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THE APPROPRIATION AND THE SOCIAL IMPLICATIONS OF THE MOBILITY TRANSITION.

THE CASE OF NAVARRA (SPAIN) FROM AN INTERNATIONAL COMPARATIVE PERSPECTIVE

PHD THESIS

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INTRODUCTION

The system of automobility that became hegemonic throughout the twentieth century is now being challenged due to its negative side effects. Problems such as traffic congestion, pollution, the need for space for parking cars, etc. are increasingly being associated with the private car, especially in cities. Back in 2016, I started to work on a PhD thesis on the social appropriation and the social implications of the mobility transition. I followed a rather long path before this research work came to an end.

While studying the Degree in Sociology at the Public University of Navarra, I developed a special interest in the practical matters on which sociologists had something to say. I started to believe that sociology could help not only in theorising but also in solving some of the key problems of modern life. Thus, I decided to continue studying sociology-related matters and I obtained a master's degree entitled "Dynamics of Change in Modern Advanced Societies" at the Public University of Navarra. I did this with the intention of gaining further knowledge on sociological research methods and different theoretical approaches.

Not long after that, an opportunity came up when the Public University of Navarra called for research proposals and I obtained a PhD research contract. My proposal was linked with the research project called "Mobility, social diversity and sustainability. The challenges of the European agenda for rural development" (CSO2012-37540) led by professor Jesús Oliva, who would become my PhD director. This project has been funded by the Spanish National Plan for Research and Development (Ministry of Economy and Competitiveness). It explores the role played by mobilities (daily mobility habits, migration, residential changes, etc.) in the social sustainability of different types of territories in Spain and in Portugal.

I chose to focus my research on daily mobility and its impacts on societies, particularly in urban settings rather than in rural areas, as the greatest transformations are taking place in cities and the vast majority of humanity is expected to live in cities in the near future. Some attention has been given to rural areas as well, but I decided that most of my efforts should be driven towards analysing those environments where most of us live and where change is reshaping our lives in a more profound way. While change in towns and villages is usually less evident, cities in advanced Western societies appear to be facing a profound mobility paradigm shift. Change in rural areas is being assessed as well, but it is more urgently needed in cities. Moreover, suburban areas have flourished around cities in such a way that private automobiles have achieved a central role there.

Daily mobility, private cars and their impact on lifestyles and societies was at that time (and still is) probably one of the most debated topics. The need for evolving towards a more sustainable mobility is having a great impact on social and political debate. Private cars have become so hegemonic in many environments that challenging the combustion-engine-car-based model is now a great societal challenge. Mere technological advancement seems not to be enough. More profound societal transformations are needed in order to implement a sustainable mobility.

Furthermore, managing inter-related matters such as inequality is of crucial importance. A car-centred mobility might leave certain social groups behind. Symbolic elements such as social status are also linked with mobility. Many of us have grown up in car-centred cultures. I even remember myself, when I was a very young child, asking my grandfather: *“If you have made some savings, why don’t you buy a Mercedes?”*. He would say that his average Renault was more than enough for him for moving from point A to point B. I could not understand why he did not give any importance to buying a better car that was attributed a higher social status. As a child, I had assimilated the values of my surrounding culture, in which individual freedom, the pleasure of driving, social status and other positive elements were attributed to the private car.

All these elements converged in a research question that had caught my attention in a profound way: How would a new mobility model be socially appropriated and what would be its implications? A transition towards a sustainable mobility was already taking place. In my home city, Pamplona-Iruña, the implementation of this transition was sparking debate. It seemed to be the perfect opportunity for trying to decipher some of the social impacts of the mobility transition. An international comparative analysis would help in exploring how the transition was being managed in other advanced societies.

THE REGION OF NAVARRA (SPAIN) FROM AN INTERNATIONAL COMPARATIVE APPROACH

The region of Navarra (Spain) was meant to be the principal focus of attention. To analyse the mobility transition in Navarra, I chose four case studies that were representative of some of the most typical situations where the transition is taking place or could potentially take place. Two of them were devoted to analysing the impacts of change in the city of Pamplona-Iruña and the suburban territories of its metropolitan area.

As during the PhD I would be offered the opportunity to travel abroad, we decided that I would add international comparative case studies that would help in understanding how the mobility transition was being managed and appropriated in other contexts. Thus, I would be able to draw some conclusions on what was being done in other places and what kind of initiatives were being successful, as well as comparing them with our home city to see what ways of managing the transition could be better recommended.

Even though I did not always have a wide variety of options from which to choose where to go, I stayed in four cities that were representative of different modern contexts in which change was already taking place. Their categorisation is based on two main factors: the city’s performance in terms of mobility, and its compactness. Despite nuances (as it is difficult to find “pure” models), each international case study is representative of a certain combination (a compact and high-performing city, a dispersed and poorly-performing city, a dispersed but high-performing city and a compact but poorly-performing city).

Munich was my first stay abroad. The opportunity to go there was not connected to a local university. I had some relatives living there who would help me in contacting important stakeholders such as BMW managers. My second stay abroad took place in Pau (France), as

I was offered a grant to stay at the Department of Sociology of the “Université de Pau et des Pays de l’Adour”. The last two stays were closely interconnected: Tuuli Toivonen (from the Department of Geosciences and Geography of the University of Helsinki) first offered me a place in their research group on mobility and accessibility and then helped me to continue my research work at the Geography and Planning Department of the University of Toronto (with which they collaborated) under the co-direction of Steven Farber.

Pamplona-Iruña can be considered a very compact city that is not high-performing (but not poorly-performing either) in terms of mobility. Its metropolitan area is more dispersed and faces additional challenges. Therefore, analysing different contexts where the transition is taking place would contribute to drawing conclusions not only on the international cases isolatedly but also on how the different areas of Pamplona-Iruña and its metropolitan area should ideally be managed and on whether there is hope for very car-dependent areas.

The methodology used for studying these cases mixes a combination of quantitative and qualitative research methods, the latter being predominant. Social science techniques, such as in-depth interviewing, conducting surveys and discussion groups, analysis of quantitative data, etc., have been used with the intention of achieving a holistic picture of the social side of the mobility transition in several modern societies. Their performance in terms of mobility and social justice linked to mobility issues has been compared in order to conclude how this phenomenon should ideally be managed. The political implications of this attempt of change have also been discussed.

RESEARCH OBJECTIVES

As explained, I chose to do my research on the social implications and the appropriation of the mobility transition. At first, this topic seemed to be too vast and abstract, so I needed to define a set of research objectives that would help me in focusing on my specific cases in a coherent way.

The attempt to evolve towards a new mobility model was sparking debate in the city of Pamplona-Iruña. Therefore, I found it logical that my home city would be one of the case studies. We knew that suburban areas and rural areas did not face the same challenges, so I also decided to include the city’s suburban areas and a nearby rural area. Later on, I was offered the opportunity to start a collaboration with the committee of a local company, so that I could include a fourth case study (on home-work mobility) from the region of Navarra.

This work would allow for the comparison of my home-region-based findings with those obtained in the foreign cities that represented different ways of managing the transition. In this way, I gave shape to the case studies that would be analysed throughout the thesis. But I needed to specify the research objectives: What did I want to learn from my case studies?

I started by defining a set of initial research objectives that could be used as a preliminary guideline. These objectives would be adjusted later. My initial research objectives were the following:

- Analyse how advanced societies are challenging the twentieth-century car-centred mobility paradigm based on driving combustion-engine private cars. Why is change needed? What are the downsides of this societal model? As the mobility transition is not such a central matter (not yet at least) in the developing world, I would focus on modern advanced societies, where the system of automobility is increasingly being put into question.
- Explore the ways in which the mobility transition is being managed and its political implications. How should the transition be managed? What kind of measures tend to spark debate? Is the management of the mobility transition being used politically?
- Study inequality-related matters that underlie this phenomenon. Who will pay the toll for this transition? Is a car-based mobility worryingly unequal? Private cars would also be conceived as an environmental threat, but special attention would be put on social inequality.
- Reflect on the impact of factors such as gender, age, place of residence, etc. Does everyone have access to mobility in such a way that all their needs are covered? Are there significant differences between men and women, the young and the elderly, inner-city residents and suburban residents, etc.?
- Examine the symbolic components of automobility. Has the automobile become a cultural symbol of freedom? Are cars used as status symbols? Are emotions one of the keys to understanding our attitudes towards the car?
- Interpret the way in which the system of automobility brought changes in mindsets, values and lifestyles. Illustrate how closely cars have been linked to phenomena such as the “American dream” and suburban lifestyles.
- Depict the challenges that different types of areas (urban, suburban, rural, etc.) need to face. Describe the appropriation of the latest trends (electric cars, automated cars, etc.) and how built environments are being reshaped (compact cities, “smart cities”, etc.).

While the middle classes in developing economies are massively gaining access to buying cars, it seems that in some of the most advanced societies the lure of the private car might be fading. Both our home case studies and the four international case studies could be used to illustrate the social impact of the transition in some of those modern advanced societies that might be reaching the so-called “peak car”.

Before finishing the thesis, I have been published some pieces of work on the preliminary findings. The first preliminary conclusions were published in a conference paper on “Smart Urban Mobility from Expert stakeholders’ Narratives” (Lopatnikov, 2017) based on the cases of the city Pamplona-Iruña and the region of Navarra.

Other preliminary findings were presented at the third midterm conference held by the European Sociological Association Research Network 37 on urban sociology. My work titled “Uncertainties and Inequalities Linked to the Transition Towards a New Mobility Paradigm. The City of Pamplona as a Case Study” (Lopatnikov, 2018) addressed some of the issues that have been mentioned. The next year, together with Jesús, we worked on a presentation for the ESA international conference held in Manchester. Our work “Rural-Urban Connections,

the Mobility Transition and its Social Representations. A Comparative Analysis of Cases Study in Spain” (Oliva & Lopatnikov, 2019a) was presented there.

Furthermore, Jesús and I worked together on a presentation on mobility issues in rural and hybrid rural-urban areas in the region of Navarra for a Spanish Federation of Sociology congress. Our work (Oliva & Lopatnikov, 2019b) “Transición de la Movilidad y Mundo Rural. Una reflexión a partir de los casos de la Cuenca de Pamplona y la montaña navarra” (Mobility Transition and Rural World. A reflection based on the cases of the Pamplona Basin and the Navarre mountains) was presented at the Congreso Español de Sociología of the Federación Española de Sociología (FES).

Outside of the academic world, I have been published two newspaper articles connected to the mobility transition in the regional media. The newspaper Diario de Navarra has shown some interest in my work. They asked me to write about Pamplona-Iruña and published my views on the inequality-related implications of mobility measures such as making car drivers pay for parking in the city, as well as an opinion article in which I argued that “default” solo car driving could be interpreted as the “cancer” of urban mobility¹.

STRUCTURE OF THE THESIS

The thesis has been divided into eleven chapters that have been arranged into three main parts. It also has additional sections, such as this introduction, the final conclusions and the methodological annex. The first part of the thesis has been devoted to giving shape to a theoretical framework and to a chapter on the methodology. The second part comprises the chapters on the four international case studies that are used for a comparative analysis. The third part consists of the four chapters on the region of Navarra (Spain).

Chapter 1 mainly consists of an academic framework of the phenomenon of the mobility transition. It aims to reflect how academic literature has analysed the deep impact of daily mobility on modern societies. It shows that scholars have studied the social side of mobility issues from multiple perspectives and it has been divided into three sub-sections: a historical approach to the matter, the key concepts linked to the mobility transition, and inter-related issues connected to it, including a statistical analysis of the evolution of the number of cars in the European Union that shows that different stages can be defined.

Chapter 2 is meant to be a supplement to the more theoretical framework that we can find in chapter 1. It offers a selection of illustrative examples of how the mobility transition has emerged as a topic of special interest. To simplify the complexity of the transition, three main spheres have been analysed: the political battles that arise in connection with mobility, the impact of mobility on lifestyles and the implications of the technological revolution. The mobility transition can be defined as a multi-level socio-technical transition that influences

¹ “Daniel Lopatnikov: ‘Social inequality should be taken into account’” (Diario de Navarra, 28/4/2018); “The cancer of urban mobility” (Diario de Navarra, 9/3/2018).

many aspects of our daily lives. I offer here numerous examples at the regional, national and international levels.

The third chapter outlines the methodology used. It describes the combination of several social science research techniques that were chosen for the analysis of the transition from a sociological perspective. Even though such a vast phenomenon could not be covered in its entirety, mixing different research techniques (most of them qualitative) was chosen as the best option to gain a holistic picture of the research problem.

The next four chapters are devoted to describing the outcomes of the research work in different international contexts. Chapter 4 portrays the case of Munich, a compact and high-performing city. Two opposing elements seem to cohabit in harmony in this German city: a powerful car industry and a top-performing urban mobility ecosystem. It could be taken as a positive example of how the transition can successfully be managed, but its very specific circumstances must be taken into account, as advocating against car ownership in the region of Bavaria would probably be controversial.

Chapter 5 is based on my work on the case of Pau (France). Pau is a dispersed and poorly-performing city that can be taken as a paradigmatic example of how the twentieth-century mobility model reshaped cities in such a way that the private car became hegemonic. With the turn of the century, the city has started to work on evolving towards a more sustainable mobility. However, retrofitting extremely car-based urban environments like Pau seems to be an extremely challenging task, and change is expected to happen very slowly.

The case of Helsinki, probably one of the best examples of how the current transition can be managed in a successful way, is covered in chapter 6. The Finnish capital city can be taken as an example of how urban mobility may be in the future. This city is not only testing the latest trends (Mobility as a Service, autonomous vehicles, etc.), but it is high-performing in what refers to the conventional alternatives to private cars, such as cycling and using public transport. Furthermore, Helsinki is a dispersed city, meaning that there is hope for change for this type of areas.

Chapter 7 is devoted to Toronto, a compact but poorly-performing North American city. North American cities have traditionally been designed for cars in an even more radical way than European cities. Some inner-city areas and the suburban areas of Toronto illustrate this phenomenon. However, we will see that the city could be divided into “two Torontos”, as downtown Toronto is not poorly-performing. Therefore, two opposing lifestyles cohabit and seem to be associated with different mindsets and attitudes towards the car.

The remaining four chapters are based on the research work carried out in the region of Navarra. Chapter 8 analyses the case of the regional capital city, Pamplona-Iruña, which can be considered a very compact city that does not perform well in terms of mobility, but it does not perform poorly either. Its mobility is characterised by a duality: The vast majority of the journeys are made either on foot or by car, these two being the locals’ main choices. The use of alternatives, such as the bike and public transport, is far from reaching the goals

set by the local Sustainable Urban Mobility Plan. The authorities' attempt at reshaping the city's mobility has brought social and (mainly) political tensions.

In Chapter 9, I depict some of the challenges faced in the suburban areas of the Pamplona Metropolitan Area (MA). These areas sprawl out from the inner city, but political consensus for achieving change is more easily reached there. Three sub-areas have been defined with the aim of comparing them: the "outer suburban ring", the "inner suburban ring" and the "city proper". This categorisation is based on each territory's location with respect to the peripheral motorway that surrounds the city.

Chapter 10 explores the perceptions on mobility issues and the attitudes towards change of the workers of a company located in the periphery of the Pamplona MA. The workers' committee offered the opportunity to collaborate with them and launch an online survey on home-work mobility. As the directors' board would not let us pose some of the questions, the committee took the initiative. Nearly half of the employees participated. We wanted to know how their massive use of private cars for home-work mobility could be tackled.

The last chapter, chapter 11, has been devoted to analysing mobility in a rural area of the region of Navarra. There, private cars might be conceived as a problem and a blessing at the same time, as, even though they pose an environmental threat and have other downsides, they can contribute to stopping the depopulation of rural areas. The centrality of the private car was found to be evident, as driving a car makes it possible to access basic services that are scarce in isolated villages. The survey respondents were skeptical, or slightly optimistic only, about bringing change to their village.

Each case study has been analysed through the use of several research techniques. The degree of their analysis has depended on numerous factors, such as time constraints, access to stakeholders and potential participants, etc. Overall, I wanted to see if there is a certain correlation between how people approach mobility issues and the environment where they live. By comparing the four international case studies and our home-region case studies, I would be able to conclude whether there seemed to be any relationship between car-based areas and car-oriented mindsets.

Many of us have grown up in car-centred cultures. Should change be imposed? Is change an attack on freedom? Ideologies and political views on the matter will be examined in this thesis. We will see that reaching political consensus would help in reducing the tensions provoked by the mobility transition. However, consensus seems not to be easily achievable, as mobility has become a political weapon in many contexts. Politicians must expect social contestation at first, as certain citizens might feel threatened by the measures taken, but "inaction" should be tolerated if our societies aim to achieve a more sustainable model.

The mobility transition should ideally not only bring a "greener" mobility but also a more just society. Inequality-related issues will be widely discussed throughout the thesis. Change happens in different ways and there is no certainty about what path will be followed. Should we head towards a multimodal mobility? Would it be ideal to switch to private electric cars and perpetuate the system of automobility? These types of questions will also be addressed.

Mine is a small contribution to analysing a vast and complex phenomenon. I aim to offer a holistic approach to my research problem, even though covering all the social impacts of the mobility transition in advanced societies is not viable. Thus, I analyse in a comparative way a set of case studies that are meant to be representative of different types of contexts where this transition is taking place.

PART I

1 - RESEARCHING THE APPROPRIATION AND THE SOCIAL IMPLICATIONS OF THE MOBILITY TRANSITION IN ADVANCED SOCIETIES

1.1-INTRODUCTION

The mobility transition and its appropriation and societal implications is a complex issue that has been analysed from multiple perspectives. Previous research works on the matter have focused on a wide variety of inter-related sub-topics, as it would be unviable to cover this whole phenomenon in its entirety. In light of their findings, most experts tend to agree on concluding that we are witnessing a transition towards a new paradigm that is reshaping in a profound way not only mobility but also our lifestyles and societies in a broad sense.

Special attention will be paid to those issues that will be covered in the thesis chapters. It is important to underline that the main focus of attention will be daily mobility, not other types of mobility such as travelling on vacation or for migrating from one country to another. Lifestyles and everyday mobility patterns (such as commuting to work) based on solo driving give shape to a combustion-engine-car-based mobility that is now being challenged, mainly in advanced societies.

1.2-A HISTORICAL PERSPECTIVE: FROM FORDIST TO POST-FORDIST MOBILE SOCIETIES

Well-known scholars, such as John Urry or Mimi Sheller, have devoted an important part of their efforts to analyse the impact that the invention and democratisation of cars has had in modern societies. We can find academic literature on why the private automobile became so successful, first in North America and later in Europe and many other parts of the world. The most important aspect of the adoption of the private car as the hegemonic mode is the profound social transformations that replacing other mobility options provoked.

Even though most of the emphasis is put here in mobility, Fordism and post-Fordism can be applied in a broad sense to societal transformations. According to Jessop (1996), Fordism could be defined in terms of a labour process, a macroeconomic system, a social mode of economic regulation and a way of social organisation, whereas post-Fordism could be linked to a more flexible social order through which capitalists tried to overcome the alienation of workers and the growing demand for more differentiated products (such as cars).

The transition to post-Fordist societies cannot be understood without having previously analysed how the popularisation of private automobiles changed our societies and people's lifestyles and mindsets.

1.2.1-The twentieth century as the “century of the car”

Academic works have analysed how and why the car succeeded in replacing other modes of transport and have theorised on which stages were crucial for this societal revolution. By

the beginning of the twentieth century, the assembly line and the success of Henry Ford's 1908 Model T led to a great disruption. The automobile was not his invention, but Ford was the first to succeed in producing a model that was affordable for the masses. Ford, the car and the so-called "industry of industries" (the carmakers) changed the world. Ford reduced the costs and made the private car accessible for regular citizens. The price for the consumer dropped and the task cycle was significantly reduced. Before the introduction of the moving assembly line, the task cycle for the average Ford assembler had already been reduced from over 500 minutes to less than 3 minutes (Womack, Jones & Roos, 1990).

According to Gartman (2004), we can observe three ages of the car during the twentieth century. Each of them would be defined by a unique cultural logic linked to consumerism in modern societies. The three ages could be defined as "class distinction", "mass individuality" and "post-Fordism". As described by Sachs (1992), at the beginning, cars were pleasures for the wealthy. However, this first stage did not last very long, as Ford seized the opportunity to democratise the car. He introduced the assembly line, increased the wages of his workers and started a new period in which regular workers could afford to have private automobiles. Thus, private cars became a compensation for the workers' conditions of alienation:

But what kind of consumer goods would workers consider sufficient compensation for their increasingly alienated and exploited work? This was the question that the American automobile industry was trying to answer beginning in the late 1920s (...) In this period the American working class was beginning to construct a separate realm of consumption in the home, where they could find respite and compensation for the realm of work. The automobile was the keystone of this narcotizing edifice of consumerism. (Gartman, 2004: 177)

The rise of the private car cannot probably be understood in isolation from the parallel rise of capitalist societies. In the post-Fordist era, automakers did not target broad income groups anymore. They started to target smaller and specific market niches (Gartman, 2004). During the last century, one billion cars were manufactured (Urry, 2004). This massive use of cars reshaped modern societies. Urry concludes that "*small causes occurring in a certain order at the end of the 19th century turned out to have irreversible consequences for the 20th century, what we might call the century of the car*" (2004: 32).

Urry does also analyse why petroleum-fuelled cars became hegemonic (see Urry, 2004). Different types of contingencies led to the rise of a paradigm that is now being challenged, as societies are gaining awareness of its negative side effects. Cars were originally invented in Europe and, prior to the introduction of the mass-produced Ford Model T, France had a higher motorisation index than the United States (Kellerman, 2006). Despite this fact, after the industrial mass production of the automobile succeeded, European households adopted private cars at a slower pace than North American households.

Until recently, motorisation indexes have usually been closely associated with a society's development. Spain has traditionally been one step behind other European countries such as Germany or France, so the adoption of a car-based mobility in Spain took place with some delay with respect to European averages (and with more delay in comparison with North America). Matas and Raymond (2008) argue that it was not until the turn of the century that

Spain reached a motorisation index that was close to European averages. Before the boom of the Spanish economy, the per capita number of automobiles in Spain was well below average European levels. However, Spain has emerged as a developed country where most European standards are met or are close to be met (see further on in this chapter tables 1 and 2 on the evolution of the number of cars in Spain and in other European countries).

All in all, we can see that the social implications of the rise of cars as the hegemonic mode of transport in modern societies cannot be understood without a historical approach to the matter. Research literature has attempted to analyse why the car has become so successful and categorise the stages of its popularisation.

1.2.2-Automobility as the hegemonic system in modern societies

Once the private automobile became widespread, it did not only reshape roads but also many other elements of our societies, such as cities and suburban areas, and more abstract elements such as people's mindsets. Private cars, together with social phenomena such as consumerism, became strongly connected to the so-called "American dream". Cars started to be conceived as a symbol of individual freedom (as opposed to the constraints attributed to collective modes):

Automobility develops 'instantaneous' time to be managed in complex, heterogeneous and uncertain ways. Automobility involves an individualistic timetabling of many instants or fragments of time. The car-driver thus operates in instantaneous time rather than the official timetabling of mobility that accompanied the railways in the mid-19th century. (Urry, 2004: 28)

In this context, Urry (2004) argues that the massive use of cars led to a whole new social order: the system of automobility. This system comprises several components that would exercise a character of domination in their combination (Sheller & Urry, 2000). Urry (2004) describes the automobile as "the iron cage of modernity". Cars would have subordinated any alternative mode for moving around and reshaped the way in which citizens engage in activities such as work, family life and leisure. The automobile could be conceptualised as

the quintessential manufactured object produced by the leading industrial sectors and the iconic firms within 20th-century capitalism (Ford, GM, Rolls-Royce, Mercedes, Toyota, VW and so on), and the industry from which the definitive social science concepts of Fordism and post-Fordism have emerged. (Urry, 2004: 25-26)

Moreover, it has also become hegemonic in the cultural sphere as a synonym of the good life, as well as "*the major item of individual consumption after housing which provides status to its owner/user through its sign-values (such as speed, security, safety, sexual desire, career success, freedom, family, masculinity)*" (Urry, 2004: 26). Fordist methods, which were first adopted in the United States and then spread to the rest of the globe, had an impact on regular people's lives, as car ownership became generalised and reshaped the lifestyles of urban and suburban dwellers. Featherstone (2005) notes that automobility as a dominant form of mobility was long neglected as a topic within sociology and its related disciplines. In

a similar vein, Sheller and Urry emphasise that not taking seriously the overwhelming impact of private cars in our lives has been a common mistake in the past:

Cars have been conceived of either as a neutral technology, permitting social patterns of life that would happen anyway, or as a fiendish interloper that destroyed earlier patterns of urban life. Urban studies has omitted to consider how the car reconfigures urban life, involving (...) distinct ways of dwelling, travelling and socializing in, and through, an automobilized time-space. (Sheller & Urry, 2000: 738)

In the Fordist society, the city became a key pole of attraction. Lefebvre (1968) described how the city was reshaped and became the centre of social life in industrial societies, where citizens had a “right to the city”. The implementation of capitalist societies led to a profound redesign of the public spaces (Lefebvre, 1974). According to Ascher (2001), a new urbanism was embraced and an urban revolution took place. Urban planners embraced a new societal order. Well-known architects such as Le Corbusier enthusiastically adopted a new paradigm that was based on the belief that modern life demanded that cities were restructured for cars. The automobile became a symbol of modernity, so cities were meant to be designed in a way that allowed an easy and rapid flow of traffic (see Le Corbusier, 1986). According to Baudrillard (1986), American freeways emerged as corridors in which citizens spent part of their lives and (allegedly) enjoyed smooth drives, dwelling in comfortable automatic cars and indulging in the greatest pleasure: driving and flowing in traffic. Thus, Sennett (1996) argues that modern life led to an increasing fragmentation of life and the bodily experience of the city.

