination of different accident databases, in depth accident investigations, surrogate safety indicators, self-reported accidents and naturalistic behavioral data (Olszewski, P. et al., 2019). The analysis of this information provided gave solid

knowledge and facilitated the proposed countermeasures for these groups and the idea that by using surrogate safety indicators there will be no need to wait for accidents to happen to learn how to prevent them from happening. (InDeV, 2022).

The deployment of ITS technologies has the potential to enhance the safety and mobility of VRUs. However, it is essential for their success that these systems are tailored to the specific needs of road users. The current investigation has begun with the identification of the critical scenarios for VRUs, as well as user needs to find the most promising ITS systems to address them. (Scholliers, J. et al., 2016b; Sewalkar, P., & Seitz, J., 2019).

The sensory and cognitive overload that these solutions can produce to sensitive and sensory underdeveloped individuals hasn't been taken into account as the focus for this kind of research, the focus has been to create safety by adding technology or creating awareness instead of changing the built environment to promote safe spaces for all road users. Justice and security for people with cognitive, intellectual and/or sensory disabilities relays on awareness from transport operators and other authorities on urban environments. (van Holstein, E., Wiesel, I., & Legacy, C., 2022)

The European Safety Council has done a report on the safety of walking and cycling withing Europe, they determine that some of the recommendations for human behavior regarding safety have to include: Traffic law enforcement for all motorized vehicles including two wheelers in areas with high numbers of pedestrians and cyclists, enforcement against illegal parking that obstructs cycling facilities and paths, encourage of helmet wearing and map high risk sites for pedestrians and cyclist for direct enforcement in to does areas.

Regarding Policies that protect VRUs from other road users, Crundall, D., & Van Loon, E. (2023) present the case of the UK where their highway code was recently updated regarding the lack of awareness from drivers when overtaking cyclists on roads, they identify that people do not take the time to read does documents after they have pass the driving exam and new rules are not adopted, conclusions from that study showed how an empathy-based approach in order to broaden car drivers' views can be the way to go as it is a promising approach.

Guayante, F. et al., (2014) Claims that, in middle-income and low-income countries, the rate of VRUs deaths is greater, in part because less educated people disobey traffic signals and cross streets through dangerous zones.

Safety of VRUs is a big concern as data of fatalities is not recorded in the scale of injury, Olszewski, P., et. Al., (2019) claims that the scope of analysis is limited being that data recollection do not correspond with reference conditions, with that, Olszewski also notes that fatality risk for VRUs is higher for non-urban versus urban areas and for darkness versus daylight conditions, and by comparing result with other studies, experiences from countries with low VRU fatality can be transfer to those with a higher risk.

The implementation of new technologies and solution to enhance the transportation system is a priority to both local and European levels, being that VRUs are now the target population for mayor urban development plans, cities use diverse approaches to manage urban transport systems striving to be smart and sustainable, the collection and revision of good practices used for VRU safety management have to be acknowledge by local government to ultimately implement appropriate solutions to meet

the needs of a specific population in an specific place. (Sosik-Filipiak, K., & Osypchuk, O., 2023)

3.3. Practices and methods

This section includes a revision I did in my internship at the LINKS foundation concerning best practices and interventions done during the covid-19 pandemic to better understand how the quality of public space and mobility plays a huge role in accessibility and over all well-being for all road users; it also includes a literature review on recent studies that utilize qualitative methods of research involving VRUs.

3.3.1. Qualitative research methods as an effective way to involve VRUs: experiences and innovations

In order to understand the needs of VRUs, the implementation of focus group is a valuable method, the name of the method defines its key characteristics, it involves a *focus* on specific issues, with a predetermined group of people participating in an interactive discussion on a topic where everyone has a take on. This is normally done with 6 to 10 pre-selected participants; this number can vary and is led by a moderator with previews knowledge on set issues (Hennink, M. M., 2013). Focus groups are ideal when exploring people's experiences, opinions and concerns, and are particularly useful for allowing participants to generate their own questions, frames and concepts and to communicate their own priorities with their own vocabulary. (Kitzinger, J., 2005).

In academic research, focus groups are often used to understand the context of people's lives or experiences, this method is used to identify diversity of experiences and perceptions and not to seek a consensus on the issues discussed, it can be differentiated

from an individual interview as there is the possibility of discussion where participants share their views, hear the views of others and perhaps refine their own on light of what they have heard, they can also begin to ask questions and clarifications from other participants raising additional issues and comparing similar experiences. (Hennink, M. M., (2013).

Some studies have included focus groups with VRUs and have gained great knowledge, an example of this is a study that was done to understand the perceptions and expectations of various VRUs groups towards Automated Vehicles (AVs) and the effects of mixed traffic scenarios that can also include conventional vehicles (CVs), they individualized five different categories of VRUs: Cyclist, pedestrians, e-scooters riders, older adults and individuals with walking disabilities. The goal was to gather 4 to 5 individuals of each category and do five different focus group discussions, this study was done in Munich where 42% of travel within the city entails active mobility forms. (Harkin, K. A. et al., 2024). This study sheds light to the coexistence of AVs, CVs and VRUs in urban environments.

Conclusion from other studies said that, derived from Focus Group discussions, junctions are one of the most relevant critical situations for VRUs, as vehicles have more opportunities to collide and VRUs are endangered due to being hardly visible or easily overlooked. Discussions from focus groups with VRUs determined that the visibility of VRUs is generally perceived as a major factor in view of traffic safety, especially in connection with heavy traffic and high-speed situations. Correspondingly, technologies and systems enhancing the detectability and visibility of VRUs are considered to have

high potential to increase the traffic safety of VRUs. (Scholliers, J. et al., 2016b; Walker, I. 2005)

A paper related to the VRUITS project, which was previously mention, also included focus group research as they understood how heterogeneous are VRUs and created categories to perform the focus group with the same structure, the findings were presents with the semi-structure interviews outcomes, this study concludes that the approach gave insight into actual stakeholder needs and attitudes towards the main objective, they consider the value of quantitative data which can help compare at the European level, but conclude that is important to go to the micro-level and gather qualitative data as well to identify individual user groups and assess relevant characteristics to achieve safety in mobility and comfort. (Bell, D., & Risser, R. 2017)

Another interesting qualitative method of research that can include VRUs are Semi-structured interviews, this method consists in a series of structured questions and some questions tailored for the interviewee that allows the interviewer to dig deeper in certain aspects to enrich the research.

Some studies have used semi-structured interviews with experts and truck drivers to see their perspective of VRUs. These interviews have determined that security for all users of streets is related to individual behaviors, respect and awareness of others, Galal, A., Donmez, B., & Roorda, M. J. (2023) conclude that truck drivers need more practical training to bridge the gap between training and real-life driving to improve performance in difficult situations, although interviewees highlighted that safety for VRUs can be better addressed through policy and regulations which should mean improvements on infrastructure, educational campaigns and regulations for truck driver working hours.

3.3.2. Leveraging on Covid-19: an overview of recent mobility practices claiming for more just streets/cities

This paragraph is an analysis of experimental practices that have made streets more just for VRUs. It sheds some light on diverse interventions that have transformed the way we plan cities today, the users that we now prioritize and the importance of greater justice when it comes to inclusion and accessibility to public space and its implications in other aspects of life.

Some of the practices and interventions within our cities today are the result of innovative and experimental ideas developed during the Covid-19 pandemic. While some of these initiatives have endured, others have given clues for continuing to plan environments which support healthier and more sustainable behaviors. This crisis exposed the mistakes of the past and came with an opportunity to transform the way we move through the cities, by improving our choices towards more sustainable modes of transport and making policy measures that do not impose additional disadvantages on vulnerable groups. (Nikitas, A., et. Al., 2021)

During the pandemic, alternatives to private car use became a priority for city planning, some people had the need to move around the city due to their role as essential workers or first responders, but most were encouraged to stay at home and if possible, avoid peak hours in public transport or opt to use bicycles or walk as an alternative (WHO, 2020). For instance, Bogotá, Colombia implemented 35 km of pop-up bicycle lanes overnight and added another 49 km a month later to reduce crowding on public transport (Ramírez, 2021). This was also done in Berlin, Germany where the implementation of

pop-up bike lanes in the first wave of the pandemic received high levels of acceptance and increase cycling usage where located (Becker, 2022)

Figure 3: Pop-up bike lanes in Bogotá, Colombia
Source: Bogota.gov.co

Figure 4: Pop-up bike lanes in Berlin, Germany
Source: Metropolis.org

The most widely replicated intervention worldwide has been the creation of parklets. These former car parking spaces were temporally transformed into miniature public spaces adjacent to the sidewalk, serving different purposes. In some cases, parklets became outdoor dining areas for restaurants when indoor dining was restricted. This kind of installation works to this day in Europe, reallocating space from cars to people, benefiting both restaurant owners and customers.

Parklets aren't an original idea from quarantine in 2020, but an initiative leads by Matthew Passmore and partners at the Rebar Group inspired by Gordon Matta Clarke's Fake Estates project. The original idea was to find niche spaces in San Francisco, US and by arriving in street parking spaces and putting something else that could be more useful or desirable and calling it Park(ing) and they launched the park(ing) day in November of 2005 and continue to happen each year in September, soon after created a How-to Manual as a guide to help the replication of this kind of installations around the globe. (Park(ing) day; 2005)

Figure 5: Parklets used as outside dining for restaurants
Source: Archdaily Mexico

Figure 6: Parklets used as public space and rest areas for pedestrians near busy streets
Source: Archdaily Mexico

In Melbourne, Australia and in San Francisco, US these parklets, are now known as hospitality or playful parklets, and they went beyond serving restaurant to serve as a placemaking approach seeking to involve inhabitants in the activities that were done in each one, by doing activations such as orchards, music performances, how-to play sessions of board games for the elderly, workshops, and more including people of all ages (Stevens; 2024). In London, UK the Cross River Partnership organization developed a guide to design and promote parklets considering barriers, approaches, case studies and sources for further interest and replication. (CRP; 2020)

As a result of the covid-19 pandemic, people developed urban planning strategies and policies that helped find solutions to inequalities, support vulnerable groups and improved quality of life and over all well-being in times of pandemics but also after, in

normal circumstances, Mouratidis, K. (2021) presented result on how the role of transport and land use, the importance of urban blue-green space and nature, nearby open public space, access to facilities and services, housing, and information and communications technology (ICT) in quality of life in cities has changed during COVID-19 with the opportunity of further research.

This time of crisis also arose issues that cities already had and were kept silent, street vendors most times than not are not regulated and were affected by the crisis, (Matamanda, A. R., et. Al., 2023) Homeless and migrants who fell into homelessness were other part of the population affected as they in normal conditions are already excluded which meant that they had limited access to the information we all got and did take measures against the virus, the responsibility fell in the hands of homeless care center that weren't equipped to provide for everyone not even before the crisis (Barbu, S. et. Al., 2021; Jang, H. S. et. Al., 2021)

Transforming urban areas like parking lots into potential public spaces for people became not just a temporary solution but a permanent one and modifying existing public spaces to make them safer became a priority for municipalities.

A common response to the pandemic by cities was to perform various street experiments searching to open public space by restricting access to cars, The municipality of Milan came up with the “strade aperte” (open streets) program, showcase in figure 7, this initiative is not and anti-car projects, is an attempt to reconsider and redesign urban mobility and public space, it seeks for more sustainable and liveable streets in the long term, the plan includes bike lanes, traffic free zones, shared streets and parklets taking spaces from parked cars areas. (de Bruijn, M., & Bertolini, L., 2020)

Figure 7: Planed transformation for piazza Sicilia in Milan, Italy
Source: Comune di Milano

The lack of space that could be guaranteed to citizens in popular crowded areas of the city was a huge problem when the pandemic hit as the recommendation from the WHO where to take distance from one another, Amsterdam came up with a temporary measure called “menu” that gave were mobility/public space recommendation that could be quickly implemented to facilitate safety ways for pedestrian cyclists to move around the city at a 1.5 meter distance from one another. Is very curious to compare the las

mention intervention from Milan that has been going one since 2018 with the program “piazza aperte” by using the same principals of making public space more accessible to citizens, and a projection to change parts of the city for the better and this one from Amsterdam, that has an emphasis on temporary which implies no existing policy goals in sustainable mobility of that nature for the city. (de Bruijn, M., & Bertolini, L., 2020)

Street experiments such as living streets, pop up bike lanes, parklets and others were very useful to intervene mobility and public space during the pandemic as they were quick and cheap and if it was necessary they were adjustable to the necessities as the situation changed, these experiments were temporary, and could be part of systematic change only if institutions were interested on that possibility or if they only saw it as a provisional solution. The policy implication of city street experiments is reflected on the potential for long term plans and policies that will allow a systematic change in urban life. (Bertolini, L., 2020)

Temporary urban interventions done for the covid-19 pandemic can be categorized as subdividing space by setting boundaries or repurposing streets and abandoned public space with pop up infrastructure and tactical urbanism strategies, both for social distancing purposes (FANG Y., YOSHIMURA Y., 2023). These initiatives could go bottom-up or top-down, as could be led by citizens, designers, artists and the local government.