As well as the embedment of the automobile in popular culture, the association between motorisation and economic growth was seen as a key feature of modern capitalist societies in the twentieth century. High motorisation indexes were associated with modern advanced societies:

Cars have been seen to play a fundamental role in the promotion of economic growth in the twentieth century, and thus in the reproduction of capitalism as a system. Both proponents and social critics argue that both in terms of its direct stimulating effects on the economy and the broader political-economic shifts effected because of the motor industry’s role in reorganizing industrial production (‘Fordism’), the car has been central to promoting growth. This role has therefore been central in legitimizing the car’s expansion, enabling the car to become perhaps the symbol of progress for most of the twentieth century. For much of the century, the motor industry, and associated industries (oil, steel, construction, in particular) have had growth rates noticeably above those for the economy as a whole. (Paterson, 2000: 262-263)

As a reaction against this “dictatorship” of the private car through a systemic and cultural domination, certain sectors of the society have campaigned against its hegemonic position. Not only activists but also scholars and researchers have blamed the system of automobility for being unsustainable and undesirable. Scholars such as Böhm et al. (2006a), in their book “Against automobility” (a book that includes a chapter written by Urry), have shown a desire for switching towards sustainable mobility and putting an end to the subordination of other modes and walking. Other authors such as Ward, García-Calvo and Estevan (1996) have also insisted on the need for fighting against the car. In a similar vein, de la Cueva (1996) argues that private cars must be substituted for other options, as they consume a great amount of

energy and kill thousands of citizens (see, e. g., Dennis and Urry, 2009, on how roads became “killing fields”). Urry’s views on the subordination of other options are shared by researchers such as Furness:

The historical transformation of the United States into a full-blown car culture is commonly, though somewhat erroneously, attributed to choice or desire, as if the aggregation of individual consumer choices and yearnings necessarily built the roads, lobbied the government, zoned the real estate, silenced the critics, subsidized auto makers, underfunded public transit, and passed the necessary laws to oversee all facets of these projects since the 1890s (...) This is not to suggest that power is always exerted from the top down, nor to imply that the average person plays no role in the production or contestation of technological and cultural norms. Rather, it is simply a way of acknowledging that technological desires and choices, particularly those concerning transportation and mobility, are necessarily constrained by the profit imperatives of very specific and very powerful institutions and organizations. (Furness, 2010: 5-6)

It appears that the private-car-based model is now being challenged. Urry considers that, in spite of the reticence of certain stakeholders, a tipping point can be seen on the horizon. The twenty-first century is expected to be the century of the mobility transition:

The days of steel and petroleum automobility are numbered. By 2100 it is inconceivable that individualized mobility will be based upon the 19th-century technologies of steel-bodied cars and petroleum engines. A tipping or turning point will occur during the 21st century (...) This tipping point is unpredictable. (Urry, 2004: 36)

A post-car system in which the benefits of individualised mobility are not so negatively compensated by the side-effects of the massive use of cars is expected to emerge as a better model. As we will see throughout the thesis, the transition towards a “post-carbon mobility” and its management have become issues of crucial relevance in advanced societies.

1.3-“MOTILITY”, “SECESSIONIST AUTOMOBILITY” AND THE “TWIN TRANSITION”

Academic literature on mobility from a social science perspective has established a series of key concepts that are intended to help in deciphering and understanding the implications of the mobility transition (see for example Salazar and Jayaram, 2016). Mobility has become a keyword that delineates new concepts in social sciences (Adey et al., 2014). Some of these concepts will be discussed in the following pages. But, before that, we should ask ourselves on what a transition exactly is. Even though it might seem to be an intuitive notion, scholars have tried to define the main features that generally characterise a transition. For example, Kempt, Geels and Dudley (2012) argue that transitions can be defined as 40-50-year periods that are the outcomes of multiple changes and are not caused by a single factor (such as an innovation or a specific measure taken by a government). As already explained, advanced societies experienced a transition to a system of automobility during the twentieth century that reshaped the cities’ fabrics and people’s everyday lives. Another transition appears to be taking place with the turn of the century. This phenomenon is expected to profoundly change modern built environments and lifestyles.

Another apparently intuitive notion that I would like to delimit before trying to define more complex concepts is car dependence. It is said that many people live in car-dependent

environments. But, what is car dependence exactly? For example, Jeekel offers a definition that underlines the idea that car dependence does not only consist of high levels of car use but also of living in places where non-use has negative effects on people's wellbeing:

Although the degree of use is an important indicator, it is an incomplete indicator. Dependence points to a situation in which users do not see alternatives. Dependence has a relationship to lacking alternatives, or at least to the perception that alternatives are lacking (...) Car dependence starts, as do most addictions, with use, but is only manifest when non-use has a negative influence on wellbeing. (Jeekel, 2013:2)

1.3.1-“Motility”, mobility transitions and the new mobilities paradigm

“Motility” is a concept that is frequently used in academic literature on mobility issues. It refers to the idea that our lifestyles depend on having access to mobility and having the potential to be mobile. Kaufmann, Bergman and Joye (2004) argue that actual and potential socio-spatial mobility (termed “motility”) could be interpreted as a social asset and that the main elements that define “motility” would be those relating to access to different options, competence to make use of them and appropriation of a particular choice. Leivestad (2016) argues that this concept emerged as a result of the need to identify the incompleteness of mobility and tackle the gap between mobility and immobility.

This notion would in some way be linked to Bauman's (2000) use of the word “motility” as the potential for movement. However, Cresswell (2006) argues that our growing potential to be on the move is constantly being challenged by attempts to control and restrict it (think of, for example, those made by national, regional and local governments). Furthermore, the idea of “motility” can either target mobility or not, depending on the intentions of the actors (as they might want to avoid the confrontation of foreign environments), and it could be a source of social inequality, as not everyone has the same access to the competences, space and money required by movement (Canzler, Kaufmann & Kesselring, 2008).

Conceptualising mobility (whether termed “motility” or not) as a potential to have access to opportunities can be useful for understanding why people do not have the same potential for constantly being mobile and how it affects their daily lives. Urry (2004) makes emphasis on the fact that modern societies appear to be reaching a tipping point in their adoption of automobility (and of petrol and diesel cars) as the hegemonic system that gives (or denies) people access to being mobile. This idea of being witnessing a transition towards a different model is key to my research, even though Urry uses it in a broader sense that goes beyond daily-routine mobility. This is why I prefer to use the terms mobility transition and mobility paradigm instead of mobility transitions and mobilities paradigm.

Following this line of thought, Sheller (2017) suggests that advanced societies are facing complex transitions that are more socially and culturally determined than technologically driven, although technical advancements are taking place in parallel. Sheller and Urry (2006) regret that social science has been too static or even “a-mobile” and argue that mobility has been seen as a “black box” made of neutral technologies and processes. Therefore, its fullest sense would have generally been missed. However, according to them,

a “mobility turn” is spreading into and transforming the social sciences, transcending the dichotomy between transport research and social research, putting social relations into travel and connecting different forms of transport with complex patterns of social experience (...) It seems that a new paradigm is being formed within the social sciences, the “new mobilities” paradigm. (Sheller & Urry, 2006: 208)

Cresswell (2010) proposes an approach that combines mobility and immobility in order to point out that this paradigm does not replace a world of fixities. Furthermore, Cresswell argues that

there clearly is something “new” about the ways mobilities are being approached currently that distinguishes them from earlier accounts of movement, migration, and transport (to name but three of the modes of mobility that have long been considered). If nothing else, the “mobilities” approach brings together a diverse array of forms of movement across scales ranging from the body (or, indeed parts of the body) to the globe. These substantive areas of research would have been formerly held apart by disciplinary and subdisciplinary boundaries that mitigated against a more holistic understanding of mobilities. (Cresswell, 2010: 18)

1.3.2-“Secessionist automobility”: Fleeing the “evils” of life in the city

Mobility and the potential to be mobile are not neutral, in the sense that in many cases people’s intentions might transcend a mere search for opportunities. Automobility has not only permitted to reach more places at a higher speed and at any time but it has also allowed many drivers to “secede” from the rest of the society. Private cars and urban sprawl are very closely connected. Once the popularisation of the automobile made it possible to move to suburban areas (they tended to be associated with the so-called “American dream”), many citizens chose a car-oriented suburban lifestyle with the intention of avoiding the downsides that they attributed to living in the city. In the suburbs, the home is the focus and the main forms of activity are car-based (Urry, 1995). Urbanisation has been contested by a process that we could label as “counterurbanisation”, which was detected back in the seventies (see Berry, 1976) and meant a deconcentration of the urban population in smaller, low-density towns that go beyond the urban-rural dichotomy (see also Champion and Hugo, 2004).

Henderson (2006) argues that “secessionist automobility” is a spatial secession rooted in “anti-urban” ideologies, as well as other motivations such as a race-based secession. Cars would have been intentionally used for “seceding” from the perceived “evils” of the city and moving to nearby suburban areas. According to Henderson,

the racially motivated physical movement of whites to outer suburban areas in North American and European cities is enabled by automobility, and automobility also enables travel through spaces inhabited by blacks or other minorities without having to interact with them (...) But secessionist automobility is not simply racially motivated (...) Rather than racialized, automobility was conceptualized as a device to achieve a spatial vision of rural ideals attached to an anti-urban image of the city as a place of vice and immorality. (Henderson, 2006: 300)

In this context, many citizens would have opted for moving to peripheral areas and might have conceived it as the right thing to do, as *“households react to poor schools, urban crime, different racial groups, or any other perceived or real urban problem by seceding from spaces*

where these problems exist” (Henderson, 2006: 294). Then, why not radically “secede” from the city and move to the rural?:

Proximity to the rural ideals and nature is realized by low-density, single-detached houses on plots accessible only by automobiles. Everyone drives everywhere for everything. Yet the overall vision cannot be met in a practical sense because metropolitan areas contain the jobs and other urban services modern life depends upon, and so the result is that secession is incomplete. (Henderson, 2006: 301)

This gives an explanation to the reason why suburban areas have become popular. The car-based lifestyles attributed to this type of hybrid urban-rural settings and the implications of their extreme car-dependency will be analysed throughout the thesis. Urry (1995) argues that suburban patterns of life can be found in both urban and rural areas and that the forms of mobility are more important than the size and density of a specific area.

Henderson (2006) claims that automobility has become “essentialised”, meaning that it is nowadays considered a universal given in urban settings, particularly in North American cities. Furthermore, based on Vuchic (1999), he regrets that many scholars and policymakers have adopted an “inevitability hypothesis” and assume that the expansion of automobility is just natural. Nevertheless, Henderson (2006) also acknowledges that a social and political contestation of automobility is unfolding on a global scale. Many scholars, policymakers and activists are starting to advocate for building denser, public-transport-oriented and walkable cities that are labelled as “compact cities” in Europe (“smart growth” or “new urbanism” in North America).

The use of automobiles as a tool for “seceding” from the city is being contested due to its impact on social ties and the environment. In fact, although cities have many detractors, many others believe that the city is a positive space for social contact and cohabitation. The result of these two opposing views of the city has led to the collision between “urbanophilic” and “urbanophobic” mindsets and lifestyles (see Martínez-Lorea, 2015), the latter meaning a relocation in suburban areas in an attempt of “seceding” from the perceived or real “evils” of the city.

1.3.3-Cocooned in private cars: the “SUV model of citizenship”

In very close relationship to the idea of “seceding” from the city, we can see that scholars have also remarked that cars may be used as if they were chambers inside which the driver is “cocooned” (Urry, 2006) and feels isolated from the rest of the society. This would be an attempt of being independent from the others and not mixing with them. Such an attitude would be linked to the current “SUV hype”.

Henderson illustrates the tensions linked to automobility through describing a racial crisis that hit Atlanta in 2000 after road money was cut as a punitive measure for air pollution and this racial crisis centred on a baseball player who appeared in the media:

In spite of the thousands of self-examining media reports about intolerance and racism, the spatial context of automobility and a vitriolic hostility towards transit and urban life were missed. During the bigoted diatribe, the culprit was driving a large SUV — a Chevy

Tahoe — and speeding down a massive multi-lane freeway. While venting to the reporter his disdain for New York’s subway, he yelled angry obscenities and made gestures at other motorists from within his speeding cocoon. (Henderson, 2006: 298)

This is just an example of how the automobile has many times been regarded as a symbol of individual freedom and a tool for escaping from the undesirable downsides of mixing with others (whether real or imagined). In a similar vein, Mitchell (2005) explains that the North American society has codified a model of public life that is opposed to public space. The rise of isolated bubbles of property, together with bigger and heavier cars such as SUVs (Sport Utility Vehicles), would have shaped an alternative lifestyle (the “SUV model of citizenship”) characterised by a false sense of security and inviolability:

We want to move freely through public space, encased in an impregnable bubble of property (made real through law), and watched over by a network of surveillance cameras, their operators, and the state. We want – and expect – to feel safe at all times (...) The rise of the sports utility vehicle (S.U.V.) over the past decade and a half has been attributed to any number of factors (and cannot only be explained in terms of consumer choice), but a central factor has been the sense of inviolability that a couple tons of steel and fiberglass can instill. Cocooned in a sealed chamber, behind tinted glass (...) we are radically isolated from each other, able to communicate only through the false connectedness of the cell phone. (Mitchell, 2005: 96)

In the same vein, Lauer argues that SUVs are being used for fleeing from the society and gaining a feeling of personal safety:

While consumer attraction to the SUV is typically attributed to two key features – safety and interior space – these pragmatic justifications may be viewed as euphemistic. Safety is not road safety but personal safety. Space is not interior cargo space but social space, including the privileged ability to traverse inhospitable terrain to remove oneself from society. (Lauer, 2005: 149)

The “SUV model of citizenship” would have risen in a context of social fragmentation and fear of crime in late twentieth-century North America. Despite putting the occupants of cars at a significant disadvantage in case of crash, and in spite of their poorer fuel economy, SUVs have emerged as a symbol of protection and retreat (Lauer, 2005). Oliva (2011) argues that certain models could be labelled as “mortal projectiles” that put those who are not so “well-equipped” at risk. Several phenomena, such as urban sprawl and the success of anti-urban narratives and SUVs, have converged in such a way that automobility has been reinforced, as they have had an important influence on many people’s lifestyles.

Finally, it is relevant to say that certain social movements have opposed the rise of SUVs as a fashionable trend. For example, Vanderheiden describes the “anti-SUV movement” that *“crystallised as a grassroots revolt against an object of common disapprobation in which a wide variety of people invoke an equally wide variety of grievances against what is treated as either a cause or symbol of what is ailing society”* (2006:24).

1.3.4-Experiencing the car: status symbols, banal mobilities and emotional factors

In parallel with the trends mentioned previously, cars (including SUVs) have emerged as status symbols that can be carried nearly anywhere. This social phenomenon has also been

analysed by scholars, as the appropriation of cars cannot be fully understood without taking into consideration the use of the car not only as a practical item but also as a symbolic one. Together with other attributions such as individual freedom or sex appeal, automobiles have been associated with the driver's and the family's place in the hierarchical order of a society.

In capitalist societies, citizens might measure their own success and the others' by what they can afford to buy. Owning a car, a luxury one if affordable, might be interpreted as the confirmation that someone is "getting ahead". In this context, carmakers have traditionally spent fortunes exploring the status meanings of cars. For example, they noticed that people who lived in regular buildings tended to leave their cars parked out on the street instead of putting them in the garage as a way of enhancing their status (Packard, 1959). Gilroy (2001) uses the notion of "compensatory prestige" and concludes that material deprivation might lead to feelings of status injury: Social groups such as the young may use the car as a symbol for status compensation as long as those who are in a higher position in the social hierarchy equate car worth with personal worth.

The workingman of the modern factory who has little opportunity to upgrade himself in his productive life might feel an "upgrading urge" in relation to his car (Packard, 1959). The philosopher de Botton (2004) labels this urge for upgrading one's status as "status anxiety". Nevertheless, Gorz (1980) notes that the car was not originally conceived as an item for the masses, as (unlike other items such as the vacuum cleaner and the radio) it is a luxury good from which citizens obtain no advantage if it becomes democratized (due to factors such as traffic congestion, the need for parking spots, etc.).

The symbolic components of the car should not be missed when exploring its impact on our societies, as buying an automobile can be motivated not only by rational factors but also by emotional factors that transcend mere pragmatism. Back in the sixties, Marcuse (1964) said that cars reflected the confrontation between the rational and the irrational in modern societies, being the car a source of convenience and nuisance, as well as a commodity where to find the capitalist soul, as the capitalist system produces needs and exerts social control through them.

Despite the complexity of the system of automobility, scholars have also made emphasis on the fact that many people tend to take their daily mobility routines for granted and, thus, mobility can be experienced as banal or mundane (see, e. g., Vanderbilt, 2008). As Binnie et al. point out,

all of us are caught up in banal or mundane mobilities, whether it is the walk to the bus stop and catching the bus to town, the daily commute by train to work, the trip by car to the supermarket, the cycle ride to school or the holiday visit to a tourist attraction. What makes these everyday voyages mundane is their commonplace and regular occurrence, so they are not generally conceived as extraordinary or special trips through time and space but are enmeshed with the familiar worlds we inhabit, constituting part of the unreflexive, habitual practice of everyday life.
(Binnie et al., 2007: 165)

In parallel, the massive use of cars has led to new phenomena, such as urban congestion and traffic jams. In this context, social science researchers have emphasised the problem of

“road rage” (Katz, 1999), which can make our journeys by car not just neutral or banal but a source of tensions and stress. The passions that lead to love for a car or joy in driving can also provoke feelings of hatred for traffic, rage and anger (Sheller, 2004). Katz (1999) argues that, in social interaction while driving, many drivers become “pissed off”. This experience would be universal and would affect very different moments in the driver’s routine. These are just a few examples of how academic literature has reflected that mobility is inextricably linked with emotions and how the impact of the massive use of cars is experienced in daily life.

1.3.5-The “fourth industrial revolution”. Sustainability and just mobility: a “twin transition”

Even though we have focused on the key importance of the mobility transition as a social phenomenon, we cannot forget that technological advancement is an important factor. In this context, mobility is not only being reshaped by the attempt to promote healthier habits (such as walking or cycling) and encourage the use of public transport to reduce the negative impacts of massive car use, but also by the emergence of new technologies. Electric vehicles, for example, are being developed as an alternative to the conventional combustion-engine cars. Autonomous cars are also expected to become common in the future. This kind of new trends could have an important impact on people’s lifestyles and on the built environment.

Schwab (2016) considers that we are witnessing the “fourth industrial revolution”, which is based on profound shifts across all industries that are historic in terms of size, speed and scope. Technological change will need to be managed in collaboration with the civil society and numerous stakeholders:

While the profound uncertainty surrounding the development and adoption of emerging technologies means that we do not yet know how the transformations driven by this industrial revolution will unfold, their complexity and interconnectedness across sectors imply that all stakeholders of global society – governments, business, academia, and civil society – have a responsibility to work together to better understand the emerging trends. (Schwab, 2016: 2)

Technological advancement can potentially help in reducing the negative impacts of the system of automobility but needs to be combined with multi-stakeholder collaborations and social transformations:

The solution to this problem will require input from all segments of society, and must include technological innovation, changes in the physical infrastructure and land use, and social, cultural, and institutional changes. A fundamental rethinking of the entire system of personal mobility is necessary (...) A new and radically different way of seeing the problem of individual mobility, and of the roles of various stakeholders in finding solutions, is also necessary. (Vergragt & Brown, 2007: 1104)

Some of these shifts will directly affect mobility. We can find pieces of research literature in which the emergence of new technologies is analysed from both a technical and a social perspective. I will only briefly comment the cases of electric and autonomous vehicles, even though competing innovations such as hydrogen-fueled vehicles (find a comparative view

on electric and hydrogen fuel-cell cars in Shin, Hwang and Choi, 2019) will also be mentioned throughout the thesis.

The “re-emergence” of electric vehicles has not only been analysed from a technological approach. We can find research works on the history of alternative fuels in transport (see, e. g., Hoyer, 2008) that conclude that technologies such as hybrid and fully-electric engines had already been developed in the past but were subordinated by combustion-engine cars. They are currently being “re-developed” for the masses with the intention of replacing more polluting automobiles. Kanger et al. argue that the car industry has strong expectations that electric cars will be popularised in order to achieve a low-carbon mobility:

This type of social signalling could further embed the notion of EVs as “green cars” symbolized in cultural resources such as the mass media and films. A final cultural factor relates to changes in broader public discourse about the desirability and performance of EVs. As sales have begun to accelerate in some countries, promises and expectations have begun to discursively reinforce electric mobility trends. (Kanger et al., 2019: 60)

Kanger et al. (2019) show how, through advertising, companies such as Nissan, Tesla and BMW are trying to associate their electric vehicles with “greenness” and a “clean conscious”. The importance of marketing a new mobility (whether based on electric cars or alternatives to the car) will also be analysed throughout the thesis chapters.

Autonomous vehicles are also expected to bring a disruption. In fact, they could reshape the way in which people move around and relate to the car, as many experts believe that they will not be individually owned. It is hard to predict the impact of adopting automated mobility at a global scale as only pilot tests have been carried out so far. We can find reviews on the developments in self-driving cars in the twentieth century, the present scenario and the expectations for the future (see Bimbraw, 2015). The social acceptance of the different autonomy levels has been a focus of attention (see, e. g., Rodel et al., 2014). Ethical matters have been widely discussed as well (see, e. g., Lin, 2016) as critical scenarios such as deciding on who to kill when a fatal crash is inevitable but some lives could be saved will need to be addressed before turning them into algorithms. Kempt, Geels and Dudley (2012) conclude that technical advancement could lead to problems of public acceptance. Bissell et al. (2020) underline that sociologists must influence the implementation of autonomous vehicles, as they could have a significant impact on our societies that is usually missed by technocratic or utilitarian perspectives.

As we can see, social science researchers have a lot to say on the appropriation of these new technologies. My research focuses on this social side of the technologies linked to the mobility transition, rather than on their technical characteristics and their development. In fact, analysing the way in which the new paradigm is appropriated appears to be of crucial relevance. Kempt, Geels and Dudley (2012) claim that, overall, we can distinguish between two distinct paths: If people drive “greener” cars but they do not change their habits, certain problems such as congestion or the need for public space will persist, whereas a transition towards an inter-modal mobility would require a broader vision of change. This last version of change is the most supported in this thesis. Certain authors argue that switching to a new

mobility based on private electric cars would not be enough in order to eventually become carbon-neutral societies, as success

depends crucially on electricity derived from renewable energy replacing most petroleum-based fuels. However, most non-carbon energy resources have limited potential, are not always carbon-neutral, and will take more than a few decades to form a major share of global electricity generation (...) In the absence of a technical solution to the global quest for green car mobility, the world will instead have to move to a surface transport system based largely on use of alternative modes.
(Moriarty & Honnery, 2008: 1724)

When analysing the social appropriation of both innovative technologies (such as those brought by this new industrial revolution) and conventional options for moving around (such as walking, cycling, using public transport and driving a combustion-engine car), many social science researchers put emphasis on the importance of evolving not only towards a cleaner mobility but also towards a socially just mobility. The concept of sustainability is many times taken for granted, as if we knew what it means without any need for an explanation. Even though this might be true to a certain extent, it is important to briefly define what we exactly understand here by being sustainable.

Newman and Kenworthy (1999) underline that sustainability is one of the most diversely applied concepts among scholars, but it could be very briefly summarised at a basic level as improving (or, at least, not harming) the environment. Issues such as climate change urge us not to harm the environment in such a way that future generations are severely affected. Hanson (2010), based on previous works, defines sustainability as meeting the needs of the present without compromising the ability of future generations to meet their future needs. A turn towards more sustainable societies is expected to happen, and experts are predicting that the role of cities will be crucial. According to Banister,

local public transport, cycle and walking have become less attractive, and this in turn has resulted in the greater use of the car. Car dependence and the increased decentralisation of cities are difficult processes to reverse—this is the transport-led future. Sustainable mobility provides an alternative paradigm within which to investigate the complexity of cities, and to strengthen the links between land use and transport. The city is the most sustainable urban form and it has to provide the location where most (70-80%) of the world's population will live. (Banister, 2008: 73)

However, the complex process of reaching a more sustainable paradigm should not only focus on environmental sustainability. Social justice is crucial as well, as there might be social tensions linked with managing who benefits the most from the transition and who pays the toll for change. Inequality-related matters will need to be addressed with care. As reflected by authors such as Yago, innovative technologies can bring opportunities, but they can also become a source of social inequalities due to an unequal distribution:

Advances in transportation technology make more information, goods, services, educational and employment opportunities, land, recreation, and so forth available to those with access to transportation (...) Intra-metropolitan changes in job locations, increasing residential segregation by income, race, and class, deficiencies in public transit, and lower rates of car ownership exacerbate employment problems of the urban poor, both working and unemployed. (Yago, 1983: 183-184)

Therefore, Sheller (2011) talks on the need for accomplishing a “twin transition” with the aim of implementing not only a sustainable mobility but also a just mobility. Mobility justice, or just sustainability (see Agyeman, 2008), as opposed to a purely environmental approach, could be interpreted as

one of the crucial political and ethical issues of our day, when the entire world faces the urgent question of how to make the transition to more environmentally sustainable and socially just mobilities. All around the world today, the challenges of precarious access to mobility (and unsafe or risky mobilities) produce the sharpest contours of uneven mobility. (Sheller, 2018: 17)

1.4-CAR OWNERSHIP, CITIES AND THE IMPACT OF MOBILITY ON HEALTH AND INEQUALITY

Academic research, as well as grey literature (such as reports on the mobility transition), have covered a great variety of inter-related matters that are directly linked to the mobility transition. For example: The shift to “greener” cities and its implications on processes such as gentrification, the impact of mobility on health and the environment, the gendered roles of men and women in daily mobility, etc. Researchers have covered numerous issues that are inextricably connected to the social implications of the mobility transition. We overview here some of the inter-connected aspects of this transition. Many of them are discussed in more detail throughout the thesis chapters.

1.4.1-Mobility and the city: Towards more compact and “smarter” cities

Both rural and urban environments are being transformed by the mobility transition, but experts agree on underlining that the most crucial changes are taking place in modern cities. Urban planners and sociologists have made emphasis on the great impact that private cars have had in shaping cities. The massive use of cars is inextricably linked to phenomena such as urban sprawl, which has had significant implications on people’s lifestyles and the way in which they move around. In this context, we can find research literature on the relationship between the mobility transition and cities.

In 2010, 73% of the European people lived in urban areas, and this percentage is expected to increase to over 80% by 2050 (European Commission, 2017). The United Nations (2019) claim that sustainable transformation is needed across all settlements, as urban areas are home to 55% of the world’s population and are projected to grow to 70% by 2050, and many rapidly-growing cities are following the least sustainable path: urban sprawl. Furthermore, cities are hotspots of pollution. The European Commission notes that

an important concept in addressing the challenges related to (mainly) urban areas, is that of Sustainable Urban Mobility Plans (SUMP) (...) The concept of SUMP relates to a functional urban area and its surroundings, focussing on the people within this area rather than directly on the transport, with the aim of creating a shift towards cleaner and more sustainable transport modes and alternatives to car use and ownership. (European Commission, 2017: 6)

New concepts linked to the transition, such as SUMP, compact cities and “smart cities”, have attracted the attention of social science researchers as well as other experts, such as urban planners and engineers (mainly in the case of “smart cities”). Research works on each of these inter-related topics, many times based on specific case studies that are considered to be “success stories”, have explored the processes that underlie the mobility transition. Banister notes that, in many cities,

planners have been active in creating high quality local neighbourhoods, including innovative designs for housing and mixed use developments, and the concentration of development around public transport accessible locations. In all cases, the intention is to reduce the need to travel (particularly by car), to encourage greater use of public transport (and walking and cycling), and to reduce travel distances. The key here is to provide quality, with easy access to local services and facilities, so that people do not need to travel long distances. (Banister, 2011: 1538)

Compactness, as opposed to urban sprawl, seems to be the emerging trend in those cities that aim to achieve a sustainable mobility. Together with building compact areas where the distances are not big, sustainable cities are expected to implement a new mobility hierarchy that prioritises walking, cycling and using public transport over the private car. Bassolas et al. (2019) found that strongly hierarchical cities tend to present higher levels of use of public transport and to have more pedestrians, while less hierarchical cities tend to be dominated by private cars.

Moreover, cities are expected to increasingly become “smart”, a concept that has been quite fashionable in recent years and draws a distinction from the terms intelligent city and digital city, as it comprises numerous aspects, such as smart living, smart governance, smart economy and smart mobility (Lombardi et al., 2012). Against this background,

it is argued that the so-called ‘Smart Mobility’ transition, in which these technologies combine to transform how the mobility system is organised and operates, has already begun. As with any socio-technical transition there are critical questions to be posed in terms of how the transition is managed, and how both the benefits and any negative externalities of change will be governed. (Docherty, Marsden & Anable, 2018: 114)

Geels (2012) argues that “systemic transitions” entail interaction between many actors, such as industry, technology, policy and civil society. Therefore, mobility transitions, such as the transition to automobility and the transition to post-carbon societies, imply the need for reshaping the way in which technology is managed and socially appropriated. In this sense, social science researchers (unlike engineers who work on specific technical matters) tend to focus on how the combination of innovative technologies brought by the so-called “smart mobility” transition can lead to a socio-technical transition. In this context, scholars believe that the governance of a “smarter” mobility will be of crucial importance:

Public policy will need to change to take account of the implications of the transition to a ‘Smart Mobility’ future. This is particularly so given that the push towards a smart future is being led by the technology sector, which has a product – the sensors, vehicles, and software etc that underpins Smart Mobility – to sell, and where some interests will seek to create a market in which there is more mobility, not less, in order to maximise its returns. (Docherty, Marsden & Anable, 2018: 115)

Last but not least, connectivity is expected to become an increasingly important feature in cities. This could have an effect on mobility, as wireless communication (among citizens, cars, infrastructures, etc.) may lead to reshaping mobility in new ways or substituting certain journeys for online communication:

The study of mobility also involves those immobile infrastructures that organize the intermittent flow of people, information and image, as well as the borders or 'gates' that limit, channel and regulate movement or anticipated movement. And it involves examining how the transporting of people and the communicating of messages, information and images increasingly converge and overlap through recent digitization and extension of wireless infrastructures (...) The emergence of high-tech 'e-topias' of wireless urbanism and 'u-cities' of ubiquitous computing and connectivity suggests a convergence of urban planning, transport planning and ubiquitous embedding of communications infrastructure. (Hannam, Sheller & Urry, 2006: 11)

1.4.2-Car cultures, gender and age as key factors. The influence of mobility on politics

We have already mentioned that automobility can be experienced in different ways, such as love for the car or road rage. Apart from introducing concepts, such as banal mobility and road rage, academic research has studied the emotions connected to driving and the system of automobility. The emotional side of our relationship with cars has also been analysed by the car industry, as many marketing campaigns are aimed at presenting a specific model as emotionally (rather than rationally) desirable.

Cars give rise to a wide range of emotions, and people's emotions towards the car might vary in different contexts, in such a way that scholars argue that different "car cultures" can be depicted (see for example Miller, 2001). Not only our perception of cars but also our self-perception as drivers and our perception of other drivers have also been analysed (see for example Vanderbilt, 2008). Cars have been examined from multiple angles. Driving does not only imply movement from one place to the other, it also implies "dwelling in the car" (Urry, 2006). Elements such as "the power of sound" (Bull, 2004) have attracted the attention of mobility researchers. Bull (2004) describes automobiles as "listening chambers" and "sonic envelopes" and concludes that the automobile cannot be dissociated from the way in which we perceive the public realm while driving.

Sheller (2007) argues that, in response to the comfort, motion, sensations and sounds of driving, we become "one" ("cyborg" hybrids) with cars. Furthermore, *"the placements and displacements caused by the manufacture, private ownership and driving of cars thus have an impact on all people, not only those in cars, and on all spaces and times, not only those that are explicitly 'automobilized'"* (Sheller, 2007: 176). Drivers inhabit their cars in isolation from the rest of the society, meaning that they cannot perceive local detail and that drivers dominate how non-car-users inhabit public spaces and make them perceive roads as full of dangerous "iron cages" (Urry, 2006).

The powerful emotional side of driving has also been profoundly analysed by carmakers. Just as an example, BMW (2007) published a report on "the secret life of cars" and on "what they reveal about us" in which they examined aspects such as why driving can make people

happy, the car as a psychological space or the car as a refuge where drivers can cocoon and enjoy their commutes.

Academic literature has also reflected the close links between mobility and other factors such as age and gender. Issues such as the choices of young generations such as millennials, or the husband's conventional role as chief breadwinner and his priority over the household car (see Pickup, 1988), have been analysed in research works.

Mobility is experienced and practiced differently, and the arenas of gender and mobilities intersect, leading to "gendered mobilities" (Cresswell & Uteng, 2008). Hanson argues that *"the literature on gender and mobility is large, sprawling and diverse in its portrayal of the relationship between the two concepts"* (2010: 6) and wonders *"to what extent (sustainable) mobility can be an agent of change for gender and to what extent gender can be an agent of change in creating more sustainable mobility"* (2010: 18).

Scharff (1991) reflects on how the car reshaped bourgeois ladyhood in North America, as it provided women with a sense of privacy for moving around which was not offered by mass transport, even though contemporary conservatives feared that such a phenomenon could lead to dangerous cross-class mixing, particularly between owners and chauffeurs.

Gender as an important factor for understanding mobility issues has not only been linked to inequality, but also to other spheres. For example, a research study (see Dunn and Searle, 2010) found that attractiveness rating varied in females (but not in males) when presented images of luxury cars (as opposed to neutral cars) when evaluating opposite-sex attraction. Another study on automobility and gender found that advertising associated minivans with white, conservative middle-class women living in suburban areas (Donatelli, 2001).

According to recent estimates, millennials (those born in the 1980s and 1990s) are driving less than previous generations in modern advanced societies such as the United States (Klein and Smart, 2017). Certain researchers have labelled millennials as a generation in transition (Garikapati et al., 2016). Millennials are frequently attributed lifestyles that are not so car-oriented:

Compared to previous generations, they are more likely to prefer on-demand mobility services such as Uber and Lyft to traditional car ownership, rent accommodation through AirBnB, and stream their music through Spotify. Millennials born and brought up in an era of ubiquitous technology and connectivity may be substituting driving (and owning cars) and out-of-home activity participation with in-home virtual activities. (Garikapati et al., 2016: 560)

Even though they seem to be the prototypical "early adopters" of the mobility transition, certain authors put into question that this phenomenon is characterised by new preferences rather than economic constraints:

Much ink has been spilled debating whether these changes in travel behavior are due to changing preferences or economic circumstances. We find that today's young adults own fewer cars than previous generations did when they were young. However, when we control for whether young adults have become economically independent from

their parents, i. e. left the nest, we find that economically independent young adults own slightly more cars than we would expect, given their low incomes and wealth. (Klein & Smart, 2017: 20)

But, at the same time that data estimates reflect that young generations seem to be using cars less, there is concern about how the older generations will evolve. Rosenbloom (2001) points out that older people's use of the private car seems to be growing in several advanced societies, whereas their use of public transport appears to be decreasing. In fact, the elderly would apparently be increasingly associating driving to active lifestyles in which the car plays a central role. In combination with an ageing population, this trend could pose an additional threat in terms of environmental issues and other implications.

In this context, marketing campaigns are targeting potential clients in a way that gender roles and differences in age can clearly be deciphered. This has also been a focus of attention for researchers. Thus, researchers have explored several sub-topics such as the construction of identities through SUV advertising (McLean, 2009), the magical and the mundane spheres in automobile advertisements (Conley, 2009) or how governments could try to "de-market" cars as status symbols and convenient accessories of modern life (Wright & Egan, 2000).

Scholars argue that the transition to a more sustainable and just mobility goes beyond technocentrism, so change does not only depend on technological advancements and needs to be addressed from a social perspective, as it is inherently political (Nikolaeva et al., 2019). Not only political institutions but also researchers have made emphasis on the necessity of managing the current mobility transition. Issues such as social inequality, the environmental impact of mobility or the way in which the built environment is shaped must have a central role in the public and political debate. The private car has become the focus of many political and social tensions, as governments have tried to regulate or restrict the use of a machine that has traditionally been associated with individual freedom (Anta-Félez, 2015). Gender, age and other factors (such as car-oriented suburban lifestyles) will need to be addressed.

SUMPs (Sustainable Urban Mobility Plans) and other matters linked to policy-making and public acceptability (as participatory processes are increasingly being promoted) have also been analysed in academic literature. Scholars have offered their views on how the political actors should manage mobility. For example, Stradling, Meadows and Beatty (2000) argue that psychological research suggests that positive changes in an individual's patterns can be more readily achieved by facilitation rather than by coercion and that most motorists would rather be "pulled" than "pushed" from their cars.

We can find studies and reports on "success stories". For example, at the Spanish level, Pontevedra and Vitoria-Gasteiz are usually considered to be good examples of how the path towards a more sustainable mobility must be followed. Vitoria-Gasteiz is approximately the same size as Pamplona-Iruña (one of the case studies), whereas Pontevedra is considerably smaller. Based on wide political consensus (back in 1998, its city council unanimously voted for implementing the principles of the UN's Agenda 21), Vitoria-Gasteiz has significantly cut the use of private cars and boosted the use of alternatives such as the bike. In 2012, the city of Vitoria-Gasteiz was awarded as the European Green Capital (see Innobasque, 2014).

1.4.3-Mobility and its impact on people's health and the environment

As mentioned before, the transition towards a sustainable mobility is usually interpreted as a transition towards a "green mobility". Even though it is not the main focus of attention, the environmental impact of mobility will be commented throughout the thesis. According to Berger (2001), it was back in the 1970s, with the oil embargoes, that an increasing public concern on the impact of the private automobile on the natural environment led to a debate on the role of cars in the North American society.

The negative impact of cars on the environment has been covered in academic literature, as the global demand for motorised mobility has exponentially risen over time:

In 1960, world inhabitants traveled an average of 1820 km by car, bus, railway, or aircraft. Three decades later, the annual distance traveled has increased to 4390 km. In light of a 75% world population growth, absolute motorized mobility has risen by a factor greater than 4 (...) Such drastic rises in travel demand increase concerns over transport systems' impact on the environment. (Schafer, 1998: 455)

As a result of the global rise of the system of automobility,

motor vehicles are a leading source of air pollution. Even though automobile and truck engines have become far cleaner in recent decades, the sheer quantity of vehicle miles driven results in large releases of carbon monoxide, carbon dioxide, particulate matter, nitrogen oxides, and hydrocarbons into the air. Nitrogen oxides and hydrocarbons, in the presence of sunlight, form ozone. (Frumkin, 2002: 201)

Transport accounted for 28% of global energy demand and 23% of global energy-related CO₂ emissions in 2014, and transport-sector emissions seem to keep growing, as they grew by 2.5% annually between 2010 and 2015 (United Nations, 2019). Growing concerns on the downsides of the massive use of private cars have led to research works that try to assess the way in which change could positively affect the environment. Many of these works have focused on mobility habits as lifestyle choices that could be readjusted. For example, Barr and Prillwitz (2012) explore different "mobility styles" and conclude that

in developed nations a growing emphasis is being placed on the promotion of environmental behaviours amongst individuals, or 'citizen-consumers', as a means to reduce personal carbon emissions in the light of climate change. Within the UK, focus has tended towards the segmentation of consumers into 'lifestyle groups' and the subsequent development of so-called social marketing behaviour change strategies, promoted as a way to encourage environmental behaviours. (Barr & Prillwitz, 2012: 798)

We can also find academic literature on other inter-related topics such as the impact on the environment of enhancing urban public transport (see Guglielmetti-Mugion et al., 2018), the rebound effects of urban ridesharing (see Coulombel et al., 2019), encouraging the use of shared e-scooters (see Hollingsworth, Copeland and Johnson, 2019), two-wheelers such as motorbikes (see Salameh et al., 2019) and even future flying cars (Kasliwal et al., 2019).

Against this background, Urry concludes that "*the 'steel-and-petroleum' car is one of the most significant contributors to anthropogenic environmental change*" (2008: 343) and that a global societal change is urgently needed. In "*Societies Beyond Oil*", Urry (2013) notes that

the twentieth century operated as though that entire century was a free (liquid) lunch, especially of oil which could be burned with impunity and not even used to manufacture useful stuff. In that century oil and its carbon friends were a genie that escaped from the bottle and cannot be squeezed back in. There is no simple going back. (Urry, 2013: 239)

Moreover, Urry (2013) claims that it is estimated that 85% of all those not owning a car would acquire one if they could. Therefore, given the rapid growth of developing economies, such as India and China (although the latter could also be labelled as a developed economy), powering down to a low-carbon global society appears to be an enormous challenge.

The transition towards a more sustainable mobility is expected to be closely related with improvements in health-related matters. There is a connection between the environment and people's health, as well as clear links between active modes and health benefits. Thus, researchers have worked on analysing the positive outcomes of implementing a "greener" and more active mobility, both for the individual and for the society as a whole.

As seen before, the system of automobility has led to urban sprawl and the expansion of metropolitan areas. Living in the suburbs has increasingly been associated with betterment and social improvement. But urban sprawl and massive car use can lead to negative impacts on both physical and mental health:

A considerable body of research establishes that sprawl - as measured by low residential density, low employment density, low "connectivity", and other indicators - is associated with less walking and bicycling and with more automobile rather than denser communities. Low levels of physical activity threaten health both directly and indirectly. A sedentary lifestyle is a well-established risk factor for cardiovascular disease, stroke, and all-cause mortality, whereas physical activity prolongs life (...) In addition to its direct effects on health, lack of physical activity is also a risk factor for being overweight. (Frumkin, 2002: 205)

However, Frumkin argues that there may also be positive impacts on health for those who live in suburban areas:

The sense of escaping from the turmoil of urban life to the suburbs, the feeling of peaceful refuge, may be soothing and restorative to some people. In these respects, there may be health benefits to suburban lifestyles. On the other hand, certain aspects of sprawl, such as commuting, may exact a mental health toll. For some time, automobile commuting has been of interest to psychologists as a source of stress, stress-related health problem, and even physical ailments. (Frumkin, 2002: 207)

In this context, we can find many research works on the links between mobility patterns and health. Active modes have been associated with significant gains on our health (see for example Celis-Morales et al., 2017), and these benefits have usually been found to outweigh the health risks of air pollution (Tainio et al., 2016). Self-perceived health and other factors such as social contact have also been measured (see Avila-Palencia et al., 2018), as well as more specific issues such as the impact of e-bikes on wellbeing in older adults (see Leyland et al., 2019) or the impact of nitrogen dioxide on children's respiratory diseases (see Martín-Martín and Sánchez-Bayle, 2018).

Road safety is another sub-topic that has been widely covered and that is directly linked to health-related matters. According to Beckmann,

mobility and safety are often seen as contradictory. The more mobile we are, the higher is our transport accident risk. The task of contemporary traffic experts, then, is to plan for more mobility without reducing transport safety. Obviously, these experts are constantly struggling to break what they regard as an unfortunate link between mobility and safety (...) This conduct is crucial in the 'hypermobile society' (...) The provision of safety, however, has then merely one social function – to allow for ever more mobility. Hence, 'providing safety' and 'increasing mobility' are seemingly becoming synonymous, rather than being contradictory. (Beckmann, 2004: 97)

The World Health Organization (2018) estimates that over half of all road-traffic-related deaths are among vulnerable users (pedestrians, cyclists and motorcyclists), who appear to be paying the toll of the implementation of a car-based mobility. The WHO concludes that

the number of road traffic deaths continues to rise steadily, reaching 1.35 million in 2016. However, the rate of death relative to the size of the world's population has remained constant. When considered in the context of the increasing global population and rapid motorization that has taken place over the same period, this suggests that existing road safety efforts may have mitigated the situation from getting worse. (World Health Organization, 2018: 2)

All in all, it seems clear that mobility researchers must take into consideration these inter-related sub-topics and the need for addressing the transition not just from an environmental approach but from a holistic perspective.

1.4.4-Mobility and social inequality

Inequality-related issues have clearly been an important focus of attention. The attempt to reshape mobility in order to implement more sustainable and healthier societies cannot be considered to be (fully) successful without taking social inequality into account. We have seen that scholars have talked about concepts such as mobility justice and just sustainability. Phenomena such as gentrification or fleeing to the suburbs with the intention of "seceding" are clearly linked to social inequalities. In this context, researchers have addressed the impact of mobility issues on inequality (see for example Camarero and Oliva, 2008), as not everyone has the same access to mobility and will be equally affected by the mobility transition.

As pointed out by Urry (2007), a car-oriented society probably is one of the most unequal. This component is key in the management of the mobility transition. Cass, Shove and Urry (2005) establish four dimensions of access (financial, physical, organisational and temporal) and argue that mobility is one of the main elements that are needed for social inclusion:

What is necessary for full 'social' inclusion varies as the means and modes of mobility change and as the potential for 'access' develops with the emergence of new technologies such as charter flights, high speed trains, budget air travel, SUVs, mobile phones, networked computers and so on. These developments transform what is 'necessary' for full social inclusion. (Cass, Shove & Urry 2005: 542)

Urry believes that what we could consider to be a good society would not limit travel and bodily co-presence:

Such a society would extend such co-presence to every social group and regard most infringements of this as undesirable. Network capital should be enlarged and social exclusion would be lessened through spreading such capital as equally as possible. A socially inclusive society would elaborate and extend the capabilities of co-presence to all its members. It would minimise 'coerced immobility', both to improve psychic health and heighten equality. (Urry, 2012: 29)

Nevertheless, the automobile may be contributing to enhancing individualistic lifestyles. According to Preston and Rajé, the

decline in collectivism and emergence of more individualised, atomistic lifestyles, in part the result of technological developments such as the automobile and the television, arguably increases the risk of social exclusion. In response to this, more recently, emphasis has been placed on the concept of social inclusion. (Preston & Rajé, 2007: 152)

Researchers such as Delbosc and Currie (2011) have observed correlations among social exclusion, wellbeing and transport disadvantage. This inequality is linked to factors such as access to employment, as car ownership and employment have been found to have a certain correlation in societies such as the United States (see Raphael and Rice, 2002). Furthermore, this situation may be even worse in developing countries where the automobile is becoming hegemonic. As argued by Starkey and Hine,

the urban poor in developing countries suffer from a wide range of accessibility and transport issues that, to a large extent, are 'off the radar' of government institutions. Walking is the predominant mode of transport for the poor that are able to live within about 7 km from their workplace (...) Cycling is generally unsafe, because of the lack of provision for cyclists, the poor driving of other road users and the lack of appropriate traffic enforcement. There is also the concern over the high frequency of cycle theft. Both the walkers and the cyclists have to suffer the effects of vehicle-generated air pollution. For those who have to live far out from the city centre (sometimes because they have been evicted or moved out from redeveloped squatter locations in the centre), a journey may mean a one-and-half hours of standing up on an overcrowded bus (for which they may have waited for over half an hour and sometimes more) or being squeezed tightly within a cramped minibus. (Starkey & Hine, 2014: 52)

Efficient and affordable (or free-of-charge) public transport is usually seen as one of the cornerstones of the new mobility paradigm. As well as walking and cycling, commuting and moving around using public transport is generally considered as more egalitarian than the use of private cars. In this respect, Lucas concludes that

what is clear from the case studies that are already available is that there is no panacea for addressing the problem of transport-related exclusion. One size definitely does not fit all and so many more examples are needed of what does and does not work in practice, within different geographical and social contexts and for different groups of people. If properly designed and delivered, public transport can provide a part of this solution, but it is most likely that other forms of more flexible (and often informal) transport services will be needed to complement these mainstream services. (Lucas, 2012: 112)

Therefore, researchers need to adopt an ample perspective on how public transport and other alternatives to the private car could help in mitigating the negative effects of private-car-based mobility in terms of inequality-related issues.

1.4.5-MaaS, carsharing, ridesharing, etc.: Towards the end of car ownership?

In close connection to the previous issues, we can see that governments, companies and regular citizens are exploring the alternatives to “default” solo car driving, which is probably the least sustainable way of moving around. New trends, such as carsharing and bikesharing, as well as the innovative idea of MaaS (Mobility as a Service), have been analysed in research works, as their implementation could help to reduce the massive use of private automobiles. Together with promoting the use of conventional alternatives, such as public transport and the bike, a new mobility model could arise from the combination of these alternatives. This can be of key importance, as solo driving could decrease. In Western societies, the average number of occupants per car has historically tended to fall as a result of the rise of incomes and car ownership, as well as declining household size (Moriarty & Honnery, 2008).

One of the key concepts that is shaping a new understanding of mobility is Mobility as a Service (MaaS). It is a relatively recent idea that aims to integrate all mobility alternatives in such a way that, on a subscription basis or through pay-per-use, citizens can have access to a service that could potentially compete with the convenience and cost of solo car driving. Giesecke, Surakka and Hakonen (2016) point out that MaaS is a new “hyped” socio-technical phenomenon that forces researchers to work together, as it transcends the areas of urban planning, social science, computer science, etc. In a report on the rise of MaaS, Goodall et al. (2017) analyse the pioneering case of Helsinki, which is one of my case studies. In parallel, other trends, such as bikesharing and carsharing, as well as carpooling, have also attracted the attention of researchers. Shaheen, Guzman and Zhang (2010) conclude that bikesharing systems are growing worldwide and are helping in reducing emissions by discouraging car use, even though their future is uncertain. In a similar way, Shaheen and Cohen (2007) show that carsharing has grown in recent decades. The potential benefits of other options such as carpooling have also been examined in academic works (see for example Shaheen, Chan and Gaynor, 2016).

While the developing world seems to be experiencing the boom of the system of private automobility, as the rise of their emerging middle classes is leading to a growing demand, some of the most advanced societies are increasingly implementing alternative options with the aim of reshaping the way in which we conceive the use of cars. If they succeeded, a more efficient use of automobiles, in combination with walking and the use of other modes, would ideally lead to a lesser number of cars and a decrease in car use.

1.4.6-The European case: Are advanced societies reaching “peak car”?

Experts are starting to talk on the concept of “peak car”, and some argue that advanced societies may be reaching a tipping point from which both car ownership and car use will no

longer increase. Metz (2013) argues that the “fourth era of travel” has started in developed economies where car use has stopped to grow. Other experts use the idea of “peak travel” (see Goodwin and Van Dender, 2013) and claim that the miles travelled per person seem to be stabilising after decades of growth. Nevertheless, it is not evident whether this trend will prevail. Certain scholars note that young generations such as millennials have been strongly influenced by the economic circumstances and might have more private cars when they can afford them. Klein and Smart (2017) believe that the enthusiasm about reaching “peak car” must be tempered, as it might be a manifestation of economic factors. Paterson argues that

debates concerning transport and developing countries also reflect this. Car ownership is expanding much faster in developing countries than in industrialized countries, partly reflecting saturation in the latter group, but also reflecting cultural assumptions concerning connections between transport and development. (Paterson, 2000: 263)

The European case illustrates this apparent saturation or stagnation (see tables 1 and 2). If we take the EU-15 countries as a reference, we can observe that, even though it has not stagnated, car ownership is starting to grow at a much slower pace than it did a few decades ago. We may be witnessing how Europe is heading towards “peak car”, even though making predictions is risky.

In table 1, we can see that the number of cars in Europe nearly tripled between 1970 and 2000. This growth was extraordinarily acute in countries such as Spain, Portugal or Greece, which were (comparatively) less advanced back in the seventies and were starting to reach European standards. In more advanced European economies, such as Germany, France, the United Kingdom or Italy, automobiles had been massively adopted earlier.

Table 1. Cars in the EU-15 (1970-2000)

EU-15 countries	1970 (m. c.)	1980 (m. c.)	1990 (m. c.)	2000 (m. c.)	1970-2000 Index (1970=100)	Cars per 1,000 inhab. (2000)
Austria	1.20	2.25	2.99	4.10	342	506
Belgium	2.06	3.16	3.86	4.68	227	458
Denmark	1.08	1.39	1.59	1.85	171	347
Finland	0.71	1.23	1.94	2.13	300	412
France	11.90	18.40	23.60	28.06	236	463
Germany	15.11	25.87	35.50	42.84	283	522
Greece	0.23	0.86	1.74	3.20	1,391	304
Ireland	0.39	0.73	0.80	1.32	338	349
Italy	10.18	17.69	27.42	32.45	319	563
Luxembourg	0.07	0.13	0.18	0.27	386	616
Netherlands	2.56	4.55	5.51	6.54	255	411
Portugal	0.42	0.92	1.85	3.50	833	350
Spain	2.38	7.56	12.00	17.45	733	442
Sweden	2.29	2.88	3.60	4.00	175	452
United Kingdom	11.90	15.60	20.70	25.00	210	419
EU-15	62.48	103.21	143.27	177.39	284	469

Source: Eurostat (2003)². Own elaboration (m. c. = million cars)

² Eurostat made a methodology change. Until 1997, only vehicles under 10 years old were included. After 1998, vehicles under 20 years old were also included.

In table 2, we can observe that during the 2000-2015 period the number of cars did not grow so fast. If it had kept growing at a similar pace, it would have nearly doubled between 2000 and 2015 (in half the time, in proportional terms compared to the 1970-2000 period). However, it grew by less than 20%. Countries such as France have stagnated, whereas those countries that were experiencing a faster growth are slowing down. In fact, the countries' growth indexes are more homogeneous in the 2000-2015 period, meaning a general trend.

Table 2. Cars in the EU-15 (2000-2015)

EU-15 countries	2000 (m. c.)	2013 (m. c.)	2015 (m. c.)	2000-2015 Index (2000=100)	Cars per 1,000 inhab. (2017)
Austria	4.10	4.64	4.75	116	555
Belgium	4.68	5.49	5.62	120	508
Denmark	1.85	2.28	2.39	129	438
Finland	2.13	3.11	3.23	152	617
France	28.06	32.86	32.33	115	478
Germany	42.84	43.85	45.07	105	561
Greece	3.20	5.12	5.11	160	487
Ireland	1.32	1.98	2.06	156	444
Italy	32.45	36.96	37.35	115	625 (2016)
Luxembourg	0.27	0.36	0.38	141	670
Netherlands	6.54	7.93	8.10	124	487
Portugal	3.50	4.33	4.72	135	492
Spain	17.45	22.02	22.35	128	504
Sweden	4.00	4.49	4.67	121	479
United Kingdom	25.00	-	30.25	121	471
EU-15	177.39	-	208.38	117	512 (EU-28)

Source: Eurostat³. Own elaboration (- data not available)

The exponential growth in the number of cars during the 1970-2000 period might have been the result of the combination of several factors, such as the final stages of rural exodus and the consolidation of (car-oriented) urban (and suburban) lifestyles, the rise of incomes in societies driven by consumerism or the switch from a car-per-family logic to a car (or even more) per adult person. The limited growth experienced during the 2000-2015 period might be explained by the start of the saturation of this mobility paradigm, although car ownership keeps growing and has not stagnated yet. This deceleration might be an indicator of the end of the ever-growing use of private cars in ever-sprawling cities. Jeekel (2013) provides with a detailed analysis on the case of the European Union and the car-dependent society from a European perspective.

In conclusion, we could say that we seem to be reaching a tipping point in Europe. It is to be seen whether this point is actually reached, and when. What is clear is that car ownership is no longer growing as fast as it did a few decades ago. However, the rise in the number of cars has not stagnated, meaning that a profound paradigm change in which the hegemonic societal role of the private car is challenged has not been implemented (not yet at least).

³ Data from Eurostat's latest update (Passenger cars in the EU. Consulted 15/1/2020).

1.5-CONCLUSIONS

We have seen how the current mobility transition has been analysed by researchers from multiple perspectives. My main focus is the social appropriation and the social implications of this transition, instead of its technological side, as I believe (as other researchers do) that the mobility paradigm shift mainly consists of a profound social transformation rather than a technological upgrade (although technical advancement is important as well). In fact, the emergence of a new mobility paradigm is expected to transform not only the way in which we move around but also our built environments, lifestyles and societies in a broad sense.