Planning experiments contemplated the inclusion of citizen participation as an active asset, Pantić, M., et. Al., (2021) argued that the purpose of citizen participation should not only be by voting on an offered solution, but to debate on a communication exchange through which an idea ultimately will be developed, during the pandemic the

idea of considering opinions in mass through internet was seen as an option but also a risk, lacking trustworthiness from both sides, people who were not comfortable to share their perspective in a platform, as well as willingness to do so. As a conclusion this study found that both traditional and virtual participation has similar drawbacks, most of the population is not interested in active participation for decision, design or policy making processes, but they often get involved to protect their private interests.

The COVID-19 pandemic reveled how public participation has changed, the changes were mainly directed toward the introduction of technology, a shift to virtual participation have already been considered the “new normal”, but is important to note that face-to-face communication and traditional forms of participation cannot be simply replaced by virtual forms of participation, instead is an opportunity to innovate with the fact that virtual participation offers new opportunities that were not possible in the traditional approach and considered a combined approach for future participatory processes as well as an increase in accessibility to digital services, process of digitalization and the enhancement of digital literacy to mitigate the side effects of misinformation, inefficient working and education and privacy and confidentiality violation and promote community well-being. (Pantić, M., et. Al., 2021; Hassankhani, M., et. Al., 2021)

Planning strategies are directly linked to mobility, Monteiro, J. et. Al., (2023) conclude that cities nowadays are including active mobility in their agendas as more cities are actively working on post-covid mobility solutions as well as prioritizing sustainability, suggesting that urban transport policies should aim for higher resilience, social equity and the reduction of the carbon dioxide emissions.

Figure 8 relates active mobility and disaster management to transport and spatial planning to achieve explain overall city planning in relation to the pandemic and future crisis.

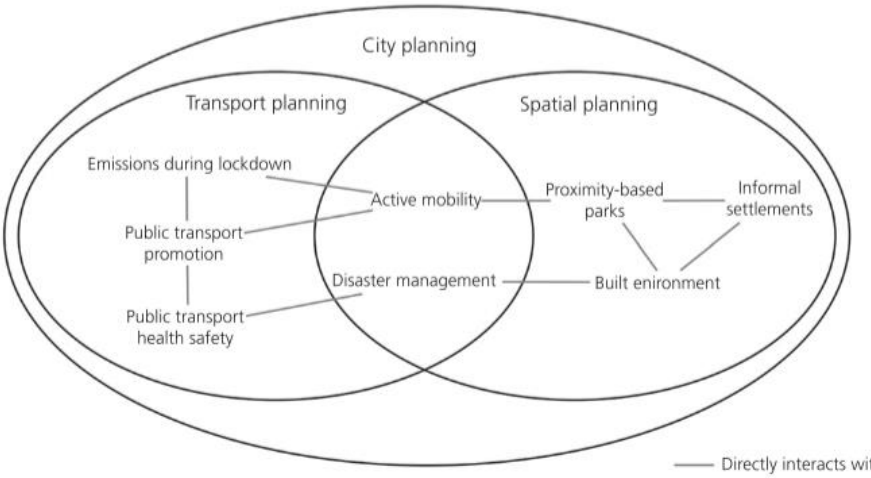


Figure 8: Relation between active mobility and disaster management with overall city planning. Source: Monteiro, J. et. Al., (2023)

In the UK, school streets were introduced prior to the pandemic, between 2015 and 2020 there were about 70 school streets in London, and till 2022 about 420, school streets in London are streets that are closed to traffic directly outside schools at pick-up and drop-off times, often using temporary materials, with the help of volunteers, they are now a familiar part of the urban environment for Londoners. The objective of school streets is to improve air quality, reduce road danger and increase physical activity by promoting active modes of transport. (Thomas, A., et. Al., 2022).

Other cities in the world have replicated school streets with different approaches, New York uses public space as classrooms for lessons to take place while Barcelona closes uno lane of traffic instead of the whole street. (Thomas, A., et. Al., 2022).

The Healthy Streets Everyday Programme and the Cross River Partnership (CRP) did a report on lessons learned from temporary and emergency closures that focuses on

school streets, the outcomes are a series of recommendations that can help later interventions and help as a promotion of this kind of interventions that include reduction of traffic, identify and remove barriers to walking and cycling, improve the public realm and monitoring interventions even when they are already done an have been functioning well. (Thomas, A., 2022).

The implementation of public space interventions during the pandemic is directly linked with social aspects of life, Verhulst, L., et. Al., (2023) identified that the challenges regarding public space were: how to achieve physical distance; and how to meet the need for access to qualitative public space. And the mobility challenges were how to ensure road safety and access to travel for all; and how to promote physical activity and introduce active modes of travel. Verhulst, L., et. Al., (2023) argued that mobility and public space measures in general, and street experiments in particular, are potentially the response to the urgent challenges identified.

The Covid-19 pandemic did not start research on pandemics and its implications for urban life, instead reopened the interest to information that was already gathered with the epidemics the world saw before, Monteiro, J. et. Al., (2023) enumerates some of them, like the cholera outbreak in London, Paris and New York where inhabitants were searching for open green and sunny areas, which contributed to the creation of outdoor areas inside buildings and outside of them to provide fresh air and sunlight.

Research also focused its efforts on resilience, planning practices and policy responses need to be regional in nature, which refers to a spatial difference from cities urban core to the suburban areas that compose metropolitan areas, and the impacts that the pandemic had in the urban realm lies on the recovery strategies that depended on the

response from citizens and policymakers to have learn an improve overall wellbeing for future hazards. (Vicino, T. J., et. Al., 2022; Martínez, L., & Short, J. R., 2021)

In the following table there is a collection of interventions done during the Covid-19 pandemic regarding public space and mobility around the world.

Table 1: Collection of best practices done during the Covid-19 Pandemic regarding public space and mobility.

TOPIC	INTERVENTION	DESCRIPTION	LOCATION
PUBLIC SPACE	-Pedestrianization of streets	- Pedestrianization of certain streets, at least one in each neighborhood of Madrid to avoid crowding during covid.	- Madrid, Spain
	-Parklets	- Parklets are former parking spaces that have been converted into miniature public spaces, often adjacent to the sidewalk. (NACTO)	- USA-EU
	-Strade Aperte	- The "strade aperte" project seeks to reallocate street space from fast to slow mobility, prioritizing cycling and walking, Milan being a relatively small yet dense city, can easily switch to alternative transportation modes, especially that the average commute is less than 4km, which is less than 40 min walking at a moderate pace, and more than half the population already uses public transport to get to work. The goal is to fast apply the 15-minute City concept by using Tactical Urbanism instruments to create new public open spaces and cycling paths. (Isocarp.org 2021)	- Milan, Italy
	- Stay healthy streets	- Stay Healthy Streets are open for people walking, rolling, biking, and playing and closed to pass through traffic. The goal is to open up more space for people rather than cars as a way to improve community and individual health. (Seattle.gov)	- Seattle, USA
	-Slow streets program	- Oakland has enacted an extensive Slow Streets program to support pedestrians, cyclists, and people who use wheelchairs by creating additional space for physical distancing. All existing and proposed Neighborhood Bike Routes, which account for nearly	- Oakland, USA

		10 percent of all Oakland streets, have been closed to through traffic as part of the program. (planning.org)	
	- Open street program	- New York City's Open Streets program transforms streets into public spaces open to all. These transformations allow for a range of activities that promote economic development, support schools, facilitate pedestrian and bike mobility, and provide new ways for New Yorkers to enjoy cultural programming and build community. (Nyc.gov)	- New York City, USA
	-The playful parklet	- Playful and playable - portable - pliable a 'playful parklet', available for free public use, which was transformed and relocated between four urban contexts in Melbourne. It demonstrated a creative, collaborative placemaking approach involving artists. (Stevens, Q., et. Al., 2024)	-Melbourne, Australia
	-Temporary encounter zones	- Vienna has created 14 'temporary encounter zones', where pedestrians are allowed to walk in the street to give residents more space for socially distanced walking. Vehicles are still allowed to drive through at 20 km/hour if it is a one-way street or they are going to a garage. The streets were selected based on areas with particularly narrow sidewalks and a high population density with no parks or green spaces immediately nearby. Vienna also has opened 20 streets to pedestrians where driving was previously banned. (UNhabitat.org)	- Vienna, Austria
MOBILITY	- Pop-up bike lanes	- In March 2020, a first phase of 35 kilometers of temporary bike paths was implemented to facilitate the mobility of cyclists in	- Bogotá, Colombia

	quarantine time and a month later, 49 kilometers more were implemented, which functioned as mirror corridors to public transport. These 84 total km added to its 5050 km of built bike lanes to further stimulate the use of the bike. (Francke, A., 2022)	
- City30	- The City30 initiative aims at safer urban transportation, improving the health of residents, and reducing noise pollution. The 30 km/h speed limit has been adopted also by other European cities, in the general frame of promoting the Vision Zero policy for road safety, adopted by the European Union. (EU Urban Mobility Observatory)	- Brussels, Belgium
- Free or reduced prices on bike rides through apps	- In Berlin, 30-minute rides on the city's bike share, nextbike, were made free starting in mid-March through a partnership with the Berlin Senate Department for the Environment, Transport, and Climate Protection. (POLIS Network)	- Berlin, Germany
- Pop-Up Bike Lanes	- One of the first places to adopt pop-up bike lanes to accommodate the changing mobility patterns brought on by the pandemic was the city of Berlin, Germany, and its highly populated neighborhood of Kreuzberg. (Uci.org)	-Berlin, Germany
- Emergency cycling plan	-Bordeaux has announced a plan to roll out emergency cycling infrastructure in response to the COVID-19 crisis. The plan focuses on 100 priority “zones” within the metropolitan area that have a high potential for cycling but currently lack the appropriate infrastructure. In total, 78km of temporary bike	-Bordeaux, France

	lanes will be implemented. In the city of Bordeaux itself, 40 zones and 23km of cycle lanes will be rolled out. (POLIS Network)	
- Introduction of e-bikes	- The City of Madrid is distributing 4,800 e-bikes to promote active mobility and to reduce air pollution from cars. With this measure, cyclists can hire bikes more easily. Madrid intends to stimulate the use of bikes, which could contribute to a reduction of cars used and improve the city's air quality. (Covidmobilityworks.org 2020)	- Madrid, Spain
- Temporary cycle paths	- In April 2020 Rome approved an Extraordinary Plan for post lockdown mobility (Resolution no.76 Establishment of cycle routes to support sustainable mobility for the post lockdown restart phase from national emergency for COVID 19 - Approval of Extraordinary plan of interventions to be carried out using only horizontal and vertical signs on roadways of road infrastructures) which provided for the construction of 150 kilometers of temporary and permanent cycle paths along the main roads of the city and along other key routes. (Dydas.eu)	- Rome, Italy
- New bicycle parking places and an increased budget for cycling measures.	- As part of its long-term improvement in cycling conditions, Freiburg implemented bicycle-friendly policies during COVID-19. For example, the city installed 700 new bicycle parking spots in the city center in 2020 and 2021. In late 2020, Freiburg also increased its budget for cycling measures to eight million euros per year in 2021 (from roughly 1.2 million euros per year 2015	-Freiburg, Germany

	through 2020) as part of the city's ambitious policy aimed at improving active travel. (Streetsblog.org)	
- Pop-up Bike lanes	- The pop-up bicycle lanes were implemented as a pilot project with the goal of improving cyclist safety. In winter 2020 and 2021, the lanes were discontinued while data were analyzed. After demonstrating positive safety outcomes, the lanes were re-installed in 2021 and will now be made permanent. (Streetsblog.org)	-Munich, Germany
-Low Traffic Neighborhoods (LTNs)	- LTNs help to make the streets around London easier to walk and cycle on by stopping cars, vans and other vehicles from using quiet roads as shortcuts. They are designed to stop places where families live from being used as a shortcut or rat-run for through traffic by blocking the roads off with bollards or flower beds. It is still possible to ride a bicycle through them and walk along the road. The road the LTN is on can be accessed in a car by residents. (Uk.gov)	- London, UK
-Plan velo	-The program was initially launched in 2019 but received a boost in investment in the second phase of Plan Vélo. The routes imitate some of the busiest underground public transit lines, including metro lines. There is something called plan Vélo that calls for making every street in Paris Bicycle friendly by 2024 seeking for promotion of 72% of the city's on – streetcar parking spaces. (Paris.fr)	-Paris, France

Most of the intervention that were performed during the crisis of the Covid-19 pandemic are related to: a) alternative modes of transport such as walking, cycling and share mobility (e-bikes and scooters) that also act as more sustainable modes of transport and achieve the physical distancing requirements; b) reducing speed of motorized private vehicles to improve security for other modes of transport, especially VRUs; c) Tactical urbanism, municipalities did not have much time or money to respond to this crisis, this strategy gave the chance to activist, NGOs, and other community members to express ideas and performed affordable intervention that had great impact in urban life; and d) street experiments to encourage diverse uses in public space, searching to re activate cities in a safer way.