In a similar way to how Hanson (2010) uses it, I use the term mobility for referring to the movement of people from one place to another in the course of their daily lives. The private car emerged in the twentieth century as the hegemonic mode for moving around in modern societies and subordinated other modes. Nowadays, scholars seem to agree on the need for a paradigm shift. I have shown how the democratisation of the private car led to the rise of a mobility paradigm that is being challenged due to its inherent downsides (even though it has also brought benefits).

Numerous inter-related sub-topics are closely linked to the current mobility transition. I try to offer a holistic perspective of this phenomenon, as it has an impact on many aspects of our societies, lifestyles and mindsets. Thus, a holistic understanding of this socio-technical transition is necessary. It seems that modern societies can opt for two paths towards a new mobility: A path in which the hegemonic role of the private car would not be challenged and alternative sources of energy would be massively adopted, and a path that would consist of adopting a balanced mobility portfolio (together with alternative energy production). This second path is the most supported throughout the thesis.

2 - POLITICAL BATTLES, CAR-BASED LIFESTYLES AND ALTERNATIVE MOBILITY: EXPLORING A MULTI-LEVEL TRANSITION

2.1-INTRODUCTION: A MULTI-LEVEL SOCIO-TECHNICAL TRANSITION

As we have just seen, the mobility transition is a very complex phenomenon that consists of a wide variety of inter-related issues. The information on this topic is overwhelming, but exploring a selection of sub-topics and illustrative examples could help us to understand this complexity and how the mobility transition has emerged as a topic of fundamental interest over the last few years. For this purpose, three spheres have been examined here: politics, lifestyles connected with mobility and innovations on alternative mobility. On the one hand, although more levels are involved, these three spheres are considered to be key in order to achieve a profound societal transformation. On the other hand, through the combination of these three inter-related main levels we can obtain an overall picture of the social, technical and cultural dimensions that are involved in the mobility transition.

This multi-level categorisation is inspired by Geels et al.'s (2012) socio-technical analysis of the transition to sustainable mobility, as they remark that the mobility transition cannot be fully understood through the analysis of a single level or sphere. Geels et al. (2012) offer a socio-technical "transition theory" that is based on the belief that the mobility transition depends upon multi-level alignments. Thus, if the hegemony of the system of automobility was to be challenged, not only new technologies but also social discourses, political systems and other spheres would be affected. These authors aim to bridge the divide between those who focus on the technological side of change and those who explore behaviour change (as if they were independent) and they underline the close links between mobility and culture, governance, technology, the industrial sector, etc.

According to Kemp, Geels and Dudley (2012), the way forward demands that technical solutions are supplemented by new perspectives on how the society as a whole is evolving. Only if we paid attention to the different dimensions of mobility-related issues we could try to anticipate how the transition will affect our societies and try to determine how it should be managed.

It is with this intention that the way in which the media have covered some of the most relevant issues connected with the mobility transition is explored in the following sections. The media play a fundamental role in our societies, as they shape public opinion (Tuchman, 1972, 1978; Van Dijk, 1988; Castells, 2007). The institutions of communication, as Arsenault and Castells argue, *"are the arenas in which programming projects are formed, and where the project constituencies are built. Communication platforms are the fields of power in the network society"* (2008: 490). For example, in their case study on a global corporation, they identify different strategies such as the *"switching processes"* that introduce synergy and timing and *"help to shape the social world by exerting control over the issue-framing and information gatekeeping"* (Arsenault & Castells, 2008: 488).

In a similar manner, car advertising has long tried to promote car-based lifestyles through the introduction of meaning and perception frameworks linked to all kinds of emotions and senses, such as safety, masculinity, family life, etc. (Stokes & Hallet, 1992; Ferguson, Hardy & Williams, 2003; McLean, 2009; Strebinger et al., 2018). Different narratives on consumer identity have been incorporated through symbolic meanings and trends in relation with the mobility transition (see Holder, 1991, Conley, 2009, and Gatersleben, 2011). They reflect the tensions between contradictory values and approaches to mobility, such as the traditional combustion-engine and the new “green” car-based lifestyles and the connections between freedom and driving (or avoiding driving).

Finally, at all levels, politicians make decisions, implement measures and adopt positions that regulate the way in which the transition is managed. Their decisions can have a decisive impact on people’s lives, as many issues are interconnected with mobility and have a social dimension: urban planning, noise and pollution, health, inequality, new modes of transport, etc. Managing all these issues raises the question of how power is exercised in the context of the transition (see Bullard and Johnson, 1997, Frumkin, Frank and Jackson, 2004, Hubbard and Lilley, 2004, Henderson, 2006, Docherty, Marsden and Anable, 2018, and Sheller, 2018).

Following this multi-level approach, a comprehensive overview of the way in which the media have covered the mobility transition is provided here through the analysis of a set of illustrative examples and specific cases (find more details in chapter 3 on the methodology and the methodological annex). First, I explore how mobility management and the mobility transition are connected with many political battles, especially at the local level. Secondly, I examine how companies try to exert a major impact on consumers’ lifestyles through a set of examples from car advertising. Finally, I provide with a summary of the way in which the media have covered some of the social implications of the mobility transition and the latest technological innovations.

2.2-THE CLOSE TIES BETWEEN MOBILITY AND POLITICS

The transition towards a more sustainable mobility is closely connected to certain global phenomena that must be managed at an international scale, and not only at the local and national levels. Important issues such as global warming transcend all borders. Furthermore, certain politicians have sought the creation of international alliances for preventing the car industry and the private sector from shaping the future of mobility in their exclusive interest.

The close link between mobility and politics has long been reflected in the international media. For example, back in the year 2005, a newspaper speculated that Volkswagen might have around a hundred German politicians in their payroll. Volkswagen acknowledged fewer cases, and some politicians were ordered to give the money to the state parliament. The so-called “Dieselgate” scandal is one of the most controversial episodes linked to the mobility transition. International politicians have positioned themselves against the use of diesel cars inside their cities or, at least, against driving the oldest and most polluting models. In this context, we can find examples of official statements, measures and alliances against diesel-engine-related pollution in cities. An illustrative example of this determination of restricting

the use of diesel cars was an “anti-diesel” campaign led by the mayors of three major capital cities: Paris (Ms. Hidalgo), Madrid (Ms. Carmena) and Mexico City (Mr. Mancera). Another example of political agreement at the international level was the initiative that several EU members led by Denmark started by the end of 2019 calling for a ban on new diesel-engine and petrol-engine cars by the year 2040⁴.

However, not all the hot topics linked to the mobility transition have been characterised by consensus and have led to agreements. For example, after having signed agreements on limiting their emissions, certain countries have taken steps back. A clear example is the US president’s decision of quitting the Paris Accord. Mr. Trump argued that he would re-launch the national car industry⁵.

Mobility issues have clearly been “politicised”. The attempts to implement a sustainable model have usually led to debate and controversy. In some cases, colliding ideological views have been the root of disagreement. However, it seems that in many cases mobility issues have been used as a political weapon to undermine a government’s public image and try to convince potential voters that the opposition would do a better job. Certain politicians have seen this transition as an opportunity for sparking debate, as consensus on how this complex phenomenon should be managed appears to be difficult to be reached. The implications of the mobility transition are many times interpreted as an opportunity for gaining votes. In some cases, such as in the case of Donald Trump’s political discourse, the mobility transition has been seen as a threat to the national economy. However, in many other cases, conflicts have arisen around how the transition should be implemented, with politicians claiming that they would do a better job than their political rivals.

Focusing on local political battles linked to the mobility transition can facilitate a deeper analysis of the social actors, stakeholders and discourses involved, as well as an overview of how (in many cases) the media cover mobility issues in a “partidist” and/or partial way. Two Spanish examples can be used for illustrating how the mobility transition became a political battlefield: The case of Madrid Central (a Low Emission Zone in the national capital city) and the case of the “Amabilización” Plan (the reconversion of the city core) in the regional capital city of Navarra (Pamplona-Iruña).

The Spanish media have reflected the political tensions and controversy connected with numerous inter-related matters, such as restrictions on car use, bans on polluting cars, the effects on the national automotive industry, the criticism towards certain measures due to inequality-related issues, etc. In this sense, first the implementation of Madrid Central, and later the attempts to revert it, have turned Madrid Central into an iconic symbol of this kind of political disputes.

⁴ Based on: “Germany May Punish Legislators Who Get Secret Private Salaries” (The New York Times, 18/1/2005); “Politicians to Pay Back Money From VW” (Deutsche Welle, 28/4/2005); “No more diesel in our cities” (El País, 1/12/2016); “Denmark calls for EU ban on sale of all diesel and petrol cars by 2040” (Reuters, 4/10/2019).

⁵ Based on: “Paris Agreement: Trump confirms US will leave climate accord” (BBC, 24/10/2019).

The Spanish public authorities have been blamed for “passing the buck” from one side to the other⁶. In many occasions, the Spanish newspapers have criticised the lack of consensus on who and how should regulate the innovations that the new mobility was bringing: the irruption of Uber and Uber-like services (not only ride-hailing but also shared bikes, e-bikes, e-scooters, etc.), the use of private e-scooters, etc. Many newspaper articles concluded that some cities (mainly the biggest ones: Madrid and Barcelona) were becoming “urban jungles” and that it was not always clear what public entities (central government, traffic authorities, councils, etc.) had the competences and determination needed for harmonising the social appropriation of all these new elements.

The Spanish media also reflected that the politicians had different views on how mobility should be managed. For example, in Madrid, the newly-elected conservative mayor stated that they were assessing the possibility of building an underground motorway along the axis of the Gran Vía Avenue, whereas the previous progressive government led by Ms. Manuela Carmena had restricted car use on this main axis.

But, above all others, Madrid Central was probably the most central topic of debate. It is a Low Emission Zone (LEZ) that was inaugurated in 2018 and bans driving cars in the core of the capital city, except for its residents and for non-resident drivers who drive cars that meet specific emission standards. The implementation of this Low Emission Zone was considered the flagship project of the progressive Madrilian mayor Manuela Carmena. As a result of its implementation, together with the measures taken in Barcelona by their progressive mayor (Ms. Ada Colau), Spain avoided being fined by the European Commission for not meeting clean-air standards concerning nitrogen dioxide (mainly diesel-engine-related pollution).

Figure 1. In Spain, many saw the LEZ of Madrid Central as an iconic symbol of the mobility transition



Source: LibreMercado (David Alonso Rincón)

For many people, Madrid Central was a great success. For others, it was a polemic project that caused significant losses to the local traders (a similar argument was used in Pamplona-

⁶ Based on:

“Pollution confronts the Government and the councils of Madrid and Barcelona” (El País, 5/2/2018).

Moreover, the Spanish politicians (regardless of their political background) were also blamed for not leading by example. In a newspaper article published by El Mundo, the journalists Denis Iglesias and Félix García criticised that, in a national context in which restrictions on diesel and petrol cars were being implemented, only three congressmen reported having a hybrid car, and none reported having a fully-electric car.

Based on: “Congressmen do not lead by example: none of them has an electric car” (El Mundo, 18/6/2019).

Iruña against the “Amabilización” Plan)⁷. In the media, these disputes were described as an “ideological battle”⁸. In fact, this battle has involved the two main national newspapers: El País and El Mundo. The former tends to be aligned with progressive political positions, while the latter tends to back conservative political views.

But, most likely, it had more to do with local political battles than with ideologies. Before being elected as the new mayor in 2019, the conservative José Luis Martínez-Almeida stated that he would revert Madrid Central. When he became the mayor, he claimed that Madrid would match the requirements set by the EU (but in an “alternative” way) and he announced a set of measures. He called his alternative project “Madrid 360”. Even though the Madrilian courts prevented him (at least temporarily) from doing this, shortly after his announcement the European Commission said that they would reconsider suing Spain. Citizens in favour of and against Madrid Central campaigned in the Spanish media, and environmental activists organised demonstrations against the newly-elected mayor’s decision. The media reflected a clear division between those who backed Madrid Central and those who did not. For one side, it was an iconic example of the transition towards a sustainable mobility. For the other side, it was a failure that had led to negative outcomes.

In response to those who stood against Madrid Central, El País published a set of articles reflecting the achievements made in what refers to reducing the capital city’s air pollution. Moreover, they would also deny that the local traders were doing worse. In fact, according to CBRE (a consultancy agency cited in this newspaper), they would be doing better. El País also claimed that, according to a survey made by the Pons Foundation, a majority (59%) of the Madrilians backed the project of Madrid Central⁹. The managing director of the national traffic authority (“Dirección General de Tráfico”) was reported to have said that Spain should fear international “ridicule” if the project was reverted. The president, Pedro Sánchez, stood against this reversion and announced that he planned to make it compulsory for the Spanish cities of over 50,000 residents to create a Low Emission Zone¹⁰. It is one of the decisions that he made when he became the newly-elected president.

⁷ Find here a couple of examples of these opposing views:

“Madrid Central, a civic success” (El País, 30/11/2018); “Traders on the new Madrid Central: ‘People stopped coming to the city centre and our sales dropped’” (El Mundo, 1/10/2019).

⁸ Based on: “The line that divides the left and the right wings is green” (El País, 4/6/2019).

For example, the leader of Vox (an extreme-right-wing party) claimed in an interview for a TV channel that citizens were being taken their freedom away with the excuse of tackling global warming.

Nevertheless, the researcher Manuel Franco argued in an interview that initiatives such as those implemented in Amsterdam show that opting for a “green mobility” does not necessarily imply that its citizens are ideologically progressive.

Based on: “Santiago Abascal in ‘El Hormiguero 3.0’: ‘With the excuse of global warming, they are taking our freedom away from us’” (Antena 3, 10/10/2019); “It is stupid to say that Madrid Central is a left-leaning measure. Does everyone in Amsterdam support parties like Podemos?” (El País, 9/8/2019).

⁹ Find here some examples on these optimistic views on Madrid Central: “Has Madrid Central been effective in terms of its environmental impact?” (El País, 28/5/2019); “Emissions are reduced by 38% in Madrid Central” (El País, 13/3/2019); “Has Madrid Central ruined the shops? Restrictions do not scare customers” (El País, 29/5/2019); “Madrid Central reduces the traffic on Gran Vía by 24%” (El País, 7/5/2019).

¹⁰ Based on:

“Navarro (DGT) says that Spain should fear ‘ridicule’ if Madrid Central is suppressed” (Diario de Noticias, 18/6/2019); “Sánchez criticises the ‘irresponsibility’ of reverting Madrid Central” (El País, 22/7/2019).

The second illustrative example of the dynamics generated by the politics of mobility at the local level is the case of the regional capital city of Navarra (Pamplona-Iruña). As we will see in detail throughout the chapters on the mobility transition in Navarra, its capital city has been a political battlefield in the last few years. The 2015-2019 political term has been particularly controversial in what refers to mobility management, as the local government implemented changes that brought intense social and political debate. This controversy was disproportionately more acute in Pamplona-Iruña than in the rest of Navarra.

The conflict could be explained by differing visions on how the mobility transition should be implemented but, most importantly, by the local political battles. The implementation of the “Amabilización” Plan meant the reconversion of the old town so that private cars are no longer prioritised and car use is reduced. Furthermore, one of the city’s main avenues was converted into what the council called a “sustainable corridor” (through replacing car lanes and parking spaces for creating bike and bus-priority lanes). These two have most likely been the most controversial mobility measures taken in Navarra in recent times.

The two main newspapers at the Navarre regional level (Diario de Navarra, first in terms of number of readers, and Diario de Noticias) were aligned with certain local political parties, meaning that they have not been impartial (including mobility-related matters, unless it was a merely informative piece of news that had nothing to do with local politics). In this context, Diario de Navarra led a fierce campaign against the change implemented by the former local government. In parallel, Diario de Noticias would applaud all their attempts of change. After the 2019 elections, they swapped their roles accordingly (the municipal government led by a left-leaning mayor lost the elections to a right-leaning leader of the opposition who had already been the mayor in the past).

Diario de Navarra strongly criticised the “Amabilización” Plan and offered their readers views and data that would undermine the government’s image. On the contrary, Diario de Noticias enthusiastically welcomed the initiative and tried to offer an optimistic approach to the changes made and their impact on the local society. Diario de Navarra were aligned with the old town traders’ association and the members of the opposition who blamed the project for “bunkering” or “desertifying” the city core and forcing drivers to go to suburban areas. Diario de Noticias were aligned with the council and those who believed that, at least in the long term, everyone (including the old town traders) would benefit from having a less car-based city core. Once the plan had been implemented, those who were for the changes and those who were against them launched campaigns that would make emphasis on the resulting benefits (such as reporting a decrease in the number of automobiles, an increase in the use of public transport, more pedestrians on the streets, etc.) or blame the municipal government for causing problems such as important economic losses. The versions that they offered were radically opposed and were based on using differing data. Examples of the two competing visions could easily be found in the regional news with a great frequency¹¹.

¹¹ Find here a few examples on these opposing perspectives: “Traders believe that the Amabilización was a need and that the old town remains `open” (Diario de Noticias, 31/05/2018); “UPN asks for talking on traffic restrictions with the traders and the government accuses them of `politicising’ the matter” (Diario de Navarra, 6/10/2017); “War on the data provided by the traders and the council concerning the amabilización”

A similar situation occurred with the transformation of one of the city's main axes (the Pío XII Avenue) into what the council labelled as a "sustainable corridor". Before its redesign, it had no cycling lanes, and cars were prioritised. The pro-government newspaper *Diario de Noticias* backed this reconversion and lauded its benefits, whereas *Diario de Navarra* clearly stood against it and supported those citizens who opposed the project (including a protest platform created by some traders and residents). The local media constantly reflected their opposing views on how the transformations were having an impact on the residents' lives¹².

Figure 2. Before the redesign, Pío XII prioritised cars and had wide pavements, but it had no cycling lanes



Source: *Diario de Navarra* (diariodenavarra.es; Jesús Caso)

Figure 3. The "sustainable corridor" was considered as either a success or a source of problems



Source: *Diario de Navarra* (diariodenavarra.es; José Carlos Cordovilla)

The mayor of Pamplona-Iruña was reported to have said that the "sustainable corridor" project was in line with what was being done in other cities. He was also reported to have claimed that criticism was understandable at the very beginning, and that residents and traders were being informed about the changes made. When he was in the opposition, the newly-elected mayor strongly criticised the municipal government and was reported to have claimed that he was "ashamed" of what had been done in the avenue. With a similar discourse to what he argued on the "Amabilización" Plan, he considered that the changes had been too radical

(*Diario de Navarra*, 6/9/2018); "A year after the Amabilización in the old town: half of the cars, no traffic jams, more use of the bus and an economic upturn" (*Diario de Noticias*, 5/9/2018).

¹² Find here a couple of examples on how differently the impact of change was reported: "Pío XII, a way to the future" (*Diario de Noticias*, 25/11/2017); "The new Pío PXII seeds debate" (*Diario de Navarra*, 12/1/2017).

and that Pío XII had become “problematic”. According to him, the local traders were afraid of these measures and the residents were fed up with them¹³.

Even though it could have a certain connection with ideological positions, these were not generally mentioned as a source of tensions on how mobility should be managed. Both sides claimed that they stood for the implementation of a more sustainable mobility in the capital and in Navarra. However, tensions and debates were constant. Diario de Navarra organised a forum on how urban mobility should be managed, asked their readers to vote on whether they liked the changes, published editorial and opinion articles against the measures taken and backed those who asked for participatory processes that were binding and not merely consultative¹⁴.

Figure 4. Certain traders opposed the measures and thanked people for “coping with change”



Source: Diario de Navarra (diariodenavarra.es; Javier Sesma)

By the end of the 2015-2019 political term, many pieces of news cited mobility as one of the greatest sources of disputes that had characterised this period¹⁵. The visions on how the attempts of change towards a more sustainable mobility were having an impact on the city were radically opposed: Diario de Noticias enthusiastically said that there had been a “*major change in the mobility habits of the citizens of Pamplona towards using sustainable modes*”, whereas UPN (the party led by the newly-elected mayor) were reported to have argued that “*the only outcome of the ‘Amabilización’ has been commercial losses and traffic chaos*”¹⁶.

After the 2019 municipal elections, the newly-elected mayor said that he would undo the redesign of the Pío XII Avenue. Shortly after that, he announced the creation of over sixty

¹³ Based on these two pieces of news: “Asiron reminds people that the project is similar to what is being done in other cities” (Diario de Noticias, 18/10/2018); “Maya: ‘As a citizen, I feel ashamed of what they have done with Pío XII’” (Diario de Navarra, 17/10/2017).

¹⁴ Find here a couple of examples of Diario de Navarra’s publications against the city council’s decisions: “The readers of DN.es reject dedicating a lane for bikes, buses and pedestrians” (Diario de Navarra, 18/1/2017); “UPN’s and PSN’s demands for a “real” participatory process in Pío XII were rejected by the government” (Diario de Navarra, 23/10/2017).

¹⁵ Find here some examples:

“Mobility, a constant polemic in Pamplona” (Diario de Navarra, 1/5/2019); “Pío XII: the first government crisis and criticism from residents and traders” (Diario de Navarra, 1/5/2019); “Mobility, Basque language and nursery schools at the core of the debate on the political term in Pamplona” (Diario de Navarra, 3/5/2019).

¹⁶ Cited from (respectively): “The Amabilización reduces the traffic in the city core and the use of public transport increases” (Diario de Noticias, 5/9/2018); “UPN is left alone in their demand of reconsidering change in the city core” (Diario de Navarra, 4/9/2018).

parking spots in the avenue. Regarding the old town, he reopened a few resident-only roads for the general traffic. He said that economic growth and not only sustainable mobility must be prioritised. The opposition criticised these decisions. Greenpeace claimed that reopening roads for the general traffic was against the current tendency of increasing the restrictions on car use in urban environments¹⁷.

2.3-TRADITIONAL CAR-BASED LIFESTYLES AND “EARLY ADOPTERS” IN ADVERTISING

In parallel with the constant debate on the mobility transition in the media, citizens have also been targeted through marketing campaigns in which we could find a divide between a traditional way of approaching mobility and a new marketing wave. As already mentioned, scholars have explored numerous components connected to the way in which mobility has been “sold” to the consumer, such as lifestyles or values, meaning (status, for example), etc. Against this background, Vanderheiden shows that pro and anti-SUV marketing campaigns are a clear example of the intense tensions between colliding approaches to mobility issues, as *“SUV marketing campaigns associate the vehicles with cherished political values such as liberty and personal empowerment, while grassroots campaigns against the vehicles blame them for contributing to increased highway fatalities, climate change...”* (2006: 24). In fact, according to Gunster (2004), SUV marketing campaigns have constantly invoked natural themes and an escape from urban existence, even though, ironically, the product sold leads to consuming excessive amounts of natural resources and emits high levels of pollutants.

The analysis of car advertising (particularly SUV advertising) reveals that these narratives have evolved from an early emphasis on symbolic aspects (such as masculinity, security and individualism) to new concepts that try to reformulate these discourses in order to confront the anti-SUV criticism usually led by the younger generations of consumers (Andersen, 2000; Luke, 2001; Paterson & Dalby, 2006). McLean (2009) concludes that new branding methods are expected to be developed with the intention of dealing with this criticism and counter-cultural messages.

The car industry is known for having spent huge amounts of money in trying to convince us on the close links between automobiles and freedom, as well as social status and success in life. Many positive qualities have long been attributed to private cars, but we will see how this optimistic vision of car-centred societies in which owning and driving cars is a synonym of the good life is now being challenged not only by the mobility transition but also by a new marketing wave that is putting this assumption to the test. The commercials launched by certain companies have remained attached to the old paradigm, whereas other companies have started to “sell” a new model that targets potential customers who could be labelled as “early adopters”.

¹⁷ Based on: “Reopening Padre Moret contradicts the progress made in sustainability, Greenpeace says” (Diario de Noticias, 6/11/2019).

2.3.1-Targeting drivers attached to the old paradigm through advertising

Even though certain public authorities and private companies have started to advertise mobility in a new and disruptive way, the powerful car industry has in many cases remained loyal to its traditional way of selling cars and targeting potential customers. Despite certain nuances (such as focusing on the car either as a status symbol or as a practical item, putting emphasis on its technical characteristics or on the emotions connected to driving it, etc.), many carmakers have targeted potential buyers who are attached to ownership and driving.

Marketing campaigns have been influenced by the socioeconomic and political contexts, as well as the values of the general public. For example, by the year 2000, Citroën launched at the Spanish level a successful marketing campaign called *“The Olympus of Diesel”*. Such a campaign would now be unconceivable but, at the time, both the private sector and many public entities were convinced that diesel cars were the best option available, had the most efficient technology and should be prioritised over other types of automobiles. By the turn of the century, we could find marketing campaigns that would probably be criticised if they were launched nowadays.

Figure 5. Dodge launched a campaign encouraging people to drive big powerful cars such as SUVs



Source: autocar.co.uk (Dodge)

The reasons for “selling” people car ownership and the desire for driving can vary. In many cases, private cars are presented as a synonym of individual freedom. This is the case of the SUV (Sport Utility Vehicle), which has emerged as a fashionable type of automobile that the car industry is trying to associate with the freedom of going anywhere at any time. Although they are not the only cars that are attributed to offer freedom, SUVs probably are the ones that are being more constantly associated with the old model in which the ideal lifestyle would imply owning a car, or even several cars, driving anywhere and possibly living in a suburban house or detached house.

SUVs have sometimes been blamed for being an irrational hype, as many drivers in urban settings use them in a similar way to how conventional passenger cars are used. A marketing campaign launched by Renault (see figure 6) in which those who drive SUVs were said to be

typically characterised as the so-called “generation X” (those born in the sixties, seventies and eighties) and labelled as “contradictory” was analysed by the journalist Denis Iglesias¹⁸.

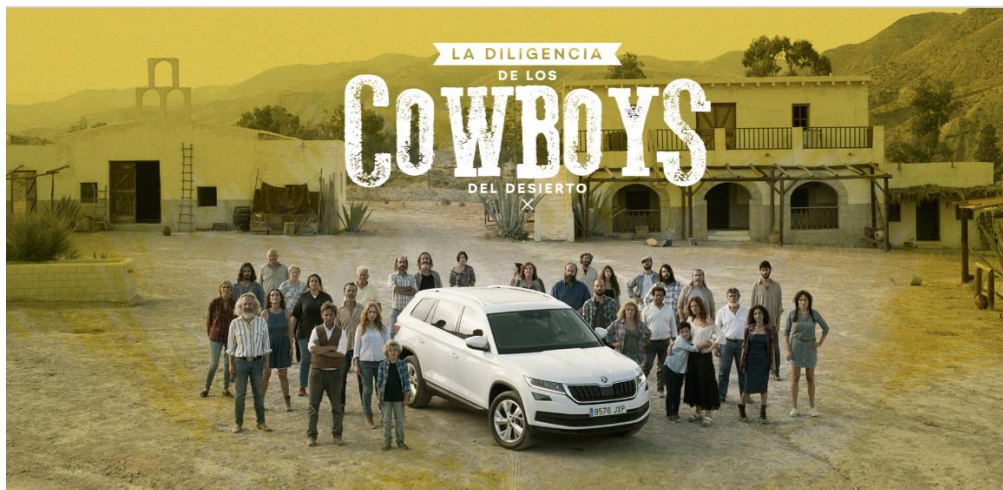
However, we could also find campaigns in which SUVs were presented as a more rational choice. For example, Skoda’s marketing campaign (see figure 7) on the need for automobiles for stopping the depopulation of the rural in Spain, in exchange for filming commercials and advertising their SUVs, offered several remote villages SUVs in order to create services that could help the local populations to reach points of special interest, such as the doctor’s, the chemist’s, etc. SUVs were presented as a rational choice for connecting remote rural villages with the nearest towns.

Figure 6. Four celebrities characterised Renault’s SUV campaign on their generation’s “contradictions”



Source: El Mundo (SUVbyRenault)

Figure 7. Skoda called their SUVs “stagecoaches of the desert” and presented them as ideal for the rural



UN SERVICIO DE ŠKODA PARA LUCHAR CONTRA LA DESPOBLACIÓN

Source luchandocontraladespoblacion.com (Skoda)

¹⁸ Based on:

“Renault target the Spanish born between 1960 and 1990 for selling their SUVs” (El Mundo, 13/2/2019).

Volkswagen, the largest carmaker (as a group of brands including Audi, Seat, Skoda, etc.) in terms of sales at the moment (they overtook Toyota in 2016), has opted for the traditional approach to selling cars in Spain in the last years. Their campaigns have usually focused on the private car as a desirable item. In one of their most recent campaigns, they claimed that *“we all have dreams. Some of them are achieved before than others”*. In a video commercial, we could see children dreaming of driving sports cars in the future, and a Volkswagen Golf that avoided overrunning a dreamy child with the help of its safety technology. It showed a cultural desire for luxury cars and the Volkswagen Golf as the realistic and pragmatic choice.

Another illustrative sample of how the car industry has targeted potential buyers in Spain is BMW’s campaign *“¿Te gusta conducir?”* (*“Do you like driving?”*). The idea that driving can be experienced as a pleasure has been exploited by BMW. Not only them but also other car brands have underlined this hedonistic and emotional side of driving, but BMW’s campaign has probably become the most popular one in Spain. In some occasions, we would not even see the car but only an arm of a male driver who was enjoying driving his BMW. In another case, we could see a man enjoying his drive while his wife was sleeping, the company saying that she was thus not spoiling such a great pleasure. This strategy of focusing on the (usually masculine, in the past at least) experience of driving and not so much on the automobile’s features seems to be relatively common. According to a survey on marketing excellence, top US marketers considered that BMW *“sets the standard for excellence in marketing”* in the transport sector (Deloitte, DUKE & AMA, 2017: 79).

A last example of an old-paradigm-based marketing campaign represents another vision of what an automobile has been made for. In this case, driving is not about social status, the desire for having luxury cars or the pleasure of driving. Dacia (a Romanian car manufacturer bought by the French group Renault) emerged during the economic crisis as a synonym of austerity and rationality. They started to target drivers who would prioritise functionality (in addition to low-cost prices) over other reasons for driving. In one of their commercials, we could see a driver who was happy showing his family that their cheap Dacia had short-range and long-range headlights, like any other car would have. In another commercial, we could see a driver who was excited about showing his wife that their Dacia had a boot that could be opened and closed. According to the reviews on their success, Dacia’s humouristic spots performed very well, and even certain affluent people seem to be interested in buying these cars as a reaction against materialism and for *“maximum pragmatism”*¹⁹.

2.3.2-Targeting potential “early adopters” through advertising

Many companies and public authorities have seen the opportunity to launch campaigns that target potential “early adopters” of the mobility transition: Those who are aware of the environmental impact of driving cars, the need for reducing pollution in cities, the benefits of cycling and walking, etc. For example, the youngest generations of “urbanites” (mainly millennials, but not only them) have been targeted by campaigns in which freedom has been

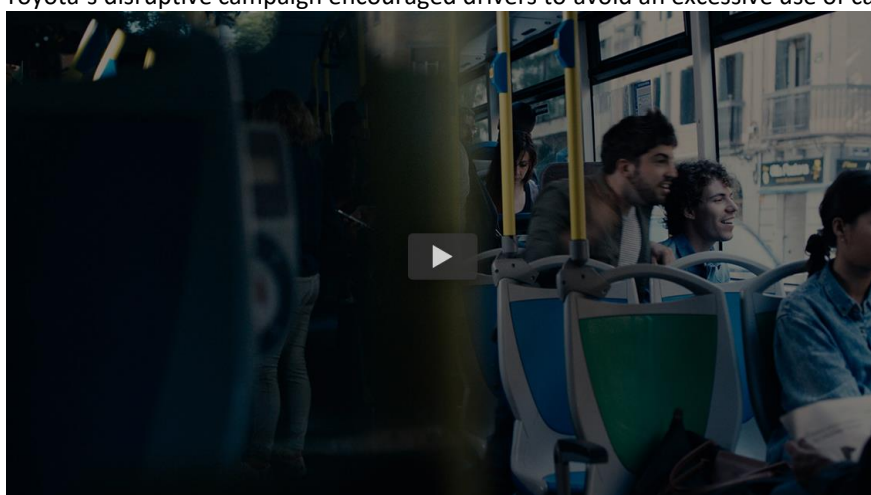
¹⁹ Based on: “Buying a car, increasingly rational and less emotional” (autopista.es, 12/3/2013); “Why are Dacias successful?” (autopista.es, 23/9/2014).

associated with a new idea: “Mobility as a Service” has replaced car ownership as the most desirable option. Hiring bikes and e-bikes, e-scooters, cars, combining all of them with public transport, etc. has started to be marketed as a “new freedom”. In Spain, millennials are obtaining less driving licenses than the older generations: According to a survey made by the consultancy agency KPMG to car industry managers cited in El País, they were worried about those younger than 25 not being interested in buying cars, mainly in highly-populated urban areas with good public transport²⁰.

The Japanese brand Toyota has launched in Spain several commercials that reflect this change. In an intermediate step between the old and the new approaches to urban mobility, Toyota started to ask drivers on what kind of future they wanted. They sold their hybrid cars as a “greener” choice than traditional combustion-engine cars. In 2019, Toyota announced that they would be the first carmaker to include their cars’ NOx emissions in their marketing campaigns in Spain²¹. They also started to advertise their new fuel-cell Mirai model as a car that only emits water. Other carmakers have followed their example: In one of their Spanish commercials that aimed to sell hybrid cars, Mitsubishi asked their potential buyers on which side of human evolution they wanted to be in.

Toyota has launched commercials in which the driver would be extremely respectful with pedestrians and would feel rewarded by their gratefulness. This was part of their “*Conduce como piensas*” (“*Drive the way you think*”) campaign, in which new values were emphasised. But probably the most disruptive aspects of this campaign were other elements that put into question the need for driving everywhere, and even the need for owning cars. In a video commercial, Toyota presented two relatively young male adults (probably millennials) who decide to leave their Toyota Yaris parked outside of the city core and take a bus instead (see figure 8). This commercial literally said that “*the new Yaris is the best car for cities, but it is not always indispensable to drive inside the city*”.

Figure 8. Toyota’s disruptive campaign encouraged drivers to avoid an excessive use of cars in cities



Source: Toyota.es

²⁰ The main conclusions of this survey are mentioned in: “Dad, I prefer a tablet to a car” (El País, 16/1/2014).

²¹ Based on: “Toyota Prius: more than 80% of the time in electric mode inside cities, according to a study” (El Mundo, 23/4/2019).

Another disruptive commercial presented two young adult women (millennials as well, apparently) having a conversation. One of them told her friend that she had just bought a hybrid Toyota Yaris and that her car was being driven by other people who did not own the car. She had started to share her new car through a mobile app whenever she did not need it. Toyota's campaign won a Spanish Advertising Association award²².

For better understanding Toyota's vision of how they might be in a turning point in which they are starting to embrace and "sell" the current mobility transition, we invited the sales manager at Toyota Navarra (Tauro Motor Car) to participate in the set of in-depth interviews with key local stakeholders (see chapter 3 on the methodology). This manager explained the brand's approach to the transition towards a sustainable mobility and admitted that their marketing strategy had often been shocking, even for their sales managers. He argued that

"for us, the salesmen, this is all new. When I first watched our new advert on sharing our cars, I immediately called my boss. I was shocked, as it seemed to me incompatible with selling more and more cars. For a salesman who has pressure on him for selling as many cars as possible, this idea of sharing cars instead of advocating for the traditional 'a car per person' logic was very shocking at first." [Sales manager (Navarra), Toyota]

But he soon understood that the company was trying to sell cars in a very disruptive way. The company wanted to be ahead of their time: *"Our president said that we will not be just a car manufacturer anymore. We will be a mobility services provider. The new model implies sharing everything. It will put the old one to the test. The reason for selling eco-friendly cars and sharing them is to be ahead of our time"* [Sales manager (Navarra), Toyota]. He also said that the adoption of hybrid cars appears to be an intermediate step before "greener" cars (such as fully-electric cars) become democratised. Finally, this sales manager described the kind of potential "early adopters" who were being targeted by the Japanese car brand:

"Even though, as a sales manager, I am of the opinion that buying a certain car is more often an emotional rather than a rational choice, unlike many others, our brand focuses on the rational side. This strategy is working well in big cities, like Madrid and Barcelona, where there are restrictions on polluting cars." [Sales manager (Navarra), Toyota]

Apart from Toyota, other companies are trying to attract those who are not too attached to the old paradigm. Another illustrative example is a Share Now's (a joint venture made of BMW's and Daimler's carsharing branches DriveNow and Car2Go) commercial in which they claimed that *"BMW and Daimler, two giants in the automobile sector who brought personal freedom to the world, join together to give the world personal freedom once again"*. Other types of companies have also tried to make new businesses appealing. For example, Cabify (a Spanish ride-hailing company), launched a campaign in Madrid through which they called for negotiating and reaching agreements with the main local stakeholders (city council, taxi sector, etc.) and claimed that they could help in making the city of Madrid a better place.

As we have seen, new services have fought for a place in a changing ecosystem that is no longer so hegemonically dominated by the car industry and by the ideals connected with car ownership, suburban life and driving as the ultimate synonym of freedom and the good life.

²² Based on: "The advertising that awakens consciousness" (El País, 27/10/2018).

In this context, car advertising has reflected in Spain the changing social meanings of the car and the evolution of the values attributed to personal freedom (find a summary in table 3).

Table 3. Two opposing visions of (auto)mobility (selection of marketing campaigns launched in Spain)

	TRADITIONAL MARKETING	NEW MARKETING WAVE
Notion of personal freedom	Car-based mobility (using combustion-engine cars)	Multimodal mobility (using “greener” vehicles)
Examples at the national level (car companies’ campaigns)	“ <i>The Olympus of Diesel</i> ” (Citroën) “ <i>Do you like driving?</i> ” (BMW) “ <i>Maximum pragmatism</i> ” (Dacia)	“ <i>Drive the way you think</i> ” (Toyota)

Source: Own elaboration

2.4-SOCIO-TECHNICAL CHANGE AND ALTERNATIVE MOBILITY

We are expected to live in “smarter” societies in which the old paradigm based on owning and driving combustion-engine cars is put into question due to it being unsustainable in the long term (Paterson & Dalby, 2006; Paterson, 2007, 2014; Barking, 2008). Private petrol and diesel cars have been shown to have an impact on environmental and health issues, urban built environments and city life, due to the way in which politics, the economies and cultures have given shape to the system of automobility in advanced societies (Böhm et al., 2006b; Goldman & Gorham, 2006; Gilbert & Perl, 2010). Furthermore, the institutional and market discourses place citizens in a paradoxical situation. As Doughty and Murray point out,

the car is positioned as central to a neoliberal agenda in which policies promote progress and choice in the pursuit of modernity and engender a culture of individual freedom and rights that can be played out through individualised mobility. In turn, citizens are encouraged to take responsibility for curbing the unsustainable elements of car use. (Doughty & Murray, 2014: 318)

For Banister (2008), the transition towards sustainable mobility should involve a coalition of experts and stakeholders, including all those working on technological innovations, urban planning and public health. Furthermore, Holden, Gilpin and Banister reach the conclusion that “*we know fairly well what we need to do and we have sufficient knowledge about how to do it and who should take the lead. Perhaps what we are lacking is stories – or sustainable mobility narratives – that we can believe in*” (2019: 10).

In the last few years, the media have reflected that mobility-related matters have close ties with many other inter-related issues that can directly affect our lives. Change is putting modern advanced societies and their citizens’ lifestyles to the test. Furthermore, we have also seen that a technological revolution is currently taking place (whether called the “fourth industrial revolution” or not). Technological progress (electric cars, driverless vehicles, etc.) is expected to be appropriated and reshape modern advanced societies and our lifestyles in unprecedented ways.

2.4.1-Iconic initiatives and the “war on polluting cars”

In general, big cities are the ones that are pioneering the mobility transition. It is usually in the largest ones where both the problems linked to automobility and their solutions can be more easily found. Not only public authorities but also private companies tend to show a greater interest in big cities, as the negative consequences of the old paradigm tend to be more visible and the potential opportunities for change and making business are abundant. At the Spanish level, the national media has mainly focused on the changes implemented in the two biggest cities: Madrid and Barcelona.

For example, the city council of Barcelona announced that in 2020 they would implement a LEZ (Low Emission Zone) that would be larger than Madrid Central, although less restrictive concerning the emission standards required. This “war on polluting cars” is also reflected by their idea of charging for parking spots in proportion to a car’s emission standards. In 2017, the municipal government took the decision of starting to limit the number of underground parking spots and the opposition blamed the mayor for being “car-phobic”²³.

Madrid has slowed its traffic down to 30 km/h on most of its roads and has put into place an ordinance that is intended to establish a different order of priorities. Apart from working on legislations, the council has established partnerships and has collaborated with private companies in order to offer the Madrilians alternatives to polluting private cars. Madrid has been labelled as “the capital of carsharing” in some newspaper articles and it has sometimes been cited as an example of successful cooperation between the public and private sectors. Madrid is estimated to be a European leader in terms of the presence of innovative mobility services, such as (electric) carsharing, (electric) motosharing, shared e-scooters and shared e-bikes. According to a survey made by the Pons Foundation cited in *El País*, more than half of the Madrilians had used shared cars. This survey also found that 58% of the Spanish would sell their cars if they were offered convenient and efficient alternatives²⁴.

Spanish citizens seem to be progressively assimilating the new ideas behind the mobility transition. According to an Europcar Mobility Group España survey cited in *El País*, six out of ten respondents believed that private cars would not be hegemonic any longer in ten years’ time. According to an Alphabet survey cited in *El País*, the new generations are keener on other options such as sharing cars, carpooling or renting cars. A profound change in people’s mindsets appears to be taking place. For example, 90% of the participants of a survey made by Direct Seguros cited in *El Mundo* believed that “green” cars will dominate the market in

²³ The case of Barcelona has been widely covered in the media. Information on Barcelona based on: “The formalisation of the Low Emission Zone of Barcelona” (*El País*, 1/10/2019); “Colau wants that polluting cars pay more for parking in the streets” (*El País*, 24/9/2019); “Barcelona will stop the construction of parking spaces in buildings” (*El País*, 17/5/2017).

²⁴ Information on changes that have taken place in Madrid based on: “Features of the new ordinance that will change the way of moving around in Madrid” (*El País*, 5/10/2018); “Reaching an efficient mobility implies the collaboration between the public and the private sectors” (*El Mundo*, 28/9/2018); “Half of the Madrilians have used shared cars” (*El País*, 8/11/2018).

the coming decade, and 38% said that a good public transport network was their preference for the future. Furthermore, 59% were for limiting car use inside the cores of the cities²⁵.

Very similar trends could be found at the international scale. International experts and researchers on mobility issues have constantly appeared in the media predicting a profound change in our societies. For example, Jaime Lerner, famous architect and former mayor of the Brazilian city of Curitiba (where he implemented an innovative BRT system), stated that the car is *“the cigarette of the future”* and that cars will nearly disappear²⁶. In a similar vein, the economist from Harvard Tony Seba predicted that *“by 2050 combustion-engine cars will only be seen in museums and movies”*²⁷. All this would mean profound transformations not only in how people move around but also in their lifestyles. Indeed, the MIT expert Nicholas Negroponte was reported to have stated that the coming generations will not own cars and will not live in suburban houses²⁸. Aaron M. Renn, senior fellow at the Manhattan Institute, posed a crucial question in an article in The Guardian: *“Have we really reached ‘peak car’?”* (headline)²⁹. He even talked on a “carpocalypse”. Whether all this happens is yet to be seen.

Although hundreds of mobility-related initiatives have been taken by public authorities, only some of them have become emblematic or paradigmatic of the mobility transition. For example, back in 2016, the city council of Barcelona announced that they would offer three years of free public transport for those who gave up driving an old polluting car. In a similar way to what Madrid had already done before, Barcelona opted for creating high-occupancy lanes on its peripheral motorway, so that solo car driving would be discouraged³⁰.

A measure that important cities such as London have implemented in the last few years is congestion charges. London's “Ultra-Low Emission Zone” came into force in 2019 and is expected to be expanded by 2021. Other European capital cities such as Oslo (Norway) have opted for combining congestion charges with more ambitious measures. In fact, they aimed to cut emissions by 50% by 2020 (in comparison with the year 1990) and want to become carbon-neutral by 2050. Electric vehicle sales have been incentivised, with a total of 30% of all vehicles now sold in the city being electric. Oslo was awarded the title of European Green Capital of 2019 by the European Commission.

Back in 1997, the Belgian city of Hasselt became the flagship of the “politics of free” when they took the decision of abolishing fares. In 2014, Hasselt cancelled this measure because of being financially unsustainable. In Luxembourg, the national authorities have decided to offer free public transport and Tallinn, the capital of Estonia, offers its residents free public transport. Nevertheless, this type of initiatives has brought controversy. For example, when

²⁵ Information based on: “The dark future of privately-owned cars” (El País, 2/2/2019);

“If you are a ‘millennial’, this is best the way to buy a car” (El País, 31/5/2018);

“59% of the Spanish people, for limiting car traffic in urban cores” (El Mundo, 22/11/2017).

²⁶ Cited from: “Jaime Lerner: ‘the car is the cigarette of the future: it will nearly vanish’” (El País, 31/8/2018).

²⁷ Cited from: “Goodbye to cars by 2050” (El País, 10/11/2017).

²⁸ Based on: “No cars and no detached houses in the city of the future” (El País, 2/2/2018).

²⁹ (The Guardian, 10/4/2015).

³⁰ Based on: “Barcelona will offer free public transport to those who get rid of polluting cars” (El Mundo, 12/12/2016); “The motorway of Barcelona will have high-occupancy car lanes” (El País, 31/8/2017).

Tallinn announced this measure, the number of people who registered as residents boomed in an unrealistic way³¹.

In this context, over the last few years many public authorities have announced that they aimed to turn their cities, regions and countries into carbon-neutral societies. Certain cities have declared a “war on diesel cars” for their harmful nitrogen oxide (NOx) emissions. This has led to an intense debate on how our societies should evolve towards these objectives. By the end of 2018, the Spanish government proposed a new law that would ban diesel and petrol car sales by the year 2040 in an effort to become carbon-neutral by the year 2050. This announcement led to a certain controversy, as the Spanish car industry (which ranks in the world’s top ten in terms of production and is estimated to amount for around 10% of the country’s GDP, directly or indirectly) feared negative consequences in terms of revenues and job losses. The Spanish trade unions joined this debate, as well as those political parties that did not agree with the ban on combustion-engine cars. Their concerns did not only refer to this future ban, but also to the current situation of uncertainty in which potential buyers doubt about what type of vehicle would be the best option in a changing society and might opt for not buying new cars at all³².

For example, the president of Volkswagen in the Spanish region of Navarra claimed that they were working on the option of readjusting the factory so that it would become a “mixed factory” in which both combustion-engine and fully-electric cars are produced. He admitted that there was some uncertainty on the long-term future of the factory, as Volkswagen was opting for separating the two types of factories. He regretted that, meanwhile, the newest combustion-engine cars are not being openly supported by the public authorities, as *“these cars pollute ten times less than those made five years ago”*. In this context, the Government of Navarra approved in 2018 tax incentives for electric cars and invested over three million euros in developing the electric car and the infrastructure needed³³.

The social implications of trying to implement a new mobility paradigm based on owning and driving electric cars has led to intense debate on all types of consequences. Apart from inequality-related matters, the media reflected the debate on other issues, such as their lack of autonomy, prices, the capacity of the local electricity networks, the lack of raw materials for producing batteries on a global scale, etc. Concerns on the possibility of contributing to conflicts in poor countries that export the raw materials needed were assessed by Guillermo Otano (Spanish sociologist)³⁴. There are also doubts on whether they are the best alternative

³¹ Information on these international cases based on:

“Electric, hybrid or bi-fuel... What types of eco-friendly vehicles are there?” (El Mundo, January 2018); “2019 – Oslo” (European Commission); “The cost of Luxembourg’s free public transport plan” (BBC, 29/1/2019); “The Tallinn experiment: what happens when a city makes public transport free?” (The Guardian, 11/10/2016); “Hasselt cancels free public transport after 16 years (Belgium)” (Eltis, 1/8/2014).

³² Information on the Spanish case based on: “The government proposes ban on petrol and diesel car sales by 2040” (El País, 13/11/2018); “The automotive sector accounts for 10% of the Spanish GDP” (ABC, 6/7/2017); “The trade unions fear a labour tsunami if car sales keep dropping” (Diario de Noticias, 10/6/2019).

³³ Cited from/Based on: “VW Navarra want to make the production of combustion-engine and electric cars compatible” (Diario de Noticias, 4/10/2019); “Navarra will invest 3.1 million euros this year to launch the electric car” (Diario de Noticias, 25/2/2018).

³⁴ Based on: “It is time to talk on the social and environmental impact of the electric car” (El País, 3/9/2018).

for replacing combustion-engine cars. For example, hydrogen fuel-cell vehicles may present some advantages (such as filling their tanks faster in a few minutes) in comparison with fully-electric vehicles (but also disadvantages, such as being less energy-efficient and needing for more expensive infrastructures). Other types of engines have sometimes been labelled as eco-friendly. For example, this has been the case of cars that run on natural gas, even though they are not attributed to produce zero direct emissions³⁵.

The implications of the implementation of each of these two technologies (electric cars and hydrogen-fueled cars) has long been discussed in the media (their affordability, the time needed for refueling them, their autonomy, a lack of noise that can help in mitigating traffic-related noise but could lead to a greater risk of accidents, the risk of manipulating hydrogen, etc.)³⁶. Even though most countries seem to be opting for prioritising the adoption of electric cars, there are certain exceptions where fuel-cell cars are expected to become hegemonic in the long term. This is, for example, the case of Japan, which has been labelled as a future “hydrogen society”³⁷. Moreover, the Japanese brand Toyota announced by the beginning of 2020 that they will create a “living laboratory”: A city where fuel-cell vehicles, Mobility as a Service and other innovations will be tested³⁸.

Producing an electric car for the masses has become one of the main objectives of several carmakers. Not only Tesla but also traditional brands, such as Volkswagen and Nissan (which has been a global leader in the market over the last few years with their Leaf model), are making heavy investments with the aim of democratising the electric car³⁹. Tesla’s Model 3 was expected to attract mass-market interest when it was launched in 2017⁴⁰. Nevertheless, although it has become relatively popular, Tesla’s cheapest model is not affordable enough for the general public and has not become so widespread.

One of the most controversial issues connected to mobility is the so-called “Dieselgate” scandal. Although it has not been the only case linked with frauds on emissions, this episode has been a central topic of debate in the context of the growing consciousness on the impact of nitrogen dioxide on health. By the end of the year 2015, the automotive giant Volkswagen was accused of having manipulated over ten million cars with a device that minimises their cars’ nitrogen oxides emissions when they are being analysed. The German carmakers were

³⁵ Find here some examples on these uncertainties:

“Is the world ready for all of us having an electric car?” (El País, 11/8/2017); “Carmakers fear a lack of raw materials for producing batteries” (El Mundo, 28/11/2017); “The European Commission fears an ‘uncontrolled’ electrification” (El Mundo, 17/9/2018); “Vehicles that run on natural gas do not solve pollution problems in cities, environmentalists conclude” (El Mundo, 24/10/2018).

³⁶ Find here a few examples on the debate on implementing electric and hydrogen-fueled cars:

“The evolution of electric cars: towards a thousand km- autonomy range” (El País, 19/12/2018);

“New law to tackle electric cars’ silent menace to pedestrians” (The Guardian, 6/5/2018);

“Could hydrogen-fueled cars replace electric cars?” (El País, 1/5/2018).

³⁷ See for example: “Opening the way to a hydrogen society” (Government of Japan. Autumn 2018).

³⁸ Find more information on this project (“Woven City”) at woven-city.global (Last retrieved: 31/1/2020).

³⁹ Based on: “The future of Volkswagen is electric” (El Mundo, 19/9/2016).

⁴⁰ Based on: “Tesla Model 3: Elon Musk rolls out mass market model” (BBC, 29/7/2017).

said to be facing the biggest scandal in their recent history⁴¹. The EU reacted by imposing additional tests in real-traffic conditions to the tests carried out in laboratories.

For counterbalancing these attacks on the public image of diesel cars, there have been attempts to prove that the newest models are not as polluting as many people might think. According to Deutsche Welle, an Ifo study concluded that *“electric cars are ‘no panacea’ against climate change”* and argued that, for example, a Tesla Model 3 had a *“worse life-cycle footprint than a similar-sized Mercedes diesel car”*⁴². Not only carmakers but also the fuels industry has reacted for defending their interests and trying to prove that the latest models are less polluting. Moreover, according to this vision, the “demonisation” of diesel cars has led to a rise in carbon dioxide emissions, as the use of petrol cars has significantly increased. In fact, the European Union has alerted about this “collateral problem”, has urged to develop cleaner engines and, back in 2018, started an investigation on the German car industry for allegedly having slowed down the development of “greener” engines⁴³.

As we have seen, there has been intense debate in the international media on the types of cars and their emissions⁴⁴. Despite some criticism, there appears to be general consensus that, even though electric cars may not be “zero-emission” vehicles overall, they are on the whole better for the environment than conventional vehicles⁴⁵. But, most importantly, there also seems to be consensus that evolving towards another car society where combustion-engine cars are replaced by fully-electric cars (citizens remaining strongly attached to car ownership and solo driving) would not be ideal.

2.4.2-Towards an autonomous mobility? Prospects, concerns and impacts

In parallel to developing “greener” cars, carmakers together with companies connected with the development of artificial intelligence are working on making autonomous vehicles a viable option for the future. The lines of discussion presented in the media focus on the progress made and the potential social implications of the adoption of automated cars. In fact, Mladenovic points out that *“this development is manifesting itself in a series of pilot tests in urban environments accros the world”* (2019: 104). According to Thomopoulos and Givoni, it is logical that there is debate on the appropriation of self-driving vehicles, as

like any new technological development, autonomous transport presents ample opportunities to better our mobility system, but similarly it carries risks and can lead

⁴¹ See, for example: “The Volkswagen emissions scandal explained” (The Guardian, 23/9/2015); “As Dieselgate scandal widens, will Germany finally tackle transport emissions?” (Deutsche Welle, 19/4/2019).