The review of different lessons learned, and recommendations gathered from the Covid-19 pandemic related to transportation, urban planning and impacts related to environmental factors are summarized in the following table:

Table 2: Lessons learned and recommendations from the Covid-19 pandemic

TOPIC	CHALLENGE	RECOMMENDATIONS
TRANSPORTATION/MOBILITY	-Agglomeration in different transport methods is a risk factor that can contribute to the spread of infectious diseases.	-Cities in south America and China introduce restrictions like an obligatory distance between passengers and priority to use public transport to essential workers, reducing traveler numbers by about 80%. (Budzynski, 2021) this strategy helped prioritize essential movements maintain does that were not essential at the minimum. Other people that had to work were encouraged to work from home, use active mobility alternatives or go by car when the distances were greater.
	-People tend to avoid public transport and instead shift towards private cars, bikes or go by walking to avoid getting infected. (Bucsky, 2020)	-Maintaining frequent public transport services. Especially during rush hours, it decreases the risk of infection caused by agglomeration.
	-The increasing use of private cars continues to pollute urban areas causing harm in the health of other kinds of road users. (Polednik, B. 2021)	-Using other modes of transport like traditional bikes, mopeds and scooters is encouraged, for this is necessary to provide adequate infrastructure and regulations.
URBAN DESIGN	-Some cities lack appropriate levels of green and open spaces that do not meet the outdoor exercise, and recreation demands of their citizens while fulfilling social distancing requirements. (Sharifi, et. Al., 2020)	-More space should be allocated to pedestrian areas and open spaces in relation to the number of roads and the number of inhabitants that every neighborhood has.

		-Municipalities must ensure equitable access to urban blue-green spaces and nearby nature areas, this will provide essential functionalities for physical, social and cultural activities with a lower risk of infection, improving the overall well-being. -Develop and maintain accessible and inclusive open public spaces through bottom-up initiatives can bring profound positive changes. (Lydon, 2015)
	-Lack of resources to develop projects focused on public and community spaces in vulnerable neighborhoods.	-Develop third places with outdoor areas for social interaction with the use of tactical urbanism can be an alternative to low resources and limited amount of space.
ENVIROMENTAL FACTORS	-Evident positive and negative environmental changes have been found because of covid-19. Air quality, noise levels and cleaner seashores improved, however, waste generation increased due to measures for health safety related to lack of waste management which led to contamination of water and soil. (Zambrano-Monserrate el. Al., 2020) NASA and ESA have released satellite images of various countries before and after lockdown and information related to the reduction of about 20% to 30% on NO_2 emissions in different	-Promote programs and initiatives to reduce the carbon footprint, such as school streets that encourage people from early stages of life to choose to walk or bike. -Reducing water waste, encourage recycling strategies to reduce waste, promote renewable energy use, reduce single use plastic, stop promoting fast fashion, etc.

	countries around the globe between march of 2019 and march of 2020. (Muhammad, et. Al., 2020) -The pollution generated by the increased use of private cars not only affects people on the roads and neighborhoods, but it also affects other species that live near roads in urban and suburban areas.	-Better choices regarding the mode of transport use can be encouraged by municipalities when infrastructure is provided, the presence of other species in places where there is urban expansion areas should be monitored to ensure their safety.
FACILITIES AND SERVIES	-Long distances between housing and services became a challenge when the priority was to contain the virus as residential areas could be in suburban or rural areas and hospitals or main cultural activities remain only in urban areas or in city centers. -Some people, particularly homeless, foreigner students, disable people and low-income people experience difficult access to healthcare and leisure activities. -Little to no housing withing the metropolitan area of cities, prices got higher for various reasons.	-Mix residential and commercial land use can be useful as well as the development of local neighborhood centers to provide walkable access to a variety of local facilities and third places. -The 15-minute city model which seeks to provide all essential services on a radio of 15 minutes distance by bike or foot can be implemented carefully when the conditions are adequate and modified so that it fits the necessities. -Ensure good access to healthcare infrastructure and essential services through a smart and just distribution of health centers can truly serve people far from city centers and other urban areas. -A compact urban form intended as a high morphological density can prevent urban sprawl and might provide easier access to healthcare facilities and services.

4. Qualitative data collection: Interviews and focus group

This section includes the semi-structured interviews performed for this thesis; the analysis was done by reviewing the video tapes as well as the transcriptions coding the most mention topics to then relate it to three dimensions of justice: distribution of justice, procedural justice and recognition of justice, depending on the question. What came out of this analysis is the gathering of relevant points of each question by the participants, some of the questions required examples of best practices given by the participants which meant further research from the author and some added sources.

It also contains the outcomes of the focus groups; the methodology to revise the session was the same, a revision of the video tape and transcription of the each section in the three separate breakout rooms, that correspond to the same dimensions of justice, this chapter contains the highlights and interesting viewpoints of this analysis.

4.1. Semi-structured interviews with experts on mobility, public administration and advocates representing VRU groups.

This paragraph contains the information and suggestions gathered after performing a total of 18 semi-structured interviews. The first part contains responses to the general questions posed to all participants, aimed at understanding their perspectives on transportation and social justice. The second part includes answers to more specific questions: first, those directed to academic experts about VRUs and knowledge gaps related to mobility and VRUs; next, those for policymakers concerning policy and decision-making processes, as well as citizen involvement; and finally, the questions for advocates, focusing on collaboration and examples of best practices.

General Questions

Topic: Right to the street

Participants were asked about the meaning of the right to the street, the responses are the summary of perspective on this concept and some others related.

The definition of 'the right to the street' is consistent across participants, though some aspects vary depending on their background or advocacy group. The most mentioned themes when discussing 'the right to the street' in the interviews were freedom, non-discriminatory use, and the concept of streets as public spaces, *"I think the street is first and foremost public space"* (Interview N°2)

In that sense, streets are places that are not used just for transit, streets are places to live the city, where people move to get to their destination but also can have the ability and means to stay and take advantage of the space that has not a clear owner, and it welcomes everyone who is willing to take care of it. We have tainted the definition of public space through time not knowing how much a lost this means. *"Nowadays, if you use the expression public space, people tend to think of gardens or maybe playgrounds, maybe a square, but the road is perceived as not public space"* (Interview N° 10)

The perspective of municipalities must be broader; they must think of many situations where the most affected are the ones that are more at risk (elderly people, children, physical or cognitive disabled people) they have to assure that everyone has the right to use the public space with ease and in a safe way, to achieve this, is very important to give a voice to the ones who are actually in the street, to know their needs and the reasons behind their behaviors as well as to give them the chance to choose the features

and/or elements of the places they live every day. *"This right goes beyond the possibility of moving around the streets. In fact, it must encompass the right to appropriate public spaces as places to meet and socialize"* (Interview N° 14)

For this, each group should have at least one advocate that prioritizes them, this people act as a bridge between citizens and the authority, the most common thing they have in mind regarding the right to the street is accessibility presented most commonly as the lack of it, freedom of movement and the complexity each one can have, as well as what part of the spectrum people with certain disabilities may be on. *"right to street means equal and safe access to public spaces for everyone, including for disabled people, it means marginalized groups are included in public spaces, especially if they feel they can move and are free to move around."* (Interview N° 7)

The right to the street is always accompanied by the right to the city which is commonly referred to as the right to the built environment, to a house with water and electricity and the infrastructure outside. *"Whereas the right to the street is both, it's about mobility and it's about citizenship and participation in the city"* (Interview N° 16) In that sense, the right to the street comprehends the public space, the ability to move through space and a sense of public participation in a community.

This shows already a new definition of the term "right to the street" understanding the street as public space, like we do with parks and plazas, where we transit but also interact with people from different ages, capabilities and income groups, hopefully also making mobility choices according to our needs having a sense of community in mind ensuring that our political voice is heard.

Topic: Social Justice

Participants were asked about their perspective on access to public streets to all community members, and what is their train of thought behind their point of view.

When mentioning access, some of the responses referred to physical accessibility, others talked about how some groups of people must be prioritized, or how some users could be object of discrimination or classified as not desire in certain places. The meaning of public can vary also from person to person, some of them think that public means for everyone, in this perspective everyone should find it easy and accessible to use the space. *"Justice after all means that we strive to make things accessible and to give the possibility to everyone according to their needs, to the things that we consider public."* (Interview N° 2)

The definition of justice can also vary since justice for some can make places where others are not welcome, to achieve justice, we must take a position and advocate for that, some interviewees talked rationality and to take the side of the most neglected group, arguing that, when we consider their needs and we design with them in mind, we may align with the needs of some others as it is very difficult to bring perfect justice for everyone. *"When we think about accessibility, we can make a place accessible for everyone by starting with the most marginalized one."* (Interview N° 3)

Nowadays the accessibility challenges we face are beyond what has been research before, this means that we have to update our knowledge and that we have to include the new forms of transport that have appear out of necessity, costs or lack of options, pickup car drivers, car sharing platforms, bike sharing or other modes of transport that may not yet be govern by law, making citizens and public administrations continue to question who should be admitted on public streets. *"Every pedestrian, cyclist, and public*

transport user should have access to the public space, but maybe there are some limitations now." (Interview N° 5)

Several interviewees adopted a community-oriented perspective on this question, thinking of individuals as part of something bigger, making the social effort to consider others' needs and challenges as well as connecting with people who may be experiencing similar things creating a sense of familiarity which can reinforce relationships. This can make public space a place for people of different ages and cultural, economic and social backgrounds fall into equal conditions which would help to reduce isolation and promote inclusiveness, accessibility and overall well-being. *"when communities feel part of the space, they tend to create a sense of belonging, which increases their interest in participation and involvement in creating safe and just spaces."* (Interview N° 14)

In this regard, we have to design for the people that will inhabit the places we make, find the target population for the place we are designing and ask them what they think is needed with a critical eye, and remember that people are on the small scale of things. *"there's the engineering aspect to it but at the end of the day these places are not for robots, these are for people, so why are we pretending that we can predict and simulate everything like it's for robots."* (Interview N° 13)

That can also be related to how people tend to assume that policy makers and the government can't do anything to improve city life and the issues faced every day by citizens, we are used to change our mobility patterns to fit the difficulties in our route and even if we have ideas to solve this problems, we assume is not possible and this can result on choosing to move by car just to avoid the challenges of using other means of transport. *"you should not defend your right to use a car because public transport is not good, you*

should defend your right to have good public transport because you are a citizen" (Interview N° 10)

Some individuals don't feel that they are part of the population of a city even if they spend most of their time in the streets, homeless people live in the streets for decades and this hasn't change, architecture and landscaping has come up with what is commonly known as "hostile architecture" to prevent homeless people to make shelter in public spaces, forcing them to be outsiders of the community without facilitating alternatives to their situation, this design form is not to make life easier for everyone in public places, instead is discriminating homeless people and others so that they have to hide from public life making places in cities classist and exclusionary. *"Spaces for these people haven't been considered, instead, they end up being hostile architecture that seeks to protect private goods, not public goods."* (Interview N ° 12)

Mobility policies have been in place for more than forty years, this means that other means of mobility like "care mobility" has not been thought about in the mobility system, some interviewees brought up this concept that is not new, but has gain force recently making people question how mobility systems were design on big scale and why does it seem to be mostly for and by men prioritizing long distances and connection to the work district on cities. *"what happens is that women because of care tasks, they do more trips on foot and so the needs are different, 50% of the population was not thought about when designing the mobility system."* (Interview N° 6)

Public space should always have the idea of community as the main target, there are spaces that are made for certain parts of that community, but if we ensure spaces for each one to have a place, maybe then we can achieve social justice.

Topic: Awareness and safety

Participants were asked about the importance of public awareness and education to promote and achieve safety on streets.

Most of the participants talk about the way physical space is designed and the difference that this makes in the way drivers behave, clear signs with safe speed limits are very important but it is not enough, drivers tend to go as fast as they can when there is no police control, and the infrastructure allows it. *"the faster you go, the more dangerous it is for pedestrians and cyclists."* (Interview N° 6) The most effective way to change urban behaviors is by changing the physical space so that all road users have their own space, not just the car. *"as you narrow the road and bump out different kinds of pedestrian crossing curves or public transit areas, or even the bike lanes it makes drivers slow down because it's a more complex and narrower situation"* (Interview N° 16)

The way people behave and the decisions they make every day are a reflection on the way they see life, some participant acknowledge that the way this is transformed has been greatly studied and thought about when seeking to reeducate or introduce new information to citizens, it has been consider that to start collective change will come after individualized change, but maybe this can be the other way around. *"we need the collective social learning in order to change individual behaviors."* (Interview N° 8)

People need to be aware of how their mobility choices can impact community life. When they understand this, they become more conscious of how their actions affect others, leading to improvements in overall safety and well-being.

The way information is communicated, as well as identifying the target audience, is crucial. It must be accompanied by meaningful action; simply raising awareness through campaigns is not enough. This applies to a range of issues, such as street harassment, where many campaigns focus on how women should behave rather than addressing why harassment is an unacceptable behavior. Similarly, in promoting children's safety, it's important not to amplify parents' fears about street dangers but instead to encourage responsible and safe street use for all kinds of users. This is a challenge for both municipalities and organizations.

In recent years, municipalities and other entities in charge of changing streets have to deal with how people rely on technology to tell them which route to take and how to arrive to wherever place they need to go, even if the change done to the street was announce way before it was actually done, the possibility that the user is not aware of this change is still very high. *"is how in sync are you with how in sync are the local authorities or the city planners with various tools out there that can at least raise awareness so that people don't find themselves inconvenienced."* (Interview N° 15)

To achieve social and physical safety we must start by designing the urban form or change the current one in such a way that people are encourage to choose ways of moving that do not impact in a bad way other road users, we also should have as a target those who have been neglected the most in recent years for next planned interventions , this can only accomplish the goal of a more safe and just urban space.

Topic: Transportation Role

Participants were asked about their perspective on the role transportation plays to achieve social equity in urban environments.

Interviewees went towards acknowledging that transportation is not to just to go by car or any other motorized vehicle, there's also other ways to move around that some of us choose when doing certain tasks, this can be care tasks as previously mention, especially women taking care of others. *"women have a completely different travel pattern compared to men because they make multi stop patterns, shorter than men, but multi stop and most of the time they have to move, not for working reason but for care reason"* (Interview N° 3) The way we designed transport systems has had an impact, and the objective of our designs have to change as we have seen how it neglects half of the population, is a matter of including also the needs of women in the transport system, that way, we are going to find out things that have been ignored for years.

Other social issues also affect the way we move, and the choices we make as well as the options that are available and accessible in terms of location and affordability. In many cities the problem begins with the fact that some are able to live near their work and many have to live far away, and it seems that the ones living far are the ones that have a more intensive labor work to do, so they have to travel long distances every day to come to que city and work, this can mean a great amount of time, money and effort spent, the same amount of time that ideally should be balance between work and leisure activities. These people should have the chance to live in neighborhoods that have excellent accessibility to public transport, this means that it is physically accessible, safe and affordable accompanied by a good walking and cycling system infrastructure, including sidewalks, parks, cross walks, bike paths, etc. So that they don't have the need for a car.

To transform people's thought processes and mobility choices, we must begin by designing transit plans and projects that reshape the built environment and improve the

relationship between different modes of transport, from walking and cycling to private cars, public transport, large vehicles, to informal collective modes. It's essential to consider how this new public infrastructure will impact existing infrastructure, residential property prices, and the community. *"The investment in infrastructure and making it work for people of all socioeconomic levels can move through the space of the city is really important to promote equity"* (Interview N° 16)

A transport system that is efficient and accessible should be a priority for municipalities, to help access opportunities and resources for everyone to promote social cohesion. *"By providing mobility for all, regardless of economic conditions or geographical location, public transport contributes to a fairer and more inclusive urban society."* (Interview N° 14) To achieve equity, municipalities must consider all road users, ensuring that sustainable modes of transport—both collective and individual—are safe, attractive, and accessible. *"somewhere remote or where public transport is not going and the only way to access the place is by car, then social equity is not really there."* (Interview N° 17)

In these cases, active mobility should be prioritized for short distances, this can only be achieved if the necessary infrastructure is in place, ensuring both the physical and social safety of users. Additionally, it's essential to reduce the promotion of private motorized transport and instead support public transit, fostering a more just, feminist, and democratic mobility system. *"I believe we need to limit mobility in motorized vehicles and really offer options for accessible, fair, and equitable mobility on foot, by bike, and via public transportation."* (Interview N° 12)

Academic expert questions

Topic: VRUs

Participants were asked how they would define Vulnerable Road Users (VRUs) and what are the characteristics that make them particularly at risk in urban environments.

Some responses aim to redefine the term 'VRUs,' often focusing more on the technical aspects than the social ones, they tend to emphasize the mode of transport rather than the people actually using the streets. For some, VRUs are simply individuals not using vehicles like cars, buses, or trucks. This definition focuses on the mode of transport rather than the users themselves, in this sense, only pedestrians and cyclists fall inside the category, but these distinctions require deeper consideration. *"There is more than that within the categories, people with disabilities, mobility habits, cognitive disabilities, woman, kids, elderly, those are not in that definition, and it's not a good thing"* (Interview N° 2)

The way to redefine this term shouldn't be from the perspective of a car or any other kind of motorized vehicle, it must take the place of the people on the streets, putting us as the priority. "*Vulnerable users are people, people moving around, and they are made vulnerable by a technology which is dangerous, it's destroying the planet, polluting the air and creating collisions and injuries and deaths"* (Interview N° 10)

To say that a group of people is vulnerable may not be the best way to frame a population, what makes them vulnerable? And who are we to put that label? *"there are people put in vulnerable situations and that you can see easily by thinking how much space is allocated to cars, how much is allocated for cyclist and how much for pedestrians."* (Interview N° 3) People put in vulnerable or marginalized situations exist,

we can see them when we realize that cities are made for motorized vehicles and the residual space is left to pedestrians and cyclists, that's why mobility justice is a thing.

There is a tendency to make decisions on behalf of others without considering factors beyond the immediate context of the space and place where people live and move. For example, specific groups such as the elderly, people with disabilities, and children who have distinct physical mobility needs that must be addressed for them to navigate the city. Similarly, women have unique needs and behavioral patterns that are often overlooked in transportation planning, which tends to focus solely on general aspects of the population.

A proposed way to redefine VRUs could be by using a scale: if an individual does not meet the normal threshold for access, if their safety cannot be ensured, or if their right to participate in society and the community is compromised, they should be considered a VRU.

Some others claim that any person can become vulnerable depending on there situation which can change at any time of day *"everyone can be a vulnerable road user, everyone can be subjected to vulnerability at one point in time"* (Interview N° 13) In this sense, we can change the state of "vulnerability" which is often imposed rather than owned. In certain situations, we change this dynamic when we take measures to protect ourselves from external dangers, without realizing that we may be becoming a risk for others.

The way we define VRUs may evolve in the future, as we are currently questioning both the meaning of the term and who it applies to.

Topic: Research

Participants were asked about what areas of research may be underexplored in relation to mobility and VRUs in their opinion.

Participants explore ways to broaden the concept of VRUs as part of the ongoing research, while also examining the definition of mobility and its various branches. This discussion led toward the idea of mobility justice, with the aim of uncovering additional dynamics and arriving at an updated version of who constitutes VRUs today.

Others would add research on different fields, maybe social scientists involved in achieving other important aspects or goals of public space which comprehends streets but is away from transport far from transportation like social cohesion. A multidisciplinary approach on this matter can break down and expand the knowledge we have today, that way, helping the transformation of cities, but for this goal, more than professionals or experts we need citizen participation as part of research, design and actual doing. *"experts are not only those with academic knowledge, but also experiential knowledge and citizens are those that leave the city so we should consider also them as experts."* (Interview N° 3)

Another great idea is to connect the concept of VRUs with written law, if there is a need to use VRUs to describe a part of the population it would be great to add it also in terms of law in new policies that are transforming city life. *"it is really interesting how to connect the abstract concept to existing legal frameworks and also practice and what is the relation and what are the influences between."* (Interview N° 4) This can be related to discourse studies which can be further explored as well as political studies that deal with transport-related issues, we need more data related to this as well.

The mobilities of care are still underexplored, we need to remember that the system continuous to do wrong to many people, the only way to start the change in that matter is to change the system not just for women but for who those women are caring of. *"how can our streets be more caring?"* (Interview N° 8) Maybe that can ease the weight put on care takers. Children mobilities have to be near the field of care mobilities, as they have also a right to the city and a right to be a part of public space planning.

VRUs are also users that conform the general categories, the elderly, the children and the disables people, but there can be another layer of complexity, participants brought up the intentionality of the conditions that make someone vulnerable in urban settlements and how by making a place accessible to some group we are making it harder to access for others. *"we don't know enough about these people and their intersectionalities to come up with design guidelines to work for them, not as an afterthought, but as a sort of core target group."* (Interview N° 13)

There are also new forms of transport, both collective and not yet regulated by law, that are crucial for people living on the peripheries of cities. This population often requires the most attention in planning, as their lives are complex, and they are expected to integrate with traditional modes of transport. There is also a growing interest in understanding this relationship.

Underexplore topics continue to arise and it a matter of choosing what is the challenge you want to ease for yourself or others, this is about mobility but as seen, this can be studied from many fields with a transport/mobility perspective as well as a public space and planning approach, as soon as we make research multidisciplinary and the

formation of plans, projects and policies that way too, we can arrive to a more just train of thought when choosing to move or act.

Public administrations and policy makers questions

Topic: Policy/design-making process

Participants were questioned on the assessment of the involvement of VRUs in the policy and design making process as well as the improvement to be made.

Braga's municipality has implemented co-creation processes that enable the community to participate and voice their concerns and needs. This has resulted in a valuable learning process for both sides, fostering reflection and greater acceptance of proposals aimed at changing behavioral aspects. Workshops have also been held, and their outcomes indicate an increased awareness among participants of the importance of inclusiveness and accessibility in the city. This way of doing is still challenging as policies and policy making processes are still dominated by car-oriented projects. *"The political decision-making process is still dominated by perspectives centered on individual motorized transport, which continues to be privileged over soft mobility and the needs of VRUs."* (Interview N° 14)

In London, the CRP focuses on decision-making and design processes. The challenge arises when the goal is to include everyone's voice, which is often impossible. However, it is important to ensure that at least a representative from each group is heard. The starting point maybe is to know and understand who are the members of the community and who are their advocates but if there is none or even if there is, maybe is better to work with the community directly.

Riga's municipality has not as much experience in collaboration with citizens, to improve this dynamic they have done some community engagement activities, but none of them have been directed to VRUs, or advocates who represent them, a first step can be to identify the groups of people they want to reach and make sure they are informed and will arrive to these activities. *"when we are developing plans or concepts or just doing research about a specific topic in which we could target specific groups, not just inviting whoever comes, but being more mindful about who we invite."* (Interview N° 17)

Milan's municipality has cleared the fact that VRUs are more exposed to road risk, for them this means people with disabilities, pedestrians, cyclists, moped drivers and motorcyclists. They also acknowledge that there are other kinds of vulnerable aspects related to social, economic and cultural vulnerabilities.

Topic: Citizen participation

Participants were asked about the role of citizens participation in the shaping of policies that affect access and safety on streets.

Braga's understands citizens participation as a key part of the policy making process, they have adopted their SUMP to make urban mobility more inclusive and sustainable in an innovative way. The city collaborates closely with organizations advocating for people with disabilities, maintaining continuous communication with them. Additionally they have a partnership with the University of Minho which has the Urban Innovation Lab in their Mobility Department and have done research and actions that promote sustainable mobility and can be developed on actual sites on the city.