⁴² Cited from:

“Ifo study casts doubt on electric vehicles' climate-saving credentials” (Deutsche Welle, 25/4/2019).

⁴³ Based on: “The counter-attack of the fuel industry for saving diesel cars” (Le Monde, 04/12/2017); “Europe alerts about the emissions of gasoline cars” (El País, 17/5/2019); “Brussels investigates Volkswagen, Daimler and BMW for stopping the development of less polluting cars” (El País, 18/9/2018).

⁴⁴ Find here a couple of examples on these debates:

“What’s the carbon footprint of... a new car?” (The Guardian, 23/9/2010);

“Why in certain countries a petrol car pollutes less than an electric car” (El País, 29/11/2017).

⁴⁵ Based on: “How eco-friendly are electric cars?” (Deutsche Welle, 4/8/2017).

into a future mobility that exacerbates, rather than relieves, current deficiencies of our mobility systems, including its high carbon and high cost characteristics.
(Thomopoulos & Givoni, 2015: 1)

In this context, Danny Shapiro, senior director of automotive at Nvidia, was reported to have claimed that *“the car of the future is ‘the most powerful computer you will ever own’”* (headline), as the chips inside these vehicles will be as powerful as supercomputers⁴⁶. Uber, Google and other tech-giants have joined the race for developing and testing autonomous vehicles, and several automakers have also engaged in this mission. Together with the need for developing “zero-emission” vehicles and the irruption of the sharing economy, certain carmakers have created joint ventures with other types of companies.

The impact of a future generalisation of autonomous cars could be disruptive, as it could reshape the perception of risks in urban and rural spaces, as well as social values connected to mobility. Carlo Ratti, director of the MIT’s Senseable City Lab, assured in an interview that *“very few phenomena change the aspect of cities, but driverless cars will do so”* (headline)⁴⁷. Apart from reshaping cities to embrace a new technology and readjusting our lifestyles (as incorporating these vehicles into our lives could mean, for example, boosting ridesharing if they were not individually-owned and liberating spaces that would not be needed), there are questions that modern advanced societies need to address. The media have revealed concerns and uncertainties about the impact of this technology: What if driverless cars were individually-owned and led to even more congestion? What if we liked driving and preferred to drive cars? What if they were not socially perceived as safe? Will sharing them (as experts are predicting) become a cheaper option than driving a private car?

While this type of questions still remains unsolved, pioneering cities and, to a less extent, pioneering rural areas are trying to anticipate this future through testing driverless vehicles. But these first steps have not avoided the risks of controversy. On the one side, there are ethical concerns on how driverless vehicles should theoretically behave. On the other side, the actual implementation of autonomous cars in real-traffic conditions has not proved as safe as experts had predicted. Moreover, experts have doubts on their implementation in dense urban settings, as, for example, *“safe, efficient self-driving cars could block walkable, livable communities”* (headline)⁴⁸.

Although according to many experts driverless cars will be safer than human-driven cars, there has been intense debate on safety concerns. Brad Templeton, inventor of Google’s driverless car, said in an interview that *“humans drive worse than machines do”* (headline)⁴⁹. Back in 2016, Barack Obama claimed that the United States would back the autonomous car because it could potentially *“save dozens of thousands of lives every year”*⁵⁰. Furthermore, many experts argue that autonomous cars could contribute to reducing congestion, as less

⁴⁶ (The Telegraph, 17/5/2015).

⁴⁷ (El País, 14/9/2017).

⁴⁸ (The Conversation, no date provided).

⁴⁹ (El País, 14/6/2015).

⁵⁰ Cited from: “Obama backs the autonomous car: ‘It could save dozens of thousands of lives every year’” (El País, 20/9/2016).

cars would be needed if they were used most of the time and they were shared. Emptying public space for other purposes would be another potential advantage, as solo car driving is nowadays a very common way of moving around. For example, it is estimated that, in Spain, the average occupancy of cars is of only 1.2 persons (moreover, it is also estimated that cars occupy between 20% and 30% of the public space in cities)⁵¹.

Iyad Rahwan, director of Scalable Cooperation at the MIT Media Lab, was reported to have said that initiatives such as the MIT's "moral machine" website in which citizens are asked on their perceptions on driverless vehicles have shown that most people tend to be contradictory: Even though people believe that automated cars should be configured in such a way that they cause the minimum overall damage possible, they would not buy a car that would harm them in an occasion in which saving other people's lives should be prioritised⁵². Matthew Wall, BBC News technology of business editor, argued on these ethical dilemmas that *"there are doubts over whether the technology will ever become sophisticated enough to handle such decisions anyway"*⁵³. As a consequence of these uncertainties, many people claim to be reluctant to ride automated vehicles⁵⁴.

But more practical challenges have also arisen in the last few years. For example, this is the case of Tesla's Autopilot (which removes the need for driving, although a human driver must supervise the car's handling) and of driverless cars that have been tested in real-traffic conditions with the supervision of drivers. Both have been involved in fatal crashes that have stirred debate on the implementation of this technology⁵⁵. Despite these setbacks, France, China, the United States and other countries have decided to keep carrying out pilot tests in real-traffic conditions with the intention of improving this technology and convincing the public opinion on its benefits.

For example, the regional government of Navarra and Volkswagen stated that they were assessing the option of it becoming a region where self-driving cars will be tested. Local joint ventures have been created with the intention of boosting this new technology. The Public University of Navarra, in collaboration with three local companies, has started to work on

⁵¹ Based on: "The car as the source of all evil" (ABC, 4/8/2016).

⁵² Full interview available from: "How will an autonomous car face an inevitable crash?" (El País, 20/11/2016).

⁵³ Cited from: "What's putting the brakes on driverless cars?" (BBC, 28/7/2015).

⁵⁴ A comparative survey found that Spanish people were more open to use them than the average in Europe, even though only 41% of the Spanish respondents argued that they would leave a driverless car take their children somewhere (31% in the case of women and 51% in the case of men). The conclusions of this survey, carried out by Bosch, can be found here:

"60% of the Spanish would not leave an autonomous car carry their children" (El Mundo, 18/12/2018).

⁵⁵ On the 7th of May 2016, a Tesla driver died while using the Autopilot. This was considered to be *"the first known death caused by a self-driving car"* (Cited from: "Tesla driver dies in first fatal crash while using autopilot mode". The Guardian, 30/6/2016).

On the 18th of March 2018, the first fatality involving an autonomous car and a pedestrian took place in Arizona. Even though Uber was later declared *"not criminally liable for self-driving death"*, this episode together with other fatal crashes have led to intense debate on autonomous mobility (Cited from: "Uber 'not criminally liable' for self-driving death". BBC, 6/3/2019).

developing an electric autonomous micro-bus shuttle. Furthermore, the Spanish Congress announced that Spain would encourage the adoption of autonomous mobility⁵⁶.

Even though automated cars have been the main focus of attention, automated buses and other types of automated vehicles are also being developed and tested. This has been a less controversial issue, probably because switching to automated public transport modes would not imply such a profound change. Therefore, these advancements have not usually generated such an intense debate on whether they should be promoted. Finally, it is even expected that, in the long-term, we will not only see robocars but also flying robocars. Many companies, including Boeing and Airbus, are working on developing flying cars that could potentially ease traffic congestion in cities⁵⁷.

2.4.3-Cohabiting with the old paradigm: car cultures and the “SUV hype”

While many actors are working on the implementation of a radically new model, there are citizens who remain strongly attached to the old paradigm. All over the world, we can find clear symptoms of this duality. We seem to be living in a period in which both paradigms are cohabiting. This strong attachment to the old paradigm could even put into question the experts’ predictions on a global shift towards different societies. Indeed, it is reinforced by new trends such as the so-called “SUV hype”, which offers drivers an extra sense of privacy, as explained by Mitchell:

In our S.U.V.’s and with our S.U.V. citizenship, that kind of connectedness can always be banished beyond the shell of the Ford Explorer or the eight-foot bubble we now carry with us when we climb down out of the driver’s seat and are forced to walk. We are now, truly, the liberal, autonomous subject. We own ourselves and no one can intrude upon us without our permission. (Mitchell, 2005: 97)

Even though experts have predicted “*the end of car culture*” (headline) and Mimi Sheller was reported to have said that “*different things are converging which suggest that we are witnessing a long-term cultural shift*”, private cars remain central in many cultures⁵⁸. Owning cars and driving have long been associated with the pleasure of driving, the freedom of going anywhere at any time, suburban lifestyles, etc. It will take time to change people’s mindsets and to achieve that a majority of them willingly embrace a new model that is not based on car ownership and solo car driving (if this is to happen).

⁵⁶ Initiatives cited in: “VW Navarra wants to make the production of combustion-engine and electric cars compatible” (Diario de Noticias, 4/10/2019); “The UPNA together with three Navarra companies work in a new electric, autonomous and connected micro-bus” (Public University of Navarra, 24/9/2018); “The Congress backs the autonomous car” (El Mundo, 10/10/2017).

⁵⁷ In 2016, Airbus launched the “Vahana” Project, which aimed to create a network of electric and automated flying vehicles for urban environments. By the beginning of 2018, they had already tested a flying drone, which was labelled as a self-piloted “flying car”. A year later, Boeing (the other giant of the aviation sector) announced that they had also been successful at testing their autonomous prototype. Dubai, which claimed that they had the objective of becoming the “smartest” city in the world, tested a drone taxi service in 2017. Based on: “Airbus’ self-piloted ‘flying car’ just passed its first flight test” (CNBC, 2/2/2018); “Boeing autonomous Passenger Air Vehicles completes first flight” (Boeing, 23/1/2019); “Dubai tests drone taxi service” (BBC, 26/9/2017).

⁵⁸ Cited from: (The New York Times, 30/6/2013).

Private automobiles have not only become cultural synonyms of freedom but also status symbols. The middle-classes have found an easy way of showing their position in the society. For example, this is clearly the case of the new rising middle-classes of emerging economies such as most of the Southeast Asian markets⁵⁹. While Europe may be stagnating, in countries such as China or India the car is booming, as newly affluent middle-classes conceive cars as a symbol of material success⁶⁰. The media have explored this cultural phenomenon and have shown how the brand strategy tactics of those carmakers that produce top-end cars push young buyers into entry-level status-symbol automobiles with the intention of starting some kind of life-cycle process⁶¹.

Celebrities can be taken as an example of the cultural links between automobiles, status and wealth. The public opinion usually expects them to drive expensive luxury cars. When this is not case, the media usually react with surprise⁶². Despite this, in 2011, a report on the case of the United States and Canada cited in Forbes concluded that, although luxury models led the list of the ten most popular cars for those citizens earning over 250,000 dollars, 61% of these affluent people were not buying luxury brands, meaning that *“maybe the rich aren't that different after all”*⁶³.

An additional phenomenon could be emerging, as “green” cars are being reported to be used as a way of showing a high status. Buying a “zero-emission” car or a hybrid car may not only be motivated by environmental concerns but also by other factors such as the driving experience (smoother, less noisy, etc.) or status-related concerns⁶⁴.

However, as seen before, Sport Utility Vehicles have emerged as a new cultural synonym of freedom and have been associated with going anywhere at any time, and probably living in the suburbs, giving shape to a new model of citizenship. SUVs have usually been marketed as safer than conventional cars, fashionable and a symbol of status (in the case of expensive

⁵⁹ Based on:

“Rising middle class will drive global automotive demand in the coming two years” (Nielsen, 16/4/2014).

⁶⁰ Based on: “Car technology driving more sustainable transport system” (BBC, 13/5/2014).

⁶¹ Cited from: “How buyers are driven toward entry-level status-symbol cars” (The Globe and Mail, 3/3/2015)

⁶² If a rich and well-known football star buys a two-million-euro-worth Bugatti, the media react with no surprise, as if it was a normal thing to do. However, when celebrities show no interest in expensive cars, they react with surprise. For example, F.C. Barcelona football player Clément Lenglet caused surprise when he was reported to have claimed that he had no interest at all in buying a Ferrari and to have argued that, at the end, it was just another car. His teammate Marc-André Ter Stegen has attracted the attention of the media because he moves around in Barcelona as if he was a regular citizen. The media posted pictures of him in the metro and going shopping using an e-scooter, as he chose to live in the city core instead of in a suburban area (as many celebrities do to be more isolated). But not only sportsmen have caught the attention of the media. In a visit to Seoul, Pope Francis chose a local compact car. The media reacted with surprise, as South Koreans were said to be “status conscious”. Based on: “Cristiano reappears in the social media showing off with his new luxury car” (As, 21/2/2017); “Lenglet: ‘Buying a Ferrari? I don’t see the point’” (Sport, 21/2/2017); “Ter Stegen makes his way around Barcelona on metro” (Marca, 10/11/2018); “In status-conscious South Korea, Pope Francis turns heads with compact local car” (CTV News, 14/8/2014).

⁶³ Cited from: “What the rich people really drive” (Forbes, 30/12/2011).

⁶⁴ Back in 2013, when hybrid cars such as the Toyota Prius were becoming increasingly popular, a study led by Baylor University found through conducting a survey that for many citizens *“less visible green products are not as desirable as they cannot be shown off”*. Cited from:

“How going green became a status symbol: Hybrid cars are more popular than eco-friendly detergents because they are ‘more visible’ to other people” (Mail Online, 11/10/2013).

models). From the low-cost Romanian brand Dacia to Ferrari, nearly all the carmakers seek to make business out of this hype. In their combination with other trends, fully-electric and hybrid SUV models seem to be the future of SUVs. For example, in 2019, the all-electric SUV Jaguar I-Pace was voted “car of the year” in Europe and it is probably not a mere coincidence that, in Spain, another electric SUV (the Hyundai Kona, an SUV model that had petrol, diesel and electric versions) was the winner⁶⁵.

By the beginning of 2017, SUVs were already estimated to account for approximately 25% of the European car market and 30% of the Spanish market. By the beginning of 2019, they represented over 45% of the Spanish car market⁶⁶. In fact, in 2006, the media reported that many Spanish families were starting to fall into debt because of buying expensive SUVs that expressed style and social status⁶⁷.

But, do we really need so many big cars? Is it harmful for our societies? Apart from less tangible questions such as the fact that many drivers associate SUVs with being “cocooned” or isolated from the rest of the society, there are other types of concerns, such as safety and environmental issues. SUVs tend to be less fuel-efficient and to pollute more than average cars, even though they are becoming increasingly efficient. Furthermore, although they may be safer for those inside them, they are more likely to damage or even kill other citizens in frontal crashes, as well as harming or killing pedestrians⁶⁸.

2.4.4- Challenging car ownership: shared mobility and Mobility as a Service (MaaS)

Even though the old paradigm is far from being totally left behind, it appears that things could profoundly change in the long term. The concepts of shared mobility and Mobility as a Service (MaaS) are becoming increasingly popular, especially in dense urban settings. Car ownership is not perceived as a synonym of freedom but as a burden by many of those who embrace these new concepts. Pangbourne et al. point out that

whilst there are still multiple definitions of what could be considered MaaS, a central assumption that is gaining ground is that transport services can be converted into service packages, akin to those offered in the communications and media service sectors. The promised result is provision of on-demand door-to-door mobility being offered by platforms that broker the transaction between users and providers of the mobility services, and MaaS promoters commonly bracket this objective with visions of ‘individual freedom’ and ‘collective efficiency’. (Pangbourne et al., 2020: 36)

The authors conclude that *“these could be described as disruptive technologies that could be game-changers for future patterns of urban mobility”*, although they also claim that *“it is not yet clear whether MaaS or any combination of the ‘Smart Mobility’ innovations will be*

⁶⁵ Based on: “Ferrari’s 2022 rapid luxury SUV detailed by technical boss” (Autocar, 16/9/2019);

“Jaguar I-Pace is European car of the year” (Jaguar, 4/3/2019);

“The Hyundai Kona wins the award Car of the year ABC 2019” (ABC, 14/12/2018).

⁶⁶ Data from: “Is it worth it that your SUV is equipped with all-wheel-drive?” (El País, 12/3/2017);

“The top 10 best-selling SUVs of the year, at the best prices” (El País, 12/5/2019).

⁶⁷ Based on: Printed version of Diario de Navarra (5/3/2006. Department’s archive on mobility).

⁶⁸ Cited from: “Better car design could prevent pedestrian deaths, says NTSB report” (Curbed, 27/9/2018).

sufficient to transition away from a technological regime dominated by the private car with an internal combustion engine” (Pangbourne et al., 2020: 36). In this context, carmakers and other types of companies are heading in disruptive directions to take the greatest advantage of the possibilities brought by shared mobility and mobility services.

An illustrative sample of this aspect of the mobility transition is the reconversion of the car industry into a mix between being carmakers and mobility services providers. Not all of them but many carmakers are investing big amounts of money in developing their mobility services branches and creating partnerships and joint ventures for anticipating the future of mobility. For example, Daimler’s CEO, Dieter Zetsche, was reported to have claimed that car brands are being totally reshaped, as *“the car industry is being transformed from combustion engines to the electric vehicle and from car ownership to pay-per-use and shared cars”*⁶⁹.

Ford could be taken as an iconic example of this ongoing process. A century ago, Ford’s Model T was the first car to be successfully produced for the masses. According to Ford, the company *“built the middle class”*⁷⁰. Now, Ford aims to become not only a car producer but also a mobility services provider, as the mobility transition is gaining ground. It appears that Ford’s vision of what freedom of movement is is not anymore the idea of having as many cars and motorways as possible⁷¹. Seat, the Spanish carmaker pertaining to the Volkswagen Group, is another example: Seat has been tasked with developing the group’s *“urban micro-mobility”*⁷².

In this context, car producers together with tech-giants and other types of companies are creating alliances for developing mobility alternatives: autonomous vehicles, shared cars, e-scooters, etc. Many examples of these partnerships could be found over the last few years (Toyota and Uber, the carsharing branches of BMW and Daimler, Jaguar and Waymo, etc.).

In the new mobility ecosystem, all types of businesses that are not linked to the car sector have also flourished without the need of establishing an alliance with a carmaker. This is the case of a wide range of mobility services companies and companies that are developing new vehicles such as e-bikes or Personal Light Electric Vehicles (PLEVs). The French Blablacar is a good example of a company that has seen an opportunity for making business out of these transformations: Their business is based on *“matching”* drivers with potential passengers or *“carpoolers”* for a commission. It is working for long distances, while short daily-life journeys seem more difficult to be managed in this way. Companies such as BlaBlaCar have created carpooling versions of their services for daily routine activities such as commuting, but, so far, these are being less successful. Public entities such as universities or councils have also created their own versions.

⁶⁹ Cited from: “Dieter Zetsche: “We will fight with BMW for potential customers” (El Mundo, 27/2/2019).

⁷⁰ Cited from ford.com/mobility (Ford Mobility. Last retrieved: 31/1/2020).

⁷¹ In 2011, Bill Ford gave a presentation in which he claimed that Ford was starting to address mobility in a disruptive way. The great-grandson of company founder Henry Ford explained in a Ted Talk that the company would work on reducing car traffic and emissions and would help in creating *“a global network of interconnected solutions”*. Cited from: “A future beyond traffic gridlock” (TED, March 2011).

⁷² Based on: “Seat present their first electric motorbike” (El País, 19/11/2019).

Probably one of the most well-known companies linked to the mobility transition is Uber. Uber is a giant company that is evolving towards “on-demand everything”. From ride-hailing to shared e-scooters and bikes, Uber appears to be open to exploit any “business niche”. As mentioned before, automated cars and other new trends have also attracted their interest. At the Spanish national level, after Uber left Barcelona, it is considered that Madrid probably is the main “testing laboratory” (not only for Uber but also for other companies) for all these new mobility services⁷³.

However, Uber is mostly known for being a ride-hailing service. Its irruption has brought debate and controversy in those places where the traditional taxi sector has seen Uber as a threat. Not only factory workers and trade unions are afraid of the reconversion of the car industry and the consequences of implementing a new mobility. Even though (as explained in chapter 7 on the case of Toronto, where Uber is well established) certain outcomes of the rise of Uber may be interpreted as positive (such as their initiatives for boosting ridesharing), it is not clear whether its growth is being beneficial overall (as, for example, in some contexts Uber might be discouraging the use of public transport).

The implementation of ride-hailing services has probably been the main point of friction. The taxi sector has campaigned against these services, and the conflict has not only brought social debate but also some episodes of violence. News on demonstrations against them and on these companies’ cars being burned down or damaged appeared in the international media. Spain was no exception to this type of clashes. There are certain laws at the national level that the regional governments and the municipal councils can supplement with further regulations. For example, after Catalonia imposed tough conditions on them for prioritising their taxi sector (such as a minimum pre-order time of fifteen minutes), Uber and other ride-hailing companies decided to leave the city of Barcelona by the beginning of 2019⁷⁴.

Figure 9. The taxi sector has led many protests against ride-hailing services such as Uber



Source: *elpais.com* (Javier Soriano, AFP)

⁷³ Based on: “Uber pivots to on-demand everything” (CityLab, 11/4/2018); “Uber and Seat `ride´ on e-scooters in Madrid” (El Mundo, 10/4/2019).

⁷⁴ Based on: “The battle between ride-hailing companies and the taxi sector is global: this is how peace has been preserved in other parts of the world” (El País, 29/1/2019); “Uber and Cabify to suspend operations in Barcelona” (The Guardian, 31/1/2019).

Finally, the emerging concept of Mobility as a Service (MaaS) must be mentioned. Many mobility companies are increasingly conceiving mobility (not only but mainly urban mobility) as a complex multimodal network of services. Through pay-on-the-go options and monthly subscriptions, there already are places where citizens can put the old paradigm to the test and replace it for a more “flexible” mobility or, at least, leave their cars parked at home with a greater frequency. The concept of MaaS is analysed in more detail in chapter 6 on the case of Helsinki, a pioneering city in which the Finnish company MaaS Global has tested a mobile app called Whim. MaaS could converge with other innovations such as electric or automated vehicles, giving shape to something that could be called “Autono-MaaS” (name used by the Uber-Toyota joint venture)⁷⁵.

It seems likely that mobility will evolve towards what some have labelled as Amazon-like or Netflix-like services. In the future, public authorities and private companies will provide citizens with alternatives to private automobiles that will probably be integrated into bigger multimodal platforms. Instead of associating freedom with driving private cars anywhere at any time, many experts predict that “urbanites” (and also, to a lesser extent, rural residents) will increasingly embrace all these trends that will converge in a new mobility paradigm.

2.4.5-A new mobility hierarchy, health-related issues and inequality

In a context in which private automobiles and drivers have long been prioritised, societies and (above all) cities must establish a new hierarchical order where healthier and “greener” alternatives are prioritised over private cars (and, especially, over the most polluting cars). According to Sheller and Urry, *“urban studies clings to the humanist figure of the pedestrian and cars are often seen as the enemy of urbanism, of civility, even of citizenship — an intrusion from the suburban borderlands”* (2000: 740). Walking is the most primitive way of moving around, but many cities have lost this essence to the hegemonic role of the private car. However, we seem to be witnessing a progressive reconversion of the modern city into a healthier, “greener” and walking-friendly setting, mainly in its core⁷⁶. Walkability has been said to have a positive impact on local economies and other factors such as security⁷⁷. Cities all over the globe are trying to become more walkable.

In this context, the president of the International Federation of Pedestrians, Ole Thorson, was reported to have said that *“the use of the bike in Spain is still anecdotal, but the Spanish walk a lot more than the Northern Europeans. We could say that the Spanish walk as much as the Northern Europeans walk and cycle (combined)”*⁷⁸. Many cities are working to offer more bike lanes and walking-friendly areas. New trends, such as electric bikes, are linked to

⁷⁵ Based on: “Toyota invests 482 million in Uber for developing the autonomous taxi” (El Mundo, 28/8/2018).

⁷⁶ Jahn Gehl, well-known Danish urbanist, was reported to have said that *“Homo Sapiens walks. A person who does not walk is incomplete. The WHO recommends that cities are walkable. The lack of sports practice is one of the world’s greatest health issues. Walking is sustainable in every sense. The car will be taken away from the city”*. Cited from: “Pedestrianising the city centre or not” (El País, 12/12/2016).

⁷⁷ Based on: “Why is it important that cities are ‘walkable’” (La Vanguardia, 5/8/2016);

“Cities for pedestrians” (El País, 15/1/2015).

⁷⁸ Cited from: “Copenhagen: before and after the cycling lane” (Vanguardia MX, 8/11/2011).

the re-emergence of the bicycle as a solution for urban settings. However, there is debate on certain questions: Are bike lanes the best and the safest option for urban cyclists? Should bikes mix with car traffic?⁷⁹.

Prioritising public transport over the private car is seen as another important feature in modern cities. “Smart city-related” innovations such as bus-priority traffic-lights or BRT (Bus Rapid Transit) systems with bus-priority lanes are examples of the implementation of a new hierarchical order in which urban roads are no longer primarily set for private automobiles. In contrast with the past, Adam Greenfield (writer and urbanist) notes that nowadays “*many urbanists think the lowly bus – emblem of all that is slow, stigmatised and wasteful – is the key to city transit*”⁸⁰.

Figure 10. The paintings of a Greenpeace protest can be taken as a representation of the new hierarchy



Source: elpais.com (Pedro Armestre, EFE)

It is relevant to mention that experts believe that other alternatives should be prioritised over private automobiles: Not only e-scooters, e-bikes and other innovations, but also more conventional alternatives such as motorbikes. It is also relevant to underline that the main goal is that people switch from private cars to other alternatives. When this is not the case, the outcomes of the emergence of new alternatives might not be so desirable. In Barcelona, a RACC study found that only 10% of the e-scooter riders were car or motorbike drivers, so e-scooters were generally replacing cycling, walking and public transport⁸¹.

“Greening” mobility is part of the solution to global warming, even though CO2 emissions also come from other sources of pollution. For example, in an effort to progressively become carbon-neutral, the EU countries agreed in 2018 on a 35% cut on car-related emissions by 2030⁸². Citizens are being encouraged to actively engage in initiatives that aim that we make

⁷⁹ Find here a couple of examples: “Bike lanes are safer” (El País, 17/10/2017);

“Cyclists, pedestrians and drivers on bike lanes: For or against?” (El País, 9/3/2017).

⁸⁰ Cited from: “Buses are the future of urban transport. No, really” (The Guardian, 27/8/2014).

⁸¹ Based on: “E-scooters are worsening sustainable mobility” (El País, 31/7/2019).

⁸² Based on:

“EU agrees 35 percent cut in car emissions by 2030 in wake of UN report” (France24, 10/10/2018).

some sacrifices for the common good. Certain initiatives put their focus on changing habits. This is the case, for example, of the “30 days of biking” challenge (in April, every year) based on the assumption that, after a month doing something differently, many people will switch to a newly-acquired habit⁸³.

In parallel, the media have also highlighted the impact of daily mobility on health. In fact, a “greener” and more active mobility would not only mean that citizens were healthier and lived longer but also that their societies saved money⁸⁴. At the beginning of their massive adoption, automobiles were not generally associated with health-related issues. Indeed, not only petrol but also diesel cars were backed by many public authorities. Certain politicians have later admitted these false steps⁸⁵.

Many more findings on the connections between mobility and health issues have been reported by the media, such as correlations between sedentary car-oriented lifestyles and higher rates of diabetes, obesity and other associated diseases⁸⁶. For example, an ISGlobal research study cited in El Mundo concluded that cycling would be the best option in terms of perceived wellbeing and sociability, while walking would stand in the second position⁸⁷.