The CRP has in mind that citizen participation is crucial to address the needs of individuals and for that, it is essential to know them and no make suppositions, you must hear their voices. *"there's always going to be something that hasn't been considered or something that has to be changed for that particular situation."* (Interview N° 15)

Riga's municipality acknowledges challenges in collaboration between departments inside the municipality and the authority each one may have on the implementation of change. However, they are optimistic about the future and the approach they have in mind for developing the pilot project, they see it as an opportunity to learn and to take the first step towards advancing their work in a more collaborative, safe and inclusive manner.

The Municipality of Milan recognizes the importance of public participation, yet it is not fully realized. In most cases, citizen input is limited to voting, and there is a need for further development to expand and deepen meaningful engagement.

Advocates questions

Topic: Stakeholders' collaboration

Participants were asked about how the collaboration between different stakeholders like the government, NGOs and citizens can be improved to support the rights of VRUs.

The role of NGOs is to participate in a meaningful way in decision making processes that involve the community, this means also making them a priority to the eyes and ears of policymakers so that they do their part. *"we helped to act as the bridge*

between community led action and demand for safety and the national policy makers" (Interview N° 1)

NGOs need to be involved in stakeholders' consultation when a new plan or means to change the built environment is happening, the problem most of the time, other than when they are not thought about is that NGOs often depend on volunteers and don't have the capacity to participate in this kind of engagement. *"volunteers spend their evenings, their weekends engaging with public authorities, etc. There's only so much that volunteers can do to engage"* (Interview N° 5)

Another issue with stakeholder consultations or focus groups is the lack of representation of many groups with unique needs. While holding roundtable discussions or focus groups for each group may offer some insights, it often doesn't provide the comprehensive responses needed to achieve the desired change. "*the most important stage is when you mix up all the groups because they should not just say what their needs are, they should also talk with the other people to state what their needs are."* (Interview N° 9) This of course applies to the fact that if you think pedestrians are just a category, you are falling to actually know the needs of all the kinds that there are.

A community approach is very necessary, we should be carrying out processes that value qualitative data more than quantitative data. *"we need to focus on the community and the people who are truly experts, who are the users"* (Interview N° 12) People who aim to improve, change or transform a place should first learn about the context they want to work in and then combine that understanding with their technical expertise to better serve the community.

Topic: Best practices

Participants were asked if they knew any countries, cities or initiatives that could be considered exemplary on their treatment of VRUs and what lesson we can learn from them. Participants gave examples related to their own cities and popular cities with respect to pedestrians and cyclists, they were mostly related to policies on reduction the speed limit for cars, innovation in physical infrastructure and inclusion of diverse groups within VRUs.

Figure 9: Quelimane cycling initiative
Source: UNHabitat.org

- **Quelimane, Mozambique[1]**

The capital city of Mozambique has shown great progress in active mobility actions is now known as the Africa's cycling city, as the municipality has created cost effective and low carbon urban mobility systems. They are now going beyond cycling and start promoting safe walking in neighborhoods and near big busy roads.

[1] https://tda-mobility.org/quelimanes-bicycle-culture/
https://documents1.worldbank.org/curated/en/099113023154021937/pdf/P1771520fca b7a0930aca102c9d7107d4cc.pdf
https://unhabitat.org/news/31-aug-2022/un-habitat-partners-with-the-city-of-quelimane-to-reclaim-streets-for-pedestrians

Figure 10: Installation of 30 K/h speed limit sign for school zones in Luzaka City Source: Child Health & Mobility.

- Luzaka City, Zambia[2]

Zambia passed a new national law in 2019 that reduced speed limits on urban roads to 30km/h. Since then, Zambia Road Safety Trust (ZRST) has been collaborating with the government to implement the law in school zones.

Figure 11: Rivoli street, Paris city center Source: El Pais (2024) Source: La reppublica

- Paris, France[3]

The transformation of streets to prioritize cyclists has now increased this population since 2015 with the help of the 2020 pandemic as well as radically reallocating traffic to create public space and school streets in the last few years.

[2] https://www.roadsafetyngos.org/africa/zambia-implementation-of-30-km-h-law-through-learn/ https://www.who.int/news-room/feature-stories/detail/lusaka-reducing-speeding-near-schools

[3] https://itdp.org/wp-content/uploads/2024/07/STA-2023-Spotlight-ParisFrance-june.pdf

Figure 12: Netherland cycling culture.
Source: Dutchnews.nl 2

Figure 13: Cyclists ride near the edge of Ebro river in the Spanish city of Zaragoza.
Source: CESAR MANSO/AFP

-The Netherlands[4]

Known has the bike nation, the Netherlands has a high cycling mode share mobility system, people living there are very much adapted to this environment, but tourist and newcomer are not always prepared for this kind of living.

-Zaragoza, Spain[5]

Spain has a continuous introduction of 30 kilometers traffic speed zones in various cities, Zaragoza was highlighted because of its relation to the JUST STREETS project and its relevance on forwarding active mobility use.

[4] https://www.euronews.com/next/2022/09/17/the-worlds-cycling-nation-how-the-netherlands-redesigned-itself-as-a-country-fit-for-bikes
https://www.cycling-embassy.org.uk/blog/2013/07/03/how-does-a-dutch-environment-work-for-pedestrians
[5] https://www.zaragoza.es/contenidos/medioambiente/ZGZVERDEEN/2Localtransport.pdf
https://etsc.eu/spain-switches-most-urban-roads-to-30-km-h-amid-calls-for-action-in-several-eu-member-states/

Figure 14: 30 zones.
Source: cyklodoprava.sk

Figure 15: Superkilen Public Park
Source: Arquitectura Viva

-Brussels, Belgium[6]

Brussels have reduced their motorized traffic and increment number of cyclists, 30 K/h zones and high fuel costs also encourage cycling to increase as well the number of families willing to go by active mobility.

-Scandinavian countries[7]

As an example, Copenhagen is known worldly in terms of its infrastructure and public space, some of them being very innovative, many cyclists and pedestrians preferred the environment that has been created these past years. Norway puts a big focus on climate change as the motor for their interventions.

[6] https://www.ecf.com/en/news/new-studies-new-plan-brussels-aims-even-higher-after-cycling-grows-by-20-and-road-fatalities-decrease/
[7] https://www.visitcopenhagen.com/copenhagen/activities/what-makes-copenhagen-worlds-most-bicycle-friendly-capital
https://pub.nordregio.org/wp-2023-8-nordic-cycling-policy/norway.html

- **Kigali, Rwanda[8]**

They have developed the Rwanda Urban Mobility Improvement (RUMI) Project, where they seek shift from private to lower -carbon transport modes, enhancing access to jobs and services while supporting urban agglomeration and socio-economic benefits, this project integrates climate resilience in land use planning, transport master planning, urban road design, and infrastructure development.

- **TRansport Innovation for Persons with disabilities needs Satisfaction "TRIPS" Project[9]**

This project focuses on people with disabilities, they want to address barriers commonly faced by people with and without disabilities in public transport and implement steps to avoid barriers of any sort in urban transport.

- **Latin america[10]**

In various capitals of Latin America, gender perspective in urban and mobility planning has been addressed, with its focus influenced by the government's priorities during each period and policies on equal rights. Research in this area has been supported by various European countries.

[8] https://www.kigalicity.gov.rw/rwanda-urban-mobility-improvement-rumi-project
https://cdkn.org/sites/default/files/files/FINAL-Baseline-Report-Rwanda-CCLCD-Strategy-super-low-res.pdf
[9] https://trips-project.eu/
[10] https://transformative-mobility.org/wp-content/uploads/2023/03/Sustainable-Urban-Transport-in-Latin-America-QAjQ2M.pdf
https://documents1.worldbank.org/curated/en/276931583534671806/pdf/Why-Does-She-Move-A-Study-of-Womens-Mobility-in-Latin-American-Cities.pdf
https://repositorio.cepal.org/server/api/core/bitstreams/15b6fc2d-2831-4ee8-9fe0-404776d8a8bc/content

Figure 16: "Gay friendly" street lights.
Source: Auto Bild España

Figure 17: Escalator in Medellin now use solar panels as their energy source.
Source: Telemedellin.tv

- **Wien, Austria**[11]

Wien is planning with a gender perspective, from their traffic lights to housing units that prioritize women, they are going one step further, proving that is possible.

-Medellín, Colombia[12]

Medellin has innovative responses to accessibility problems due to topography; they came up with cable capsules and escalators for urban mobility, this has promoted tourism as well as the overall well-being and connectivity for inhabitants, they have a very good infrastructure for walking in many parts of the city.

[11] https://www.bbc.com/travel/article/20210524-how-vienna-built-a-gender-equal-city
https://www.theguardian.com/cities/2019/may/14/city-with-a-female-face-how-modern-vienna-was-shaped-by-women

[12] https://theworld.org/stories/2016/07/31/new-feat-colombia-s-urban-innovator-slum-escalators
https://leitner-poma.com/casestudies/medellin-colombia-pioneer-city-urban-cable-transportation#:~:text=In%202004%2C%20Medellin%2C%20Colombia%20was,with%20its%20famous%20%C2%ABMetrocable%C2%BB.

- **Pontevedra, Spain**[13]

The municipality of Pontevedra have prioritized active mobility at the political level, deciding to eliminate the privilege of parking cars on public streets, recognizing it as the private occupation of public space.

- **Ghent, Belgium**[14]

The municipality of Ghent has been actively monitoring pedestrian flow and collecting data on transport poverty to better understand mobility patterns and access challenges.

- **London, United Kindom**[15]

London has reduced the number of parking spaces in both the city center and surrounding areas, while increasing bicycle parking and expanding school streets.

[13] https://citychangers.org/pontevedra-the-little-utopian-city-that-drove-out-cars/
https://ok.pontevedra.gal/en/walking-does-it/
[14]https://urban-mobility-observatory.transport.ec.europa.eu/resources/case-studies/gents-traffic-circulation-plan-belgium_en?prefLang=de
https://eurocities.eu/latest/creating-the-cultural-shift-behind-ghents-mobility-revolution/
https://stad.gent/en/mobility-ghent/circulation-plan
[15] https://www.reinventingparking.org/2024/03/lessons-from-UK.html
https://urban-mobility-observatory.transport.ec.europa.eu/resources/case-studies/park4sump-objectives-and-key-messages-parking-management-cities_en
https://www.cbc.ca/news/canada/london/london-ontario-parking-standards-1.6499235

Figure 18:
Source: POLIS Network

-Leuven, Belgium[16]

The municipality of Leuven has been taking part in making the streets safer by reducing speed limits and promoting cycling and walking.

Figure 19: Accesibility enhancement in Switzerland.
Source: Wheelchairtraveling.com

-Zurich, Switzerland[17]

Almost all of the country is accessible by train, metro or bus and all of these modes of transport are accessible with wheelchairs which address the most recurrent accessibility problems for other kinds of users.

[16] https://www.polisnetwork.eu/news/promising-results-of-leuvens-new-circulation-plan/
https://urban-mobility-observatory.transport.ec.europa.eu/news-events/news/cycling-leuven-increases-32-following-its-ban-through-traffic-2019-08-19_en
[17] https://www.internationals.uzh.ch/en/living-in-zurich/transport.html#:~:text=The%20public%20transport%20network%20in,by%20train%2C%20tram%20and%20bus.
https://www.zuerich.com/en/inform-plan/getting-there-and-mobility-on-location/zurich-sans-barrieres

4.2. Focus group for JUST STREETS with international organizations of VRUs

This section is the analysis of the focus group done for the JUST STREETS project. The purpose of this and other focus groups is to understand mobility and behavioral habits, as well as to identify barriers and enablers of various modes on urban environments. The gathered outcomes are the result of 3 breakout rooms with advocates from diverse organizations who represent vulnerable groups in urban environments. Each section had introductory questions that helped the participants formulate their view in topics of distributional justice, procedural justice and recognition to achieve justice in cities today.

Topic: Distributional Justice

Participants were asked to give an opinion on the needs of different streets users and why they think some design choices are creating social injustices on the streets. Each participant referred their answer to the group they advocate for and how they see distributional justice in these aspects.

Distributional justice of space in urban environments means that at some point someone has got more space than others and now we are acknowledging that, and we are trying to fight against that, which is very difficult when all streets and most countries are built in the same way. *"it's about how we divide road space and what space individuals are often competing for, which is why we often find fights between pedestrians and cyclists and cyclists and drivers"* (Room 1)

Having to share space between different means of transport becomes an issue when there is no respect for one another, the fault usually falls on the big means of transport as they can go faster and be a hazard for others, this applies to cars and bicycles in a street but nowadays also to scooters that are not yet regulated and can be on sidewalks, where they not only can be driven but also park obstructing flow. This kind of practice is just restricting people, especially the most vulnerable groups (kids, elderly, people with physical and/or cognitive disabilities, etc.)

For some, accessibility in a broader sense can be the way to make the streets more inclusive, space is one thing, but signaling in a way that is clear and having urban spaces that are sensory friendly in terms of noise and visual pollution is also very important, this is something that is completely forgotten as streets and cities are built for people with normal capacities both physical and cognitive, this aspects are crucial for autistic people.

Nowadays we are dependent on tools like Google maps and street view to move around in cities, by walking, cycling in a private car or in a bus, but the images shown aren't always to date and don't really reflect the actual reality of what it will be when you arrive, which can be a little confusing for some.

A way to see it is to design neighborhoods and streets for children, that way you address most of the issues that make places insecure and inequal, this approach aims to change existing infrastructure or make one that respects walking and cycling. It goes further by ensuring there is enough room for a mother with a stroller or a child holding her hand, while also addressing the needs of people using wheelchairs or other mobility aids. The goal is to make these everyday activities safe and accessible for everyone, rather than turning them into hazards when we move outside our homes.

It is not only an issue of mobility, but it can also be related to accessibility, access to amenities like bathrooms and benches for the elderly but also for people that spend most of the time in the streets like homeless people. Strategies related to hostile architecture tend to target homeless people but also young groups of people trying to avoid gatherings that end up in “unwanted behaviors”.

It is also a matter of being critical and not accepting a solution that seems okay. Viral solutions like the 15-minute city and parklets are well-intentioned, but they don't always deliver as expected or only achieve partial success, the idea of taking space from park cars to create space of outside dinning or to create a little public space to put benches or green areas is great but when this also means to take space from cycling paths and sidewalks so that it becomes a challenge to pass through these spaces, the solution is not doing much.

We should stop assuming that where there is a public spaces or a public street it will automatically be used for wrong doing, we need space for whatever activity people want to do, we want streets with space to have community activities, so that streets become more secure and better adapting the idea that we should be banning some group of people, or restricting the space to ensuring the rights of the people to the city and everything that is inside.

Topic: Procedural Justice

Participants were asked about what they think are the need of the different user groups on streets and why some design plans and/or uses of the street can create social injustices between the different groups of users. The participants prioritize the group they advocate for in their community.

Many individuals with disabilities, as well as parents of children with disabilities, often rely on private modes of transport because they are more accessible and can be personalized, this is true for people with both physical and cognitive disabilities. However, this reliance can be reduced by adapting infrastructure to make it more accessible for everyone.

This can mean public space that feels secure and is equipped for leisure activities in all neighborhoods as well as a high-quality cycling infrastructure, which is translated into a reduction of the space for motorized vehicles. *"the street should be first of all for pedestrians and for more needing pedestrians, then, for all the other users and public transport and bicycles other two wheelers users"* (Room 1)

The entire city should be accessible to everyone, especially children, the elderly, and people with special needs. This doesn't necessarily mean pedestrianizing the whole city, but rather finding ways to ensure people can move freely and safely, without risk, while also providing secure spaces for resting or playing. Municipalities today must be bold and clearly state their priorities—pedestrians, cyclists, and public transport should come first. This includes reducing speed limits within the city and redistributing space for different modes of transport. While vehicle regulations are a broader issue at the European level, local governments have the power to make these changes. In any case, political courage is essential for progress.

When identifying the needs of the population to ensure the city is accessible to all, it is crucial to recognize intersectional identities. What truly matters is not professional expertise, but direct lived experience. Engaging with people and forming partnerships where their experiences are valued in the decision-making process is key. We need to

collect and continually update data about the population's needs, which is essential for informing both design and decision-making. This requires ongoing focus groups, interviews, data analysis, and other methods to stay responsive to emerging challenges.

Diverse opinions are very important, sometimes it doesn't matter if entities do many participatory design sessions, the problem is that more or less is always the same people attending, maybe it's important to hear the people who don't care or think that there isn't anything to do, maybe by hearing them they will actually be a part of the solution even more if they don't agree to past solutions, dialogue is the way. To ensure that participation in processes continues to grow and diversifies over time, it's crucial that these efforts lead to tangible outcomes, this could be in the form of a law, a bill, or changes to a street or an entire neighborhood. The key is that people see a real difference, so they understand that their participation is valuable, and the entity continues to be reliable.

Topic: Recognition of Justice

Participants were asked about what knowledge gaps they know need to be addressed to support a more inclusive planning and design of streets.

Probably one of the problems we have now is that we think of universal solutions, like the 15-minute city, although it is a great idea, it doesn't fit every city or every context or every situation, we need more experience of people to better address the difficulties in that specific context. Recognition comes from the idea of attributing a solution from a procedure that helps recognize a problem that is linked to a particular community.

That can be link to the fact that cities have data, this data is not always updated but if government takes this data and they find that people are going 50 k/h in average in a

street they can say that they are going to reduce the limit to 30 k/h, in paper is great, because the speed was reduced but in reality there is not a job done to inform drivers, to create awareness and be sure that this new rule is respected. This also happens when we see lesser accidents on the statistics sheet in one street or area, thinking it is very secure, but maybe it is avoided by some vulnerable groups as is perceived as too dangerous and that's the reason why there is no accidents.

There are many kinds of data that is not collected, not only now but we don't have history of this information, so is very difficult to address every problem but is also very interesting to think that this missing data or research is not really the thing that is holding us back, we are still able to do something to solve the problem that we already know, but we are just not doing it.

Participants remarked how people tend to choose private cars over public or active means of transport, thinking that streets seem scary, people don't go by bicycle because they feel unsafe, this can mean not riding it because there is not the infrastructure that protects them or they feel there bike can be steal when they are park, same thing happens with pedestrians, they feel unsafe going or they just can't go, because streets are inaccessible for them.

Recognition also includes people with invisible disabilities like autistic people, they tend to get lost, and it is very difficult for them to find the way home as well for other people to recognize that they are having a hard time, awareness is the key to later di physical changes to the built environment where they can feel safe and well taken care of.

We need to understand cities as places with many centers, where things are happening for everyone and is not that you are not welcome in some place, is that there are places that are more your fit.

Diversity of professionals and people representing population groups in focus groups as well as in round tables and other participatory processes is very important to recognize needs and comprehend behavioral trends, this should remain always an option for citizens. Nowadays we must be innovative with them as to try to include people who haven't participated due to lack of time and other reasons, Barcelona has implemented an online platform called "Decidim" to target this part of the population, who are concern about urban design issues but can't always participate.

There's also a lack of knowledge developed and shared in terms of data and research at the local level on the investment required to provide more just as inclusive streets, and cities by organizations to municipalities and other governmental entities in relation to the return revenue in terms of quality of life for example, as well as the importance of working at the small scale to target wider problems, is not only about what people experience when they are on the streets, is also why is there people that avoid streets as they feel such lack of accessibility. *"maybe that road that has a few accidents, is not used by some user groups because it's too dangerous, it's perceived as too dangerous. So a positive indicator may be a negative one."* (Room 3)

Peer to peer learning networks is also a great way to exchange information and improve performances in many areas of knowledge, there is a possibility to compare experiences and best practices developed and performed in contrast with each context and environment.

To ensure that the knowledge gathered by organizations reaches both citizens and public administrations, they create manifestos and hold public events to ensure the message is heard and acknowledged by decision-makers. This is followed by requesting a public response and accountability from administrations, seeking either a public plan or a proposed solution to address the issue at hand.

5. The metropolitan city of Milan (MCM)

This chapter contains a description of the pilot intervention that at the time of the formulation of this thesis was being formulated by the MCM with the municipality of Corsico, it gives light to the proposal, with information gathered from the administration of the MCM to later analyze the actual site and propose intervention. After that, it includes an analysis of the SUMP which connects the possibility of citizen participation in the formulation of policies that affect in this specific case the mobility and nodes linked directly to Corsico.

It also includes a series of recommendations to improve the formulation of the pilot intervention for JUST STRETTS and future updates of Milan's metropolitan SUMP, ensuring VRUs are recognized as their target population for upcoming initiatives. These recommendations are based on the information gathered and emphasize the importance of consciously prioritizing VRUs in future planning policies and interventions.

5.1. Description of Milan's pilot intervention for JUST STREETS

Context and location

The MCM oversees 133 municipalities and identifies areas where interventions in sustainable mobility and accessibility are needed. The pilot project is still in its early

stages, and as this thesis is being written, the MCM has selected Corsico as its first site for implementation.

Corsico is a municipality of about 34.694 inhabitants in 2024 (ISTAT). Is part of the Lombardy region in the MCM and it has a surface of 5,36 km2.

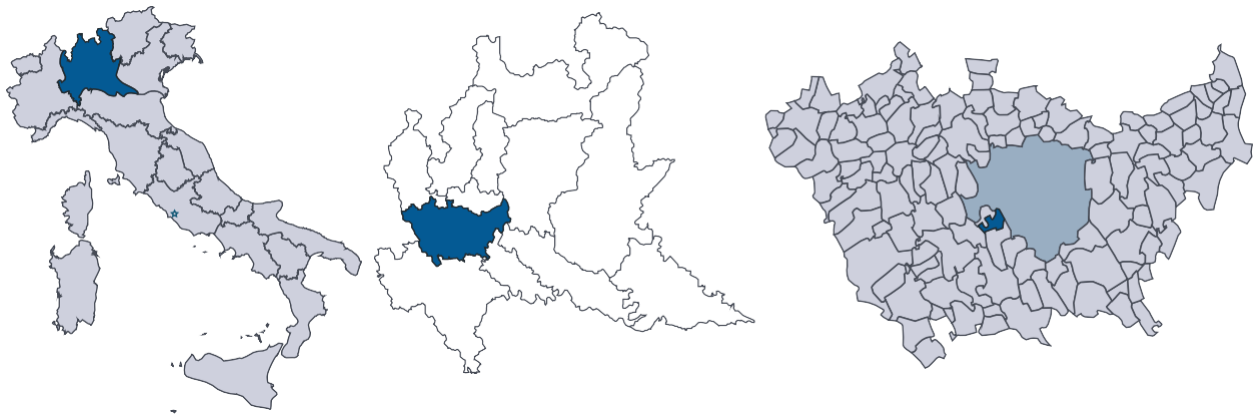


Figure 20: Location of Lombardy, the Metropolitan City of Milan and Corsico.
Source: Author's elaboration.

Figure 21: Location of Corsico and the intervention site.
Source: Author's elaboration, image from Google Earth Pro.

Proposal

The proposal from the MCM focuses the intervention of a cycling path in a section of the street called *alzaia (see figure 22)* that runs along a public green area in front of Corsico railway station and a public park which is connected to the other side of the canal called *naviglio*, where the city center of Corsico is located.

The critical aspect about this intervention is that this street is used by heavy vehicles coming and going to the factories on one side of the site as well as cars linked to private use coming and going to and from the private nursing home and the factories. In this street the use of bicycles and the presence of pedestrians is little but present, however, a more in-depth study on the traffic flow of the area is not available at the time of this thesis.

The main objectives of this intervention are:

- Make the street safer for all users.
- Promote active and sustainable mobility between the two banks of the city, coming from and going to the railway station.
- The cycle path connects Corsico with Milan's city center along the *naviglio*, this is why it is important to take the first step to better connect the bicycle network.
- Monitoring environmental impacts (air quality, health quality, etc.)

The MCM has a big demand of active mobility modes, during the pandemic they emphasized their urban efforts on road safety between cyclist, pedestrians and car drivers.

The timeline for this project contemplates three phases in short, medium and long term without really giving a timeframe.

Short term:

- Improve the information and further understand the potential of the LUM.
- Initiate participatory processes with the local community.
- Increase community awareness focused on sustainable mobility.

Medium term:

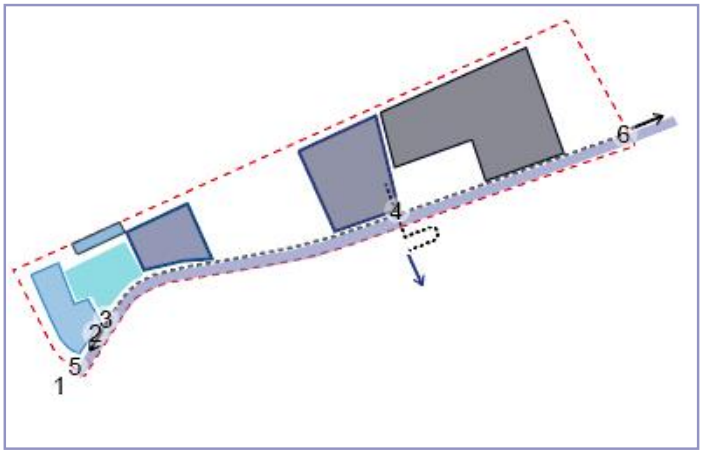
- Increase accessibility of the LUM.
- Improve the quality of existing green areas and services.