All these issues also lead to the question of social justice: Can a “smarter” and “greener” mobility help to reduce inequality? Inequality is present at all levels, although certain links are less visible. Poverty seems to correlate with disadvantage in terms of having access to both car ownership and alternative mobility. In addition to this, the poor might be expelled to places where other people prefer not to live. For example, the efforts made for promoting walkable and active city cores can sometimes lead to processes of gentrification, as housing rises in price⁸⁸. Therefore, not always everyone benefits equally from the investments made in implementing the mobility transition.

Another example is traffic-related pollution, which has been found to have a correlation with poverty: The poorer the country (in terms of per capita GDP), the more its citizens tend to be exposed to small particles⁸⁹. In many places, the way in which citizens move around

⁸³ More information on this initiative at 30daysofbiking.com (Last retrieved: 31/1/2020).

⁸⁴ The UK government created a tool for councils to estimate the costs of air pollution. In light of their report and cost tool, Public Health England concluded that *“the costs are for diseases where there is a strong association with air pollution: coronary heart disease; stroke; lung cancer; and child asthma”* and that *“a relatively small reduction in the population’s exposure to PM2.5 and NO2 could lead to a significant reduction in costs”*. Cited from: “New tool calculates NHS and social care costs of air pollution” (gov.uk, 22/5/2018).

A Bellona Europa report cited in El País found that the annual cost of a combustion-engine car (health-related expenses) was 2,371 euros. Based on: “Why the electric car is being a failure in Spain” (El País, 15/8/2019).

⁸⁵ For example, David King (UK government’s special representative for climate change and chief scientific adviser under presidents Blair and Brown) was reported to have confessed on the British government backing “diesel cars: it turns out we were wrong” (headline, BBC, 4/4/2017).

⁸⁶ Based on: “Seven ways to encourage sustainable mobility in your workplace” (TheCityFix, 7/10/2014).

⁸⁷ Based on: “In the city, it is preferable to cycle than to walk” (El Mundo, 13/8/2018).

⁸⁸ In an interview, the Spanish expert on urban health Manuel Franco offered the example of Madrid Río. He regretted that affluent citizens were benefiting the most from the redesign of this area: A less noisy and less polluted area that encouraged citizens to be active and practice sports had led to a rise in housing prices. He asked the readers on who was benefitting from change. Based on: “It is stupid to say that Madrid Central is a left-wing measure. Does everyone in Amsterdam support parties like Podemos?” (El País, 9/8/2019).

⁸⁹ Based on: “Latin American pollution and its deaths” (El País, 25/5/2019).

says a lot about their lives. The UN expert on urbanism Elkin Velásquez stated in an interview that the city of the future must be compact, have an efficient public transport network and encourage that citizens from different backgrounds cohabit without being segregated, and concluded that *“a sustainable city reduces poverty and inequality”* (headline)⁹⁰. But this is not happening yet, not at the global scale at least, as most cities are becoming increasingly unequal. Furthermore, many cities are growing and becoming less dense, in such a way that providing their residents with efficient public services is becoming harder⁹¹.

Numerous other inter-related issues such as gender must also be considered when we analyse inequality. For example, in 2018, the “Mancomunidad de la Comarca de Pamplona” estimated that 77% of the public transport users in the Pamplona Metropolitan Area were women⁹². Certain modes such as the public bus are sometimes stigmatised in North America and in many other parts of the world. Public transport users can either be “choice riders” or “captive commuters” who cannot afford private automobiles (and/or cannot drive)⁹³.

Not only those initiatives that encourage people to use their cars less can lead to negative inequality-related outcomes. There has also been debate on how the financial aid for buying “green” cars should be managed. For example, Germany has set a maximum price of 60,000 euros, so that expensive “green” premium cars are excluded⁹⁴. Overall, we could conclude that the mobility transition could help in reducing inequality, if public authorities took this factor into serious consideration and they managed it with care.

2.5-CONCLUSIONS

The mobility transition, its appropriation and social implications have emerged as a topic of central interest, particularly in modern advanced societies. This rise has been reflected in different types of sources, from academic research to grey literature and the media. Public opinion, perceptions and attitudes and values can be shaped by the media. The information on this topic is overwhelming, so its complexity has been analysed here through examining three main spheres that are closely connected with this phenomenon: politics, lifestyles and technological innovations.

At the political level, we have seen that sustainable mobility management can potentially lead to both agreements and disagreements among different political entities. Furthermore, controversy and political tensions may arise. Political confrontation is relatively frequent, as managing inter-related issues such as the bans on polluting cars, the effects of the transition on the car sector or the impact of the measures taken on social inequality can lead to intense debate. I have illustrated these heavy political tensions with a couple of local examples from the Spanish context: the case of the LEZ (Low Emission Zone) of Madrid Central and the case

⁹⁰ (El País, 1/4/2014).

⁹¹ Based on: “75% of the cities are more unequal than 20 years ago” (El País, 3/10/2016).

⁹² Data from: “The use of public transport increases by 700,000 journeys in the first four months of the year” (MCP, 29/5/2018).

⁹³ Based on: “Race, class, and the stigma of riding the bus in America” (CityLab, 10/7/2012).

⁹⁴ Based on: “German government expands subsidies for electric cars” (Deutsche Welle, 5/11/2019).

of the redesign of the city core of Pamplona-Iruña. In both cases, we see how the debate is exacerbated by the media, who tend to position themselves for or against the attempts of bringing change. While Madrid Central is probably the most iconic symbol of the transition towards a new mobility at the Spanish level, the “Amabilización” Plan is also a clear example of how mobility issues are in many occasions “politicised” and lead to local political battles.

In the same context, marketing has also become a polarised sphere. The traditional way of life linked with car ownership and driving is still very present in marketing campaigns that target potential buyers. We have seen how, in Spain, several carmakers have tried to attract citizens through making emphasis on rational and mainly irrational elements such as driving for the pleasure experienced. But we have also seen that certain car brands such as Toyota are already “selling” a new mobility model in which ownership and driving everywhere are not encouraged anymore. Numerous carmakers are no longer exclusively car producers and are being reconverted into mobility services providers. However, in parallel, certain trends such as the so-called “SUV hype” are reinforcing the traditional model instead. Therefore, we can conclude that we are witnessing the cohabitation between two colliding waves that in many cases imply antagonistic lifestyles.

Furthermore, in this changing ecosystem, many mobility companies are flourishing with no need for having any ties with the traditional car sector that dominated (auto)mobility in the past century. Modern advanced societies are putting to the test the twentieth-century idealisation of car ownership, suburban life and driving as synonyms of freedom. Thus, over the last few years, many inter-related issues that can directly affect our daily lives have been intensely debated.

Technological progress (“smart cities”, fully-electric vehicles, autonomous mobility, etc.) is also expected to reshape our lifestyles and societies in a broad sense in an unprecedented way. Together with the appropriation of new concepts such as MaaS (Mobility as a Service), these new trends could perhaps challenge the hegemonic role of car ownership and driving. In parallel, many cities are working on establishing a new hierarchical order in which the car is no longer prioritised. Walking, the most primitive way of moving around, is expected to be enhanced. Cycling and public transport would be the other two cornerstones of the new fabric of the city.

Potentially, these changes could lead to reducing both the environmental impact of daily mobility and the social inequalities linked to it. However, for this to happen, mobility issues need to be managed in the right direction. Phenomena such as gentrification can lead to the benefits of the implementation of change being unequally distributed. As argued by Sheller (2011), the mobility transition should ideally be interpreted as an opportunity to implement not only a “greener” mobility but also a more socially just paradigm.

3 - RESEARCH TECHNIQUES AND METHODOLOGY

3.1-INTRODUCTION

The methodology of this thesis combines some of the most frequently used techniques of social science research. The goal was to address the complexity of the research problem through multiple approaches and case studies. This chapter summarises the methodological aspects of the thesis and is supplemented by a methodological annex where further details can be found.

Scholars have sometimes used the notion of “mixed methods research” (Creswell, 2014) for describing those cases where the researcher combines both qualitative and quantitative techniques. Researchers might seek qualitative and quantitative data in order to achieve the best understanding of a research problem. It may also be called “data triangulation” (Denzin, 1989; Perelló, 2009), meaning that using several approaches to explore a research problem could help in reaching more insightful conclusions. In this case, the research problem is the appropriation and social implications of the mobility transition and, through the collection of diverse types of data, a better understanding of how this phenomenon is being managed in different contexts is sought. To a certain extent, this research work, which takes inequality into consideration, can also be considered as a transformative mixed methods research (see Mertens, 2010).

The quantitative research work has mainly consisted of the analysis of data and statistics provided by local authorities and other entities, whereas the qualitative work has been more varied. In-depth interviews, surveys, discussion groups and other research techniques have been used with the intention of providing the thesis with a variety of data and insights that, when combined, assist in drawing conclusions on how the transition towards a sustainable mobility model is being socially appropriated and how it should be managed.

In-depth interviews rarely constitute the only source of data, and they are most generally used with the intention of seeking a more profound insight and a more precise information than surveys can provide (Johnson, 2002). Surveys on mobility issues have also been carried out. Most of them were computer-based online surveys. In the digital age, using the Internet for survey purposes might be cheaper than conventional surveys and can also lead to higher response rates, mainly among young people such as students (Van Selm & Jankowski, 2006).

Other similar methods have been used as well, even though they cannot strictly be called surveys. As I will later explain in more detail, certain participants were asked to rate a set of images that reflected different ways of moving around. These parts of the fieldwork could perhaps be labelled as choice or preference experiments, even though they do not formally follow their specific structure. I have called them “image-based rating exercises” instead. In any case, however labelled, they have been useful for my comparative analysis.

Several discussion groups were also conducted for gathering additional qualitative data. The term focus group does not exactly define what I carried out. Thus, I have opted for the

term discussion group instead, even though I was initially inspired by this social science research technique. Discussion group may be a better definition for reflecting that certain specific features of focus groups, which are meant to be deeper and more expansive than surveys, as argued by Ibañez (1979), were not as formal as stipulated for a focus group: For example, the way in which the participants were contacted and compensated.

A focus group is intended to provide the researcher with data for analysing ideological discourses and symbolic representations of a phenomenon (Alonso, 1998). As Rabiee notes, *“the optimum number of participants for a focus group may vary (...) The number generally suggested as being manageable is between six and ten participants; large enough to gain a variety of perspectives and small enough not to become disorderly or fragmented”* (2004: 656). This ideal size was achieved in the three cases in which discussion groups were used, as well as a cohesiveness or “we-ness” (Owen, 1985) that is key for promoting cooperation and participation in small discussion groups. Focus group participants are usually contacted via telephone and are generally paid (Juan & Roussos, 2010). I used more informal ways of contacting potential participants and offered them small gifts instead.

All in all, the aggregation of qualitative and quantitative data has been chosen as the best option possible for trying to achieve a deeper understanding of the research topic, as using any method alone would probably not be enough. The techniques and approaches used, as well as the chapters in which they are included, are described in more detail in the following sections.

3.2-ANALYSIS OF DOCUMENT CORPUS AND STATISTICAL DATA

The first and second chapters are aimed at providing with a framework with which to illustrate the complexity of the phenomenon studied and the inter-relatedness of numerous issues connected to the mobility transition. To do this, academic literature, grey literature (reports) and other types of sources have been explored in order to understand the way in which the mobility transition and its appropriation have been linked to numerous societal transformations in modern advanced societies.

The structure of the second chapter is inspired by previous academic work on this multi-level socio-technical transition and analyses the way in which the media have covered the mobility transition and its impact on modern societies. Three main levels have been defined. Although I have made a selection of the most recurring topics and the implications that have been attributed to them, hundreds of pieces of news that reflected the connection between the political sphere and the social and economic implications of the transition had been reviewed.

Most of the information has been accessed online. In the case of the region of Navarra, I have had access to a selection of printed-version pieces of news on mobility issues from the year 2002 onwards. They were part of a department’s collection/archive gathered with the intention of tracking any progress made in the sphere of mobility at the regional scale.

The research work is also based on the re-elaboration and the analysis of secondary data provided by official entities, such as the “Dirección General de Tráfico”/DGT (the national transport authority), the “Instituto Nacional de Estadística”/INE (Spanish Statistics Institute), the “Mancomunidad de la Comarca de Pamplona”/MCP (metropolitan transport authority), Eurostat, etc. Data tables and comments on the research work conducted with these data, as well as the conclusions drawn, have been included throughout the thesis chapters. Data on socio-economic and mobility-related variables have been analysed with the intention of exploring their links.

3.3-IN-DEPTH INTERVIEWS

3.3.1-In-depth interviews with key stakeholders

The case studies have been partly analysed through semi-structured in-depth interviews with key stakeholders in play. The expert interviewees were expected to provide with a better understanding of the research problem, as well as knowledgeable insights into the matters that were being discussed. It would serve as a first step before using other types of research methods, such as surveys, discussion groups and the analysis of statistical data. By the end of the research, dozens of in-depth interviews with relevant stakeholders (such as mayors, councillors, urban planners, scholars, experts, managers from the mobility business sector, etc.) had been gathered.

These in-depth interviews were semi-structured, meaning that I did not strictly follow a fixed script, but posed relatively open-ended questions instead. These questions allowed for a discussion that would cover a set of main topics, following an open script that I adapted to each stakeholder’s specific profile. As these scripts can be inferred from the discussion, I have not included them in the methodological annex.

The participants came from both the public and the private sectors. Most of them were contacted by email and encouraged to participate. Their profiles (positions and entities) are shown in table 4. It must be taken into account that their political positions correspond to the political term 2015-2019. One participant asked for a greater anonymity, so their entity is not provided.

The interviews mostly consisted of a talk on the stakeholder’s views on the general issue, and special attention was paid to their fields of expertise. The participants were offered small gifts and could set the place and timetable that suited them best. In specific cases, I carried out joint interviews in which more than one interviewee (two or three) participated at a time. One expert was interviewed twice. Apart from these face-to-face interviews, if a person was not available for a meeting, they were sent a script and they answered by email.

The interviews were carried out in English, Spanish or French, recorded (audio) and later transcribed. English language has always been used in the selection of quotes that has been included in the thesis chapters.

Table 4. Participant stakeholders' profiles

STAKEHOLDER'S POSITION	ENTITY	DATE
CASE STUDY: MUNICH (GERMANY)		
Office manager*	Sono Motors	28/8/2017
CIO (Chief Information Officer)*	CarpoolWorld	28/8/2017
PhD researcher on mobility 1 (Non-commercial sharing practices in mobilities)	TUM university's Mobil.Lab	11/9/2017
PhD researcher on mobility 2 (The reconversion of the German car industry)	TUM university's Mobil.Lab	11/9/2017
EU-funded project leader	SWM (Stadtwerke München)	12/9/2017
Business strategy manager*	BMW-Alphabet	13/9/2017
CASE STUDY: PAU (FRANCE)		
Sales manager	Pragma Industries	24/11/2017
Manager in charge of BRT project	Ville de Pau/City of Pau	30/11/2017
BRT project mediator	Ville de Pau/City of Pau	30/11/2017
Environmental engineer and researcher	Apesa	1/12/2017
President	D. U. T. (Defense of Transport Users)	4/12/2017
Project manager*	Navya	29/12/2017
CASE STUDY: HELSINKI (FINLAND)		
Ministerial advisor	Finnish Ministry of Transport	2/10/2018
Senior specialist in markets unit	Finnish Ministry of Transport	2/10/2018
ITS chief advisor	City of Helsinki/Forum Virium	3/10/2018
Founder and CEO	MaaS Global	8/10/2018
Scholar/researcher on sustainable mobility	-	18/10/2018
CEO	Kyyti	23/10/2018
Scholar/researcher on sustainability	Metropolia University	9/11/2018
Senior consultant*	Sitowise	12/11/2018
Scholar/researcher on sociology of traffic	Aalto University	13/12/2018
CASE STUDY: TORONTO (CANADA)		
Scholar/researcher on mobility; policy and economics	University of Toronto	9/4/2019
Scholar/researcher on mobility; emissions and air quality	University of Toronto	17/4/2019
Scholar/researcher on mobility; active modes	University of Toronto	8/5/2019
Scholar/researcher on mobility; regulation and policy	University of Toronto	6/6/2019
Scholar/researcher on mobility; politics of automobility	University of Toronto	19/6/2019
Executive Director	University of Toronto Transportation Research Institute (UTTRI)	13/5/2019
Marketing Director	Pantonium	24/4/2019
Advisor on Mobility Management	Metrolinx	26/4/2019
Service Planning Director	Metrolinx	21/5/2019
Urban planning consultant	(Independent)	21/6/2019
Manager*	Bike Share Toronto	22/7/2019
CASE STUDIES: NAVARRA (SPAIN)		
Scholar/researcher on mobility; ITS and electrical engineering	Public University of Navarra (UPNA)	14/11/2016
Scholar/researcher on mobility; statistics and transport	Public University of Navarra (UPNA)	3/12/2016
Coordinator of the participatory process of the SUMP	Public University of Navarra (UPNA)	29/5/2018
Head of transport planning and modernisation	Government of Navarra	25/11/2016
Mobility councillor (*dismissed before end of term)	City council of Pamplona-Iruña	15/12/2016
Citizen safety councillor (and San Jorge area councillor)	City council of Pamplona-Iruña	26/5/2017
Citizen safety area director	City council of Pamplona-Iruña	28/7/2017
Councillor (and Ensanche area councillor)	City council of Pamplona-Iruña	10/10/2017
Councillor (and Iturrama area councillor)	City council of Pamplona-Iruña	10/10/2017
Mayor*	City Council of Pamplona-Iruña	20/10/2017

STAKEHOLDER'S POSITION	ENTITY	DATE
Urban planning councillor	City council of Pamplona-Iruña	30/10/2017
Councillor/opposition	City council of Pamplona-Iruña	2/11/2017
Councillor/opposition; previous and newly-elected mayor	City council of Pamplona-Iruña	3/11/2017
Planning technician; taxi service*	MCP (Mancomunidad de la Comarca de Pamplona)	30/1/2017
Social research technician	MCP (Mancomunidad de la Comarca de Pamplona)	9/11/2017 7/3/2018
Urban transport area director	MCP (Mancomunidad de la Comarca de Pamplona)	7/3/2018
Urban transport planning technician	MCP (Mancomunidad de la Comarca de Pamplona)	7/3/2018
Pro-bike activist	Local association for sustainable mobility	9/10/2017
Manager	Old town traders' association	17/10/2017
Founder and president	Local female cycling club	15/12/2017
President	Association of car dealers and repair shops of Navarra	9/3/2018
Sales manager (Navarra)	Toyota	22/5/2018
Manager	Local e-bike and PLEV shop	17/8/2018
INNER SUBURBAN RING:		
Mayor	Huarte (Town council)	13/2/2018
Mayor	Villava (Town council)	15/2/2018
Town planner	Villava (Town council)	15/2/2018
Environmental issues technician	Valle de Aranguren (Town council)	8/3/2018
Coordinator of the local police	Valle de Aranguren (Town council)	8/3/2018
Public works and services councillor	Burlada (Town council)	12/3/2018
OUTER SUBURBAN RING:		
Mayor	Valle de Egüés (Town council)	15/2/2018
Environmental issues technician	Noáin (Town council)	16/2/2018
Town planner	Beriáin (Town council)	7/3/2018
Mayor	Ezcabarte (Town council)	13/3/2018

* Answered by email

3.3.2-In-depth interviews with Spanish citizens living abroad

During the four stays abroad, in Munich, Pau, Helsinki and Toronto, I carried out a set of semi-structured in-depth interviews with Spanish citizens who lived there with the intention of comparing how they had adapted their mobility habits to their new urban environments and how they valued certain mobility-related issues. They were asked to reflect on how the mobility transition was being managed both in Spain and in their foreign home cities. Several volunteers had lived in the Pamplona Metropolitan Area. It helped to establish a comparison with our local case studies (see the introduction to Part III). Two of the main topics that were covered were car dependency and the alternatives to the private car that they were offered.

For each case, a semi-structured script was elaborated (these scripts can be found in the methodological annex). The four scripts were similar, so that the participants' answers could be compared. However, there were some nuances, depending on each specific context (for example, certain cities had mobility services, such as carsharing and bikesharing schemes or MaaS platforms, whereas other cities did not). Each script had four sections: introductory

questions, main discussion, conclusions and profile questions. Most questions were open-ended, but some of them (such as the profile questions) were not.

The volunteers were contacted using informal social media networks (such as Facebook groups of Spanish citizens who live in these cities) and were offered a small gift. Their strong sense of community made it possible to encourage participation and find volunteers. All the participants were required to be adult Spanish citizens who had been living in the city for at least one month. Asking for this minimum duration of stay was intended to guarantee that they had adapted to their new environment and could talk about their new mobility habits.

Practically all the interviews were one-to-one interviews in person. One person answered by email and another person participated through online video conference. The volunteers' profiles that correspond to each case study are summarised below, and summary tables are provided (note that in the case of shared flats, household cars or bikes, etc. only refer to the participant, and note that the category "car" includes similar vehicles such as minivans).

- Munich (Germany):

Seven Spanish men and six Spanish women offered themselves as volunteers during my stay in Munich. The average profile obtained reflects the prototypical Spanish migrant who settles in a developed and wealthy German region like Bavaria. Their average age was 33, the youngest person being 25 years old and the oldest 48. All of them were skilled workers and university graduates, five of them being engineers. On average, they had lived in Munich for around two and a half years, and some of them came from cities such as Madrid (four), Barcelona (three), Málaga (two) and Pamplona-Iruña (two).

Table 5. Participant Spanish citizens' profiles (Munich)

GENDER	AGE	OCCUPANCY STATUS	HOUSEHOLD MEMBERS	HOUS. MOT. VEHICLES	HOUS. BIKES	TIME IN MUNICH
Male 1	29	Engineer	2 (couple)	1 motorbike	2 bikes	3 years
Male 2	29	Engineer	2 (couple)	None	2 bikes	2 years
Male 3*	35	Economist	2 (couple)	None	3 bikes	4 years
Male 4*	25	PhD researcher	2 (shared)	None	1 bike	3 years
Male 5	37	Architect	4 (couple w/ch.)	None	1 bike	4 years
Male 6	33	Engineer	3 (couple w/ch.)	1 car	3 bikes	3.5 years
Male 7**	48	Engineer	1	None	1 e-bike	2 years
Female 1	34	Commercial agent	2 (couple)	None	2 bikes	1 year
Female 2	32	Engineer	3 (couple w/ch.)	1 car	5 bikes	5 years
Female 3	32	Teacher	2 (shared)	None	1 bike	2 years
Female 4	32	Teacher	1	None	1 bike	1 year
Female 5	29	Tourist office worker	2 (shared)	None	1 bike	6 months
Female 6	29	Software developer (BMW)	2 (couple)	1 car	2 bikes	1.5 years

* Had lived in the Pamplona MA ** Answered by email

The majority of these participants lived in households consisting of two members (they were usually relatively young couples, or singles sharing flats) who had no motor vehicles in Munich (ten out of thirteen households had no cars, only three had a car, and one had a city motorbike). In addition to this, sustainable mobility patterns were also reflected in the fact

that these households had two bikes on average. One participant had an e-bike. Therefore, their profiles reflected that most of them had embraced a non-car-oriented lifestyle.

- Pau (France):

Seven Spanish women and four Spanish men who lived in Pau volunteered. Their average age was 37, the youngest person being 26 and the oldest 54. Most of them had university degrees and were skilled workers. On average, they had lived there for around three years, and they came from cities such as Bilbao (three), Madrid (three), Zaragoza (two), Valencia (two) and Pamplona-Iruña (one).

Table 6. Participant Spanish citizens' profiles (Pau)

GENDER	AGE	OCCUPANCY STATUS	HOUSEHOLD MEMBERS	HOUS. MOT. VEHICLES	HOUS. BIKES	TIME IN PAU
Female 1	34	Unemployed/scientist	4 (couple w/ch.)	2 cars	2 bikes	2 months
Female 2	53	Sociocultural animator	3 (two children)	1 car	None	8 years
Female 3	54	Doctor	2 (adult son)	2 cars	2 bikes	3 years
Female 4	42	School coordinator	1	1 car	None	4 years
Female 5	27	Physical therapist	3 (shared)	1 car	1 bike	2.5 years
Female 6	35	Translator	3 (couple w/ch.)	2 cars	None	2.5 years
Female 7***	28	PhD researcher	2 (couple)	1 car	None	3 years
Male 1*	38	Mechanic	1/3 (joint custody)	1 car	3 bikes	6 years
Male 2	26	Butcher	2 (couple)	car + motorbike	4 bikes	2 years
Male 3	27	Physical therapist	3 (shared)	1 car	1 bike	3 years
Male 4	41	Engineer	3 (couple w/ch.)	2 cars	None	2.5 years

* Had lived in the Pamplona MA ** Video conference

The majority of these participants lived in households consisting of three members, being bigger families than in the case of Munich (mostly couples). They had many more cars than the Spanish who lived in Munich, all of them having at least an automobile (two cars in four cases). Having bikes was less common than in the Bavarian capital. In fact, five households had no bikes at all. This clearly reflected their adaptation to a car-centred model.

- Helsinki (Finland):

Eight Spanish men and eight Spanish women participated in the interviews carried out in Helsinki. Most of them were highly educated workers. Several volunteers were researchers. Their average age was 38, the youngest person being 24 and the oldest 54. Even though the average size of their households was two members, the most frequent situation was living alone without sharing flats.

On average, they had lived around six years in Helsinki and six of them came from Madrid. Among others, there were also citizens from Pamplona-Iruña, Bilbao, Granada and Burgos (two in each case). Only one household had two cars, four households had one car, and the majority had no car. Every household had at least a bike (one person had fifteen bikes as he was a former cyclist), except for one participant who had a bikesharing station nearby. Thus, their profiles reflected the adoption of a non-car-oriented mobility.

Table 7. Participant Spanish citizens' profiles (Helsinki)

GENDER	AGE	OCCUPANCY STATUS	HOUSEHOLD MEMBERS	HOUS. MOT. VEHICLES	HOUS. BIKES	TIME IN HELSINKI
Female 1	47	Researcher	4 (couple w/ch.)	2 cars	4 bikes	20 years
Female 2	30	Nursery-school teacher	1	None	1 bike	2 years
Female 3*	34	Cook	1	None	1 bike	5 years
Female 4	54	Fashion designer	1	None	1 bike	21 years
Female 5	48	Human resources	3 (single w/ch.)	1 car	3 bikes + e-bike	6 years
Female 6	29	Embryologist	2 (couple)	None	1 bike	8 months
Female 7	33	Translator	2 (shared)	None	1 bike	3 years
Female 8*	24	PhD researcher	1	None	1 bike	5 months
Male 1	44	Construction company	3 (couple w/ch.)	None	3 bikes	6 months
Male 2	30	Basketball coach	1	None	None	1.5 months
Male 3	47	Engineer	3 (couple w/ch.)	1 car	3 bikes	5 years
Male 4	32	Auxiliary nurse	2 (couple)	None	2 bikes	5 years
Male 5	41	Hospital admin.	3 (couple w/ch.)	1 car	15 bikes	7 years
Male 6	47	TV/media worker	4 (couple w/ch.)	1 car	5 bikes	24 years
Male 7	32	Post-doc researcher	1	None	1 bike	1 year
Male 8	30	Software engineer	1	None	1 bike	7 years

* Had lived in the Pamplona MA

- TORONTO (CANADA):

Thirteen Spanish women and three Spanish men participated in the in-depth interviews conducted during my stay in Toronto. Most of them were highly skilled workers, managers and students. Their average age was 32, the youngest person being 23 and the oldest 42. The average size of their households was three members. None of them lived alone. Those who were single shared flats.