Long term:

- Create or improve metropolitan regulations to improve other areas of the metropolitan city of Milan.
- Create guidelines according to metropolitan PUMS and PTM objectives.

The intervention has as their target group VRUs and more specifically people with disabilities and aims to facilitate people's though process in relation to their mobility choices towards more sustainable forms of mobility in both, the inner-city connection and the intermodal change between all transport networks which is more critical in places where there is a concentration of people such as the LUMs (modal interchange centers in the Italian abbreviation)

Figure 22: Site distribution and area of intervention.
Source: Author's elaboration



1

Conflic between pedestrian space nd bike path.

2

Pedrestin space invaded by bike lane and benches.

3

Conflict between various modes of transport.

4

Street with discontinuty for active road users.

5

Lack of signals and conflic between active modes of trnsport.

6

Discontinuity for all modes of transport.

Parking Lots

Train Station

Private Nursing Home "Il Naviglio"

Green Space "Ex-Stella Area"

Public Park "Ex-Pozzi Area"

Industrial Factories

Pedestrian brigde

Cycling Path Intervention

Intervention Area

Continious Cycling Path

Direction to City Center

5.2.Brief analysis of Milan's SUMP

The Sustainable Urban Mobility Plan (SUMP) was introduced by the EU Commission with the 2013 Urban Mobility Package, updated in 2023 with recommendation that are updated to align its aims with the European Green Deal and the 2030 Agenda.

The SUMP is a document that outlines an analysis of the local population, and the mobility challenges they currently face, as well as those anticipated in the future. It is also a strategic plan for mobility and transport which proposes a series of interventions and objectives for the short, medium, and long term, to direct policy makers' actions towards sustainability, which should be updated regularly according to the established timelines.

The steps to execute a SUMP include:

- Define an interdisciplinary and interinstitutional work group
- Prepare and analyze frameworks and baseline
- Stakeholders' engagement
- Jointly define objectives and vision
- Joint development and assessment of scenarios
- Strategic Environmental Assessment (SEA)
- Approvement and implementation of the Plan
- Monitoring

Evaluation and monitoring are fundamental activities. A monitoring report is requested every two (2) years to better understand how to reach the agreed milestones in

time and to be ready for the Plan's compulsory updating, which is planned for every five (5) years.

The SUMP for the MCM begins by clarifying that it covers 133 municipalities, each with its own SUMP and jurisdiction over its streets. It then explains how streets are categorized, which policies impact them, and their respective hierarchy. Next, it also clarifies that the cycle path network is not entirely within its jurisdiction, with further details available in the “Biciplan-piano urbano della Mobilità Ciclistica.” This section concludes by outlining other forms of sustainable mobility, including car-sharing, scooter-sharing, and bike-sharing.

Follow by that, the SUMP has a participatory aspect, which involves various sessions with stakeholders providing input on key issues such as exchange nodes, the expansion and improvement of public transport routes, public transport pricing, and the enhancement of the cycle path network. The document also acknowledges that some metropolitan municipalities do not participate in these processes. They emphasize that the outcomes of these sessions reveal that the most common requests are for more and improved cycle paths, better public transport connections between municipalities, and enhanced integration of shared mobility with exchange nodes.

Their primary goals are to improve public transport, reduce traffic, enhance accessibility, increase the frequency of public transport, and improve public spaces along streets. To achieve these objectives, they have defined three key categories:

- Environmental aspects
    - Reduce the use of gas
    - Improve the air quality

    - Reduce the noise pollution
- Mobility security and safety
    - Reduce accidents
    - Reduce fatal accidents
    - Reduce costs due to accidents
    - Reduce fatal accidents related to VRUs
- Socioeconomical aspects
    - Improve social inclusion (physical and ergonomical)
    - Increase satisfaction of citizens
    - Increase occupancy rate
    - Reduce mobility costs

Their goals for short (2 years), medium (5 years) and long (10 years) term have indicators which aim to show in a quantitative way how the interventions are helping the comprehensive improvement of the MCM.

The SUMP of the MCM was approved in 2021 and it is now strictly integrated with other regulatory and planning instruments:

- *Piano Territoriale Metropolitano* / Metropolitan Territorial Plan (PTM): general plan to coordinate metropolitan and supra-municipal actions;
- *Strategie Tematico Territoriali Metropolitane* / Metropolitan Thematic & Territorial Strategies (STTM): tool to ensure the implementation of the PTM.

One of the PTM's focuses is on railway lines and stations and their modal interchange function, which makes them close-by areas highly strategic places. These places have been called LUM (*Luoghi Urbani della Mobilità*)/ Mobility Urban Places.

The term LUM is introduced by the PTM and they are conceived as areas that surround an important intersection, in the metropolitan area of Milan there are 56 LUMs, they have great potential of service development, connected to their function of modal interchange, these areas are attraction poles for private investments as well as object of public regeneration projects.

The classification of LUMs is:

- Metropolitan, Supra-municipal and Local (depending on their level of strategical relevance)
- Urban, Peri-urban and Rural (depending on functions and territorial context)

Relation to Corsico

Specifically regarding Corsico and its approach to VRUs, the document highlights the need to enhance security on public transport, particularly for the most vulnerable users. To ensure public transport remains as a desirable mode of travel, it must be accessible to everyone, including pedestrians, those transferring between modes (e.g., from bicycle to public transport), and individuals using exchange nodes. These nodes should be designed with safety in mind, ensuring that transfer distances are manageable and secure for VRUs, this way of designing makes places called *ambiti di accessibilità sostenibile*.

The intervention is in the Corsico LUM which is crossed by both suburban and regional train lines at the railway station of Corsico makes it an important LUM, it's classified as urban with a supra-municipal strategic relevance.

5.3. Present challenges in terms of mobility Justice for VRUs in Corsico

Corsico is not big on their treatment of VRUs, the intervention proposed by the MCM hopefully would start a mind shift to start questioning mobility choices where other areas of the city and other municipalities will replicate the action. In terms of VRUs the area of intervention is not attractive to any kind of active mobility road user, there are not continuous sidewalks, pedestrian paths or bike paths, even if there are some parks, they are not easily accessible and do not have many proposed activities, the roads right now are more related to private car used and are damaged as result of heavy vehicle use.

The present disconnection in the bike and pedestrian paths are the main problem for VRUs in the site, this represents a big challenge since this area is frequented by large trucks and private use cars for the various service companies and factories inside and near the intervention site.

5.4. Recommendations

This section has a series of recommendations regarding the analysis of the Metropolitan City of Milan SUMP and the Pilot intervention for JUST STREETS. The analysis was done with the information gathered in the theoretical framework on mobility justice, VRUs and the best practices both the interventions from covid and the ones presented in the interviews.

5.4.1. For the SUMP

The formulation of the SUMP does not contemplate a reformulation, but it does contain objectives for short, medium and long term, therefore, it should be updated in those periods.

Table 3: Recommendation for Milans' SUMP

CHALLENGES	RECOMMENDATIONS
- Minimum to presence of VRUs in the document and as a target group for interventions.	- It's important to take a position and determine who VRUs are for the sake of knowing who the target group is for each planned intervention.
- Difficulty for citizens to know and understand the objectives of the SUMP.	- The SUMP usually is written in the mother thong of the place it concerns which is fine but limits its scope in cities with high number of migrants or big cities in terms of population that are prone to be studied. - The document tends to be too technical, which is logical, but it should always have a summary and be part of some campaign of divulgation so that citizens know what is planned to be done which would help to get accountability of the government and hopefully better participatory processes when needed.
- No periodical updates and divulgation of goal achievement or development.	- The importance of continuous updates and divulgations needs to be remarked because the trust people have on municipalities and other entities who develop public projects depend on that. It also regards the bigger goal and the motor of this kind of tool for public urban developments. - To understand that there is short-, medium- and long-term objectives is to acknowledge a responsibility for preparation and execution of projects that meet those goals.

- Clarification of its scope to find the one that corresponds to each municipality	- For people who want to know what is planned for their city, region or country and everything in between is important to easily know the scope this kind of tools have. This information is not that easily accessible and should target all kinds of citizens.

5.4.2. For the Pilot intervention: how to analyze and consider mobility needs of VRU

The formulation of the pilot is in its early stages, the information gathered was provided by members of the municipality of the MCM and analyzed by the author with the help of members of the JUST STREETS project, so that what has been done and what is planned was fully comprehended. The following table of recommendations contains the main challenges encountered so far.

Table 4: Recommendation for Milans' pilot intervention.

CHALLENGES	RECOMMENDATIONS
-Access limitation for active mobility users (pedestrian and cyclists)	- The intervention has to be coherent with the needs of all road users, this means that it has not only to meet requirements written by law in the (law instrument), but also the specific needs of the citizens who live near and are going to be affected by this intervention, updated qualitative research that correspond to identification of the members of that community and need corresponding to the intervention is recommended.
-Access limitation for VRUs other than pedestrians and cyclists	- In addition, guaranteeing access to all road users should mean prioritizing those who may have a harder time figuring out how to move around, to achieve this, the intervention must implement clear signs, tactile tiles and other safety aids help all users.

-Lack of infrastructure related to rest areas near the intervention	- Elderly people, people with physical and cognitive disabilities, care takers, women and kids may need places to rest spread along the way, this infrastructure should have their own space as to not take space from sidewalks or bike paths.
-Poor communication between stakeholders	- There must be a consensus between the municipality, the citizens and the private actors to achieve actual mobility justice. The success of the pilot depends on the ability of the stakeholders implicated to manage the way the intervention is going to exclusively prioritize VRUs and how other road users are going to change their route to guarantee safety still arriving at their destination.
-Intersectionality between mobility modes	- Access to the train station and the possibility for everyone from drivers to pedestrians to be able to maybe shift from one mobility mode to another is something that the MCM must consider. There should be at least a walkable way, a bike route and parking space as well as options of shared mobility (e.g. e-bikes and scooters) and public transport stations to make continuity of travel patterns.
- Monitoring environmental impacts (air quality, health quality, etc.)	- The MCM has not considered which aspects they want to monitor and protect, things such as air quality and health quality of citizens are conditional and too general, it is very important to have specific objectives with the information gathered and the potential action that will improve not only numbers but actually impact life for citizens and the current situation of the site.

Accompanied by the idea of closing the road to car use, it is important to implement activities connected to the intervention area so that it encourages people to use the new space, this creates appropriation and a sense of care which will improve the success rate and possible replications.

6. Discussion and Conclusions

This chapter critically summarizes the findings of this study, seeking to address the main research question: what are the needs of Vulnerable Road Users (VRUs) and how can these needs be prioritized in spatial and mobility planning? And in that sense, how can we develop more just and inclusive streets? To gather the information needed to address this question, the thesis had conceptual insight by performing a literature review and research of best practices, and practical insight gathered from a qualitative data collection. This chapter also discusses the limitations of this study, some personal remarks and the possibility for further research in the future.

The literature review is divided into three research questions that help guide and contextualize this study:

1. *What is the current debate on transport and mobility Justice? This research question is addressed in section 3.1. Which is a proper literature review on the current debate on transport and mobility Justice and related concepts.*

This part acknowledges that the concept of mobility justice reveals a search for streets that prioritizes encounter and respect between members of a community, making streets part of overall public space in cities, inclusion of non-traditional modes of transport and the importance of physical and social accessibility to the city itself should be the priority. Research also sees that mobility justice is related to the distribution of space between modes of transport, from pedestrians to big means of transport, and not only for modes of transport but for other activities, it is also about safety and the perception of it both on roads and other forms of public space.

In the case of mobility poverty, this study highlights diverse meanings such as the inability to afford transportation and the lack of motorized transport which in the end makes key activities such as employment, education, healthcare and leisure activities impossible to reach. There is a difference between choosing to move and having to move brought by Pereira, R. H., et. Al (2017), who questions if the places people want to go are the same as the places they are able to reach.

The ability for diverse groups of people to be heard in the decision-making process is equivalent for their needs to be met, Kuttler, T., & Moraglio, M. (2021) argued that groups consider vulnerable in urban environments who have economic, social and/or physical difficulties when prioritized in political decision, reach access to work, education and maybe health but not leisure. Justice here will promote overall social inclusion as well as continuous research on sustainable alternatives that aim to not create other problems for the community.

Regarding the right to mobility, the right to the street and the right to the city, this study acknowledges that they are not written laws but granted by social contestation and are given to every citizen so that everyone has the ability to access work, health, education, culture and leisure freely. It also highlights that the right to the city not only comprehends a right to the built environment but also contains the right to the street, being streets the place of focus for political contestation and justice claiming.

2. *What and who are Vulnerable Road Users (VRUs) and how have they been included in recent research? This research question is addressed in section 3.2. That has a focus on what Vulnerable Road Users (VRUs) are and how have you been involved in recent studies.*

The main finding of this section is the definition of VRUs which came out to be every person when they are put in a vulnerable position against another person who utilizes other modes of transport which are motorized, bigger and/or faster. It also regards all types of users, VRUs in a general sense are pedestrians and cyclists, and withing these categories they can be women, men or non-binary individuals and even though everyone can be vulnerable there are certain people who are at more risk on urban environments such as elderly people, disable people and kids as well as the care takers of all of them that most of the tie are women.

Recent research focuses on ITS systems that will predict situations on roads where VRUs were the protagonists but fail to actually prevent the occurrence of this situations, they need to acknowledge people's needs so that the system can be tailor to them specifically, other efforts on VRUs safety are related to policies that protect them from other road users. For all efforts data collection is the most important tool to understand the problem to search for solutions.

3. *What recent actions have improved mobility justice and how have research methods support VRUs inclusion? This research question is addressed in section 3.3. Which comprehends practices and methods that include qualitative in research focus on VRUs.*

The most effective way to gather data to understand the needs of people is by performing qualitative research. This thesis targets VRUs and makes an effort to understand how they have been included in processes of qualitative data research. The implementation of focus groups that target specifically VRU groups came out with great knowledge regarding the experience of these individuals in urban environments, as well

as the understanding of their behaviors acknowledging that many times their mobility choices regard the built environment and the behavior of other users in the road.

Public spaces shape social connection just as much as social interaction shape public and private spaces, justice. The outcomes of this thesis focus on three main dimensions of justice, distributional justice, procedural justice and recognition of justice, which helps on the continuous search for justice as a whole.

During the recent crisis on the Covid-19 pandemic, urban planners, municipalities, NGOs and individuals performed many interventions regarding public space and mobility to counter the impacts of isolation as well as to start promoting urban life in a safer way. The implementation of tactical urbanism that prioritizes public space for pedestrians, kids, elderly people over motorized transportation, and green areas over pavement by utilizing low budget solutions has been the most replicated kind of intervention all over the world as it can be adapted to every context and can include every kind of user.

This study also included a qualitative data collection that aimed to help understand VRUs needs on urban environments, a series of 18 semi-structured interviews with academic experts, advocates and policymakers as well as an international focus group with advocates are performed and analyzed in relation to three main dimensions of justice: distribution of justice, procedural justice and recognition of justice.

The semi-structured interviews were composed of four questions done to all participants related to social justice, the right to the street and the promotion of justice on streets. It also included two specific questions to each group, for a total of six questions, each question corresponds to one of three dimensions of justice. Table 5, 6 and 7 contain

the results as a summary of the analysis of the responses on the light of the dimensions of justice.

Distributional justice concerns the fair allocation of resources, in this case of space and infrastructure.

Table 5: Results from questions related to distribution of justice.

TARGET GORUP	QUESTION	RESPONSE
All Participants	What does the “right to the street" mean to you?	- The “right to the street” as a strategy to understand public space in a broader sense, promoting citizens participation to select features of nearby public spaces. The “right to the city” within “the right to the street”, where we all have the right to access and live the built environment, to move freely and for our voice to be heard.
Academic Experts	How would you define Vulnerable Road Users, and what characteristics make them particularly at risk in urban environments?	- Vulnerable Road Users (VRUs) with respect to mode of transport on an actual road, are people who are not inside of a vehicle (car, bus, truck, etc.). VRUs are also people who walk when there is not a proper sidewalk, bike where there is not a bike path, people with at least one disability that have to make an extra effort to go anywhere, an elderly person that need go far and do not find a bench, a kid that is in constat risk of injury for any reason on the street, etc. There are not vulnerable people, there are people that are put

		in vulnerable situations by the environment around them and by other people.

Procedural justice recognizes who participates in decision making processes and how does decisions impact urban life.

Table 6: Results from questions related to procedural justice.

TARGET GROUP	QUESTION	RESPONSE
All Participants	Do you believe access to public streets is important for all community members? Why?	- Physical accessibility and social inclusion avoiding discrimination is the way to achieve justice, so that everyone has a place in the city. - There must be a relation between private and public in terms of law, given that many initiatives come from necessity and later need to be regulated to work within the system. - The evaluation of mobility systems today has revealed that the way they work tends to neglect women in most cases, to achieve mobility justice is important to update and transform cities so that it prioritizes active mobility as women and other kinds of VRUs are the people who move more in those means.
All Participants	How important do you think public awareness and education are in promoting safety on streets?	- Physical space needs to be transformed so that the intended use is prioritized over does non desirable, the way people behave most of the time depends on the why the physical space is built and the mobility

		decisions we make, it should be with the community impact it has. - To create safer and just urban spaces is by transforming cities to target the most neglected populations.
Policy Makers	How do you assess the involvement of VRUs in the policy-making process? What improvements could be made?	- Identification of population groups to encourage co-creation processes that have a representation of every member of the community and the acknowledgement of their problems.
Policy Makers	What role does citizen participation play in shaping policies that affect street access and safety?	- By creating partnerships with higher education institutions to develop projects and do research. - By performing co-creation processes to hear citizens and other stakeholders. - With better communication between departments within the municipalities so that progress goes smoothly, and collaboration can be achieved. - By gathering qualitative data. - Participation from citizens results in a greater adoption of policies which prioritizes safety.
Advocates	How can collaboration between different stakeholders (government, NGOs, civil society) be enhanced to support the rights of VRUs?	- By guaranteeing accountability from municipalities so that change seems like a real possibility. - Stakeholders consultations should include NGOs and advocates. By performing peer-to-peer round tables.

		- By guaranteeing representation of every member of the community in focus groups and other kinds of participatory processes. By performing more qualitative data recollection so that technical knowledge serves the community.
Advocates	Are there countries or cities that you believe are exemplary in their treatment of VRUs? **What can we learn from them?**	- Active mobility prioritization. - Reduced speed limits. - Schools streets inclusion. - Innovative public space. - Shift to more sustainable modes of transport related to climate change. - Inclusion of people with disabilities in research and developments that benefits them first knowing that it will ultimately benefit the rest of the community. - Inclusiveness with a gender perspective in urban developments. - Innovative responses to accessibility problems in remote areas. - Reduction of parking spaces. - Further research on transport poverty. - Improvement of accessibility to public means of transport.

Recognition of justice is the respect and fair consideration of diverse perspectives.

Table 7: Results from questions related to recognition of justice.

TARGET GROUP	QUESTION	RESPONSE

All Participants	What role do you believe transportation plays in achieving social equity in urban environments?	- Transport systems have been prioritizing men and their ways of moving by neglecting women, their mobility needs, care mobilities and the way they interact with the city impacting their behaviors. - The way to get to places should be logical, informal means of transport that arrive to the most dense parts of the cities and the rural areas need to be connected to massive public means of transport so that people can reach any place they want and need to go, making mobility justice a priority to ensure equity in urban environments.
Academic Experts	What areas of research do you think are currently underexplored in relation to VRUs and mobility?	- The VRU definition and inclusion in urban planning. - Find intersectionalities in VRUs and how can this population be prioritized in urban environments. - The connection between regulatory laws regarding new means of transport and VRUs. - Promote qualitative research at the local level to make streets more caring.

The focus group was composed of three sections, each one regarding one of the justice dimensions with prompts that helped the discussion. Table 8 contains the highlights of the session.

Table 8: Highlights from the focus group.

TOPIC	FOCUS GROUP
DISTRIBUTION OF JUSTICE	- Needed attention to confrontation between means of transport. - Inequality in the amount of space distributed to means of transport and other activities in public space. - Prioritization of VRUs to enhance the experience for everyone. - Clearer rules to make use of public space. - A built environment that seeks to include and not to exclude. - Clarity on who is entitled to the right to the city and to the street.
PROCEDURAL JUSTICES	- Necessity to use private means of transport to accommodate necessities that public means are unable to resolve. - Prioritized public space over space for motorized vehicles. - Construction of trust in municipalities by materializing citizens' ideas and practicing accountability. - Intersectional condition of individuals. - Prioritize direct experience over professional knowledge (e.g. participatory processes) - Better communication between stakeholders
RECOGNITION OF JUSTICES	- Critical eye with universal solutions. - Data collection, from before, during and after an intervention. - Start action even if the tools are not there. - By changing physical space, we can shift the automobile mentality as well as the perception of safety and security. - Consider invisible disabilities. - Aim for many places with different features that may fit everyone. - Enhance diversity in participatory processes. - Work at a small scale and communication between stakeholders at that stage. - Peer to peer learning networks to compare experiences and reflect.

Limitations

While the case study performed relevant qualitative research with experts, the timing of this thesis limited further qualitative research that could be done to citizens in

the intervention site of the case study, this information would have made the analysis and recommendations more accurate. This research makes an effort to shed light on the importance of inclusion of qualitative research as one of the first steps to perform any kind of intervention or policy proposal as the ones that are being formulated for the JUST STREETS project.

This study was mainly conformed by information gathered in European contexts, from the literature review regarding recent research to the qualitative data collection participants and the case study, and while this makes sense as the study is performed in an European country, the perspectives can be biased by this conditions.

This research touched a number of problematics and brought to light to many concepts and knowledge gaps related to mobility, justice and VRUs but it wasn't the right document to develop neither.

Future research directions

Some of the concepts that were broad up while doing the literature review as well as the ones mentioned by participants in the interviews and focus group could shift the way this research went, which means that there is much more to be done. Some of the topics that could be further investigated are:

- **Care mobility** which looks at how caregiving is not necessarily in one location, but across different places, whether that's someone traveling to provide care, patients moving between homes or hospitals, or even using technology to offer care from afar. Care mobility research refers to women as the main care takers,

and further research can help understand how care can be more flexible and available, depending on where people are and what they need.

- **Transport poverty in peripheries** referring to the lack of access to affordable, reliable, and efficient transportation in rural or remote areas. This isolation can lead to social and economic exclusion, as individuals in these areas struggle to participate fully in society due to transport barriers. Addressing transport poverty is crucial to ensure equal opportunities and improve quality of life for those in more isolated communities. (E.g., comparative research between the US case and the Latin America case, suburban and rural areas, etc)
- **Intersectionality of disabilities** which refers to how different aspects of a person's identity, such as race, gender, socioeconomic status, and health issues, can overlap and create unique experiences of discrimination or disadvantage. related to their behavior in urban environments. A person who is both disabled and from a minority group may face challenges that are different from those experienced by someone with just one of these identities. Theres a need to consider all these factors together to better understand someone's experiences and to provide inclusive support.
- **Mobility choices** referring to the different options people have for getting around, these choices are influenced by factors like personal preferences, availability of transport options, cost and convenience. Mobility choices can vary depending on where someone lives, their physical ability, and their access to resources, and they play a key role in how people navigate their daily lives and communities. These choices have an impact on other people as well as on the environment and/or on the development of other species.

Bu addressing these topics, objectives such as social justice and mobility justice can be achieved. By having VRUs as the target population in research, future developments can better address their needs and understand their behaviors to change the urban realm in their favor.

Conclusions

The process to achieve justice in any instance is not lineal, to gain justice is important to identify who the most neglected groups are and how their needs can be heard and prioritized, therefore, mobility justice refers to the achievement of justice in streets intended as public space in which people not only can go from point A to point B, but also have the chance to do other things. Streets must provide a fair space for all kinds of street users.

The physical transformation of infrastructure in the built environment must be accompanied by behavioral change strategies that prioritize gender equality and equity. To initiate this transformation, it's crucial to understand *how*, *where*, and *whom* to target in order to effectively transform the system. This approach ensures that both the infrastructure and the people interacting with it are part of a more inclusive and equitable process of change.

The recommendations shared in this thesis are tinted by the performance of the research and my personal background. This means that while objectivity is in my best interest, it is not a definitive solution to the challenges presented.

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