Table 8. Participant Spanish citizens' profiles (Toronto)

GENDER	AGE	OCCUPANCY STATUS	HOUSEHOLD MEMBERS	HOUS. MOT. VEHICLES	HOUS. BIKES	TIME IN TORONTO
Female 1	33	Business analyst	2 (couple)	1 car	3	4.5 years
Female 2	42	NGO worker	3 (couple w/ch.)	1 car	1	4 years
Female 3	34	Customer service	5 (host family)	None	None	2 months
Female 4	26	Logistics manager	2 (shared)	None	None	2 years
Female 5	31	Marketing	2 (couple)	None	None	1.5 years
Female 6	29	Post-doc researcher	2 (shared)	None	None	1.5 years
Female 7	37	Company manager	4 (couple w/ch.)	1 car	4 bikes	5 years
Female 8	33	Admin. assistant	4 (couple w/ch.)	None	None	7 years
Female 9	28	Student	2 (shared)	None	1 bike	3 years
Female 10	39	Student	3 (couple w/ch.)	None	3 bikes	6 months
Female 11	28	Office manager	2 (couple)	1 car	2 bikes	4 years
Female 12	30	Account manager	2 (couple)	None	None	2 years
Female 13*	26	Waitress	8 (shared)	None	None	4 months
Male 1	34	Post-doc researcher	2 (shared)	None	1 bike	4 years
Male 2	41	Engineer	4 (couple w/ch.)	2 cars	4 bikes	14 years
Male 3	23	Restaurant worker	3 (shared)	None	None	6 months

* Had lived in the Pamplona MA

On average, they had lived around three years in Toronto, and half of them came from Madrid. One family had two automobiles and six households had a car. Nine had no car. This was not representative of Toronto, which is usually considered as a car-oriented city. As we will see in the chapter on this case study, Toronto could be divided into two different areas: downtown Toronto and the rest of the city. Most of these Spanish citizens had opted to live in downtown so that living without driving was easier. Only half of these participants had bikes, probably meaning that bike use was less common than in Munich and Helsinki.

3.3.3-In-depth interviews with local-company workers

As a supplementary part of the fieldwork of the study conducted with the collaboration of the workers' committee of a mid-sized company located in the periphery of the Pamplona Metropolitan Area, a selection of eight profiles was made. Each profile corresponded with an interviewee. The committee found the volunteers. After having analysed the results of the online survey, the eight profiles that were selected were the following:

- A person who usually commutes by bus.
- A person who usually cycles to work.
- A woman who is a frequent solo car driver.
- A person who usually takes the car to go somewhere else for lunch.
- A person who usually stays for lunch.
- A person who usually shares rides with colleagues.
- A person who is a frequent solo car driver because of living far away.
- A person who is a frequent solo car driver because of taking their children to school.

The semi-structured in-depth interviews had a similar structure, but they did not have a common script, as each worker's circumstances were different. The interviews were divided into four main sections: profile questions, opinion on the survey and views on the company board's involvement with sustainable mobility, motivations for moving around in one way or another and expectations for change. The scripts can be inferred from the discussion.

Like in the case of the online survey, the participants' identities were kept anonymous. All those who volunteered were employees, neither middle managers nor top managers.

Table 9. Participants' profiles (local-company workers)

GENDER	AGE	PLACE OF RESIDENCE	EDUCATION	SPECIFIC PROFILE FEATURES
Female 1	36	Berriozar	University degree	Commutes by bike
Female 2	58	Zizur Mayor	University degree	Female solo car driver
Female 3	50	Rochapea (main city)	Vocational training	Carpools to work
Female 4	34	Ensanche (main city)	University degree	Solo car driver/Children to school
Male 1	36	Old town (main city)	University degree	Commutes by bus
Male 2	46	Astigarraga (not Navarra)	University degree	Solo car driver/Lives far away
Male 3	39	Ripagaina (main city)	Vocational training	Solo car driver/Drives at lunchtime
Male 4	33	Ripagaina (main city)	Vocational training	Stays at lunchtime

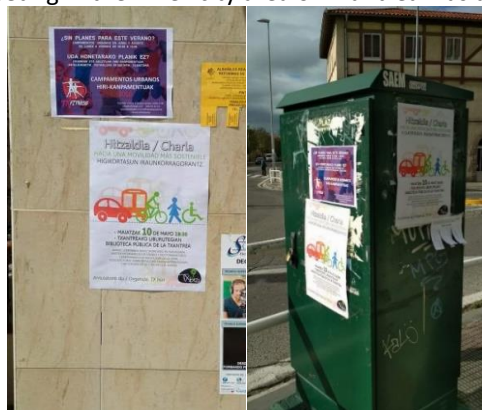
3.4-DISCUSSION GROUPS

Discussion groups were used in three different contexts. These contexts were meant to be representative of some of the different types of settings that were being analysed: the inner city, suburban areas and rural areas. They corresponded to our local case studies from the Spanish region of Navarra.

Each discussion group was recorded (audio), transcribed and translated. Their contents have been summarised throughout the thesis chapters and illustrative comments have been quoted. An open-ended script was adapted to each discussion group, and the participants were encouraged to talk spontaneously about other matters that came to their minds while talking about the proposed mobility issues.

As mentioned before, quite informal ways of contacting potential participants were used: For example, wall posters and social media (such as a rural community WhatsApp group). The participants were not paid. Nevertheless, in the case of those from the rural area, each participant received a small gift that would be complemented by another one if they helped in achieving that other rural residents fulfilled the survey.

Figures 11 and 12. The meeting in the inner-city area of Txantrea was advertised with wall posters



Source: Own pictures

Figure 13. The meeting in the rural area of Biurrun was advertised with a wall poster

**CHARLA Y DEBATE SOBRE MOVILIDAD
Y USO DEL COCHE EN ZONAS RURALES**



DOMINGO 10 DE FEBRERO

13:00

ESCUELAS DE BIURRUN

TESIS SOBRE MOVILIDAD SOSTENIBLE
DANIEL LOPATNIKOV BOJO
UNIVERSIDAD PÚBLICA DE NAVARRA, DEPARTAMENTO DE SOCIOLOGÍA Y TRABAJO SOCIAL

Source: Image from *arstechnica.com* (Sebastian Anthony). Own elaboration

3.4.1-Discussion group with inner-city residents

A local entity (“Tx bizi”) helped me in organising a talk on mobility issues after which the volunteers from the area of Txantrea participated in a discussion group. Any adult resident was welcome. The meeting was held in the neighbourhood library.

Ten residents volunteered. These inner-city residents did not drive too regularly. In fact, some of them did not drive at all, or hardly ever drove. Their mobility patterns were not too car-based, and the proportion of cars per adult was not as high as in the other two cases.

Table 10. Discussion group participants’ profiles (inner city)

GENDER	AGE	EDUCATION	TYPE OF JOB	DRIVES	CARS	ADULTS	HOUSEHOLD
Male 1	66	Baccalaureate	Pensioner	Occasionally	1	2	Semi-detached
Male 2	26	Vocational training	-	Never	1	-	Flat
Male 3	53	University degree	Admin. assistant	Hardly ever	1	3	Flat
Male 4	-	University degree	Manager	Occasionally	2	3	Flat
Male 5	-	Basic education	Lorry driver	Hardly ever	1	1	Flat
Male 6	-	University degree	Admin. assistant	Daily	1	-	Flat
Male 7	54	Vocational training	Technician	Often	1	2	Detached
Female 1	34	University degree	Admin. assistant	Occasionally	1	-	Flat
Female 2	-	Baccalaureate	Admin. assistant	Never	None	-	Detached
Female 3	64	Baccalaureate	Pensioner	Occasionally	2	-	Flat

(- information not provided)

3.4.2-Discussion group with suburban residents

A discussion group made up of adult suburban residents was organised with the help of the council of Noáin, an “outer-suburban-ring” town located in the Pamplona Metropolitan Area. Their environmental issues technician helped me in organising a talk on mobility issues and a discussion group made up of those who attended the talk. Any adult resident who was interested in the topic was welcome. Four men and three women volunteered. The meeting was held in the town council premises.

Table 11. Discussion group participants’ profiles (suburban area)

GENDER	AGE	EDUCATION	TYPE OF JOB	DRIVES	CARS	ADULTS	HOUSEHOLD
Male 1	46	Baccalaureate	Politician	Daily	2	3	Flat
Male 2	41	Vocational training	Operator	Daily	2	2	Duplex
Male 3	-	-	-	Daily	-	-	Flat
Male 4	-	University degree	Banker	Daily	1	2	Detached
Female 1	40	University degree	Technician	Occasionally	1	2	Flat
Female 2	43	Basic education	Hotel manager	Daily	2	2	Semi-detached
Female 3	47	University degree	Admin. assistant	Occasionally	2	2	Flat

(- information not provided)

The participants were generally frequent drivers who were in their forties. Most of them reported driving daily. Their households had two cars, or at least one car. This reflected their car dependency, which was not so extreme as in the rural case but was more acute than in the urban case.

3.4.3-Discussion group with rural residents

The fieldwork carried out in the rural county of Valdizarbe-Novenera, more specifically in the small village of Biurrun, mainly consisted of a discussion group and a survey. I counted on the help of a few locals who were involved in initiatives aimed at studying and improving their community. The meeting was held in the old local school (which is no longer working).

Eight rural residents volunteered: six women and two men. All of them were adults, most of them being younger than the village's average (48), as only one participant was over this average (49), and another volunteer was 48. The other six rural residents were younger, the group's average being 36. This seems normal, as younger generations might be more socially engaged than their older counterparts.

Their answers to the profile questions reflected that they have very car-centred lifestyles. Except for one person, they all reported driving daily. Most of their households had several automobiles. They lived in Biurrun, and two of them had a second family household in the Pamplona Metropolitan Area.

Table 12. Discussion group participants' profiles (rural area)

GENDER	AGE	EDUCATION	TYPE OF JOB	DRIVES	CARS	MEMBERS	2 nd HOME
Female 1	22	University degree	Student	Daily	3	3	No
Female 2	24	University degree	Shop assistant	Daily	1	2	No
Female 3	42	Vocational training	Shop assistant	Daily	2	2	No
Female 4	48	University degree	Unemployed	Daily	2	3	No
Female 5	24	University degree	Teacher/Pedagogue	Daily	3	4	No
Female 6	44	-	On maternity leave	Often	2	5	Yes
Male 1	32	Vocational training	Factory worker	Daily	1	2	No
Male 2	49	Vocational training	Lorry driver	Daily	2	3	Yes

(- information not provided)

3.5-SURVEYS

Four online surveys were conducted as part of the thesis research work. Three of them were practically identical, so that they could be compared. They were answered by students from Helsinki, Toronto and Pamplona-Iruña, and consisted of a set of profile questions and questions about mobility habits and attitudes towards mobility issues. The fourth one was a survey on home-work mobility that was carried out with the participation of the workers of a local company located in the Pamplona Metropolitan Area. The full questionnaires can be found in the methodological annex.

The samplings were non-probabilistic, as any university student could participate. As we counted on the help of the departments of my overseas hosts and my faculty, the students came from social science and geography-related courses. Therefore, they were expected to be relatively "eco-conscious" young people. The intention was to explore their differences. The sampling of the online survey on home-work mobility was non-probabilistic as well, but we achieved a representative number of respondents of nearly half of all the workforce.

A survey on mobility issues was conducted after the discussion group in the selected rural area of Navarra. Following the logics of “snowball sampling”, the participants were asked to search for fellow rural residents who would answer a paper version of the survey. This was expected to be the most efficient way of gathering a useful sample of respondents, as their strong sense of community could encourage other villagers to participate. Each discussion group participant was given a couple of weeks to find three or four respondents. They had previously been given an initial gift and would receive a second gift (which complemented the first one) after having collected the survey answer sheets.

3.5.1-Students’ profiles

The online survey was filled in by sixty students from the University of Helsinki, after an explanatory email containing a link to the Google Forms survey was sent to a list of students pertaining to geography-related courses. A total of 65% were female respondents. Over 90% attended their courses at the Kumpulan campus, half of them being master’s students, 45% undergraduate students, and the remaining 5% PhD students. As the participation was lower than in Toronto and in Pamplona-Iruña, we sent a reminder to encourage participation, but we did not achieve a greater sample size.

A similar survey was also completed by 127 students from the University of Toronto, after an explanatory email containing a link was sent to a list of students pertaining to geography-related courses. Nearly all of the participants were undergraduate students (two of them were master’s students). The participation rate was greater among female students (95), and the average age of the students was 22. Most of the respondents lived in the city (91), while the rest lived in other municipalities of the GTHA (the Greater Toronto and Hamilton Area) or even further away. A total of 72 survey respondents were based at the Scarborough Campus (a suburban campus), while 55 were based at Saint George Campus (in downtown Toronto).

The online survey was filled in by 109 students from the Public University of Navarra too. An email was sent to the list of students who were registered at the social sciences faculty. Over 80% of the respondents were undergraduate students, while the rest were master’s students. Nearly 80% were women. Slightly over half of the participants lived in Pamplona-Iruña, while around 30% lived in suburban towns within its metropolitan area. The rest lived further away. They were all based at the campus of Arrosadía (inner city).

3.5.2-Workers from a company located in the Pamplona Metropolitan Area

Around 48% of the workers of a company (its name will be kept anonymous) located next to Pamplona-Iruña participated in an online survey on home-work mobility. From the 172 surveys selected for a full analysis, 97 were answered by male employees and 75 by female employees, meaning percentages of 56% and 44%, respectively. Therefore, the final sample was quite balanced, even though male workers were slightly more represented than female workers.

The survey had 32 questions on habits and solo car driving and predisposition to change. It also had six profile questions and an open comments section. It was pre-tested by nine workers who made it possible to adjust those questions that could be unclear and keep the survey relatively short (so that it took less than ten minutes to be filled in). All the workers were invited to participate, regardless of their hierarchical position in the company (labelled in the profile questions as “employees”, “middle managers” and “top executives”).

The 172 surveys selected corresponded to employees whose workplace was located in a peripheral town (Sarriguren) pertaining to the council of Valle de Egüés. A total of sixteen questionnaires that pertained to workers who worked for the company in other places were only taken into account as regards the comments section, as these employees’ home-work mobility patterns might reflect different circumstances. The participants’ average age was 40 years old (39.9). The employees’ educational level was very high, in accordance with the company’s skilled workforce requirements. A total of 65% of these workers had a university degree, while most of the remaining 35% had a vocational training certificate. A very small group of workers had a high school baccalaureate as their highest qualification.

Only 16 out of 172 respondents were middle managers. No high-level or top executives participated, meaning that the majority of those surveyed were regular workers. Nearly half of the respondents (81) lived in Pamplona-Iruña, while a further significant number of them (68) lived in neighbouring towns within the Pamplona MA. A smaller group lived in cities and towns located outside of the metropolitan area. This might influence the opportunities to bring about change, as more employees living close to each other means more chances for sharing rides and/or implementing mobility services. In fact, there were specific areas of the city of Pamplona-Iruña (such as Rochapea, Lezkairu and the old town) in which an important number of employees lived. The town of Sarriguren was by far the most popular place of residence among the neighbouring towns within the metropolitan area (22 respondents). This seems to be logical, as this peripheral town is relatively big, and the company’s main building is located there. In this regard, another important peripheral town was Zizur Mayor, where ten respondents lived.

3.5.3-Survey on rural mobility

In the case of the rural village of Biurrun, a total of 27 adult residents filled in the survey (out of approximately 160 rural dwellers, although the potential respondents were fewer as children could not participate). The participants had their primary residence in Biurrun. Five of them had a second residence in the regional capital, Pamplona-Iruña, and one respondent had a second residence in a town located within its metropolitan area.

The sample consisted of fifteen adult women and twelve adult men (55% of the residents were male). Their average age (48.8) was more representative of the population of Biurrun-Olcoz (aged 48 on average)⁹⁵. Eleven volunteers claimed that they only had a basic education

⁹⁵ Data from the Navarre Statistics Institute (2019). Instituto de Estadística de Navarra: na(stat). Estadística del padrón continuo a 1 de enero de 2018 (Available from navarra.es).

level. Two had a baccalaureate, and five people had a university degree. Vocational training studies were more common than university degrees, as nine respondents claimed that they had a vocational training degree. Their current types of jobs ranged from factory workers to civil servants and other occupations. Retired was the most cited status (four respondents). The survey (which can be found in the methodological annex) had four main parts: profile questions, questions on mobility habits, questions on perceptions about mobility issues and comments.

3.6-“IMAGE-BASED RATING EXERCISE”

An image-based “social experiment” was carried out in Helsinki, Toronto and Pamplona-Iruña with the intention of comparing the students’ attitudes towards mobility. It consisted of an image-based in-class rating exercise. With the collaboration of university lecturers, we would project a set of images and ask the students to rank them in terms of desirability and social status attributed to each way of moving around. The aim was to analyse how students who live in different environments (perhaps) had different views on mobility. The exercise was carried out at the start or end of lectures, in geography-related courses (in Helsinki and in Toronto) or in sociology-related courses (in Pamplona-Iruña). Each student was given an answer sheet (anonymous) with some profile questions and a table in which they would rate each image. Before starting, I would briefly explain how to rate the images.

A sample of the images used can be found in the methodological annex, as well as the averages obtained, the standard deviations (as a measure of dispersion: A higher deviation means that the data are more spread out) and the results of chi square tests used for trying to determine whether there were significant relationships between certain key categorical variables. Fifteen images were ranked in Helsinki and in Pamplona-Iruña (sixteen in Toronto, as pick-up trucks were added due to their cultural weight in the North American context).

Each image had to be attributed a score in terms of desirability (how desirable it would be for the participant students to commute in that way on a regular basis, under normal weather circumstances, average length of commute, etc.) and status (if they saw somebody commuting in that way: What status would they attribute to that individual?). Scores would range from 1 to 10, as I used the score 0 for neutral status (0 meant that it was attributed to people from all social backgrounds). 10 would be the highest desirability possible and the highest position in the social hierarchy. 1 would be the lowest, so 5.5 would be intermediate.

A total of over 400 students participated. Most of these students were undergraduates. In the case of the University of Helsinki, master’s students were an important part of the sample. An additional sample of students was added in the case of the Public University of Navarra. They came from an informal degree for elderly people (most of these students are pensioners) called “Aula de la experiencia” (“Lecture room for experienced people”). I was given the opportunity to carry out the exercise at the “Aula de la experiencia”, so that their answers could be compared with those of young local students.

Table 13. Participants' profile summary ("image-based rating exercise")

Entity	Participants	Females	Males	Female-male ratio	Average age
University of Helsinki	124	70	54	1.30	25
University of Toronto	94	58	36	1.61	22
Public University of Navarra (young generation)	119	86	33	2.61	21
Public University of Navarra (older generation)	70	48	22	2.18	64

3.7-ADDITIONAL REMARKS

A few remarks need to be made to understand the complexity of some of the issues that have been analysed. To a large extent, the intricacy resides in the trouble of finding universal definitions of certain aspects linked to mobility, as well as the wide variety of options and nuances that characterises mobility. For example, the definitions of the areas of a city and the definitions of the modal share categories might vary⁹⁶.

Statistical analysis has been applied. Both Excel (mostly) and SPSS (in specific cases such as chi square tests) were used. When using SPSS, I relied on the help of one of the professors in statistics from our department (Ernesto Pérez Esaín). To design the survey on home-work mobility, I relied on the help of an expert in surveys from the department (professor Vidal Díaz de Rada).

The methodology used here aims to achieve a holistic picture of the appropriation and the social implications of the mobility transition, even though it clearly cannot cover all this complex phenomenon on a global scale, and I can only attempt to offer an analysis of a set of case studies from a comparative perspective. Despite these limitations, the use of several methods is aimed at drawing some conclusions on how the current mobility transition varies in the way in which it is being socially appropriated in different international contexts. This thesis is also aimed at offering insights on how the transition should be managed in order to not only achieve an environmentally-friendly mobility but also a socially just mobility.

⁹⁶ The modal share categories set by the "Mancomunidad de la Comarca de Pamplona" (MCP) that are used in the chapters on the region of Navarra need to be explained. While "on foot" only comprises pedestrians, the other three categories imply certain nuances: The category "public bus" includes other modes of public transport that are much less commonly used (for example trains), "private car" includes minority private modes such as motorbikes and "bike and others" includes taxis and school buses. Another remark to be made is that certain data might vary, depending on the entity that provides them and the way in which they interpret these data. For example, due to the complex zonification of the Pamplona MA, where some boundaries might be blurred, data on populations and other matters may be variable. Another example is the difficulty of defining what exactly cities, suburban areas, etc. are and how they can be divided into sub-regions with the aim of exploring trends. In this sense, the United Nations (2018) argue that the way in which a city's boundaries are defined is a key element for assessing aspects such as the size of its population. They offer an example, based on Toronto, and divide this city into the "city proper", the "urban agglomeration" and the "metropolitan area". I have also used the terms "city proper" and "metropolitan area", and I have added the terms "inner suburban ring" and "outer suburban ring", which have been defined in accordance with each territory's location with respect to the peripheral motorway that surrounds the city. In the chapter on Pamplona-Iruña, I have divided the "city proper" into the "city centre", the "midtown" and the "uptown", which reflect the factor of proximity to the core of the city.

PART II

4 - THE MOBILITY TRANSITION IN A COMPACT AND HIGH-PERFORMING CITY. THE CASE OF MUNICH (GERMANY)

4.1-CONTEXTUALISATION OF THE CASE STUDY

Munich is estimated to be the most compact German city. This helps in implementing a “greener” mobility, as distances are not too big and collectivising people’s journeys is easier. In fact, Munich is a high-performing city, with an efficient public transport network. Cycling infrastructure is very developed too. My stay in the regional capital of Bavaria was relatively short (one month, starting in September 2017). One member of my family was at that time working at the headquarters of the car giant BMW. Thus, it was an opportunity to contact local stakeholders (such as a BMW-Alphabet mobility manager) and analyse a compact and high-performing city.

Similar to Helsinki (chapter 6), Munich is usually ranked as a top performer at a European level and at a world level. Apart from this, the well-known German car producer BMW, one of the leaders of the car sector’s transition towards a new mobility, has its headquarters in the Bavarian capital city⁹⁷. They have launched innovative services and they are developing “greener” automobiles such as fully-electric cars.

A set of in-depth semi-structured interviews was carried out. The fieldwork was mainly based on interviews with key stakeholders in play (including public and private entities) and Spanish citizens living in Munich. Most of these Spanish citizens reported that living in this city is convenient for those who desire to live without cars and that car ownership is mostly attributed to citizens who use their cars at weekends, particularly to prototypical Bavarians for whom showing status through their cars is important.

This chapter analyses how mobility issues are managed in a society where two apparently opposing social forces appear to cohabit in good harmony: a regional culture that highlights the centrality of owning a high-end car, and an awareness on sustainability issues that aims to limit the use of private cars and promote “greener” alternatives for daily mobility.

Munich is estimated to be the most compact German city in terms of population density (approximately 4,900 inhabitants/km²)⁹⁸. The city accounts for around one and a half million residents, and the metropolitan region of Munich is estimated to quadruple this figure (six million). Thus, this metropolitan region is similar in terms of size to the metropolitan region

⁹⁷ A KPMG (consultancy agency) report based on a survey made to automotive industry managers that was cited in El País concluded that BMW was generally considered to be the most innovative carmaker. Based on: “The car industry considers BMW as the most innovative brand” (El País, 9/2/2017).

⁹⁸ According to the annual Statistical Office Munich’s (2018) report “Munich Facts and Figures 2018”, the city’s population was 1,526,056 inhabitants in 2017. The population density has been calculated using the total urban area provided in this report (310.7 km²). Its compactness has probably helped Munich to build an efficient public transport network.

of Berlin (note that Germany has eleven metropolitan regions that stand as political units that are larger than what is generally conceived as a metropolitan area elsewhere).

Germany is known, among other reasons, for being a country where some of the most renowned car brands were created and are currently based. As it was logical to expect, the German motorisation index is above the European Union’s average (561 cars per thousand citizens in 2017, the EU-28’s average being 512)⁹⁹. Moreover, the city of Munich is located in a strategic territory for the German automobile industry (see map 1).

Map 1. The region of Bavaria hosts one of the country’s main car factories



Source: bloomberg.com/graphics

⁹⁹ Based on Eurostat data (Number of passenger cars per 1,000 inhabitants, 2017).

Munich is a territory of high average income and low unemployment that attracts many investors and workers. Furthermore, apart from BMW, other top carmakers such as Audi, Mercedes and Porsche are based nearby. Audi is based in Ingolstadt (just seventy kilometres away from Munich), and Mercedes and Porsche are based in Stuttgart. This context makes Munich a city where there is a strong culture of the car and (as reported by the interviewees) an attitude of worship towards these top German carmakers (especially towards BMW).

Nevertheless, the local authorities have made a great effort to tackle the excessive use of private cars. By developing an efficient network of public transport and offering proper cycling infrastructure, Munich has achieved a good balance between the private automobile and other mobility options¹⁰⁰. It appears that car ownership and sustainability are not always incompatible. Even though ownership is common, many people limit the use of their private cars to the weekends and opt for mobility alternatives (not only public transport and their bikes, but also public bikes and shared cars) for commuting and other daily routine activities. Deutsche Bahn (DB), the MVG (Munich's local transport authority) and new players (such as the Asian company O-Bike) have provided the city with thousands of shared bicycles. Many bikesharing stations are strategically located in points of interest such as metro stations.

Munich is an important innovation hub in the field of mobility. Several public and private entities are working (and have sometimes created joint ventures) on innovative bikesharing and carsharing services. BMW's carsharing service DriveNow was not alone in this business. Car2Go (Daimler) and StattAuto also offered carsharing services in Munich (by the beginning of 2019, BMW and Daimler created an alliance called Share Now and joined their carsharing services. This is an example of how the new mobility ecosystem is leading to the creation of joint ventures). In their website, StattAuto make a relevant estimation: They calculate that carsharing might be economically better than owning a car for all those who drive less than 12,000 kilometres per year¹⁰¹. This means that carsharing may be a good alternative for many drivers, especially for those who do not commute by car daily. The potential of carsharing services for reducing the total amount of cars in the streets, as well as bringing parking space needs and pollution down, has been widely discussed (see, e. g., Glotz-Richter, 2016, on the case of the German city of Bremen).

Carsharing and bikesharing schemes are meant to provide citizens with flexible mobility alternatives that can easily be combined. As Büttner points out,

bicycle stations can be implemented at public transport nodes, such as train stations. In this way, people can use bicycles to travel to the suburban train station and then again for their remaining distance to the workplace in order to solve the "last-mile problem". In addition, innovative mobility models such as car sharing and carpooling can make individual mobility behavior more flexible. (Büttner, 2016: 150)

¹⁰⁰ For example, Munich was ranked in the top 10 of the best cities in the world for driving in 2017 in a Kfzteile24 study that took into account factors such as its public transport (kfzteile24.de, no date provided).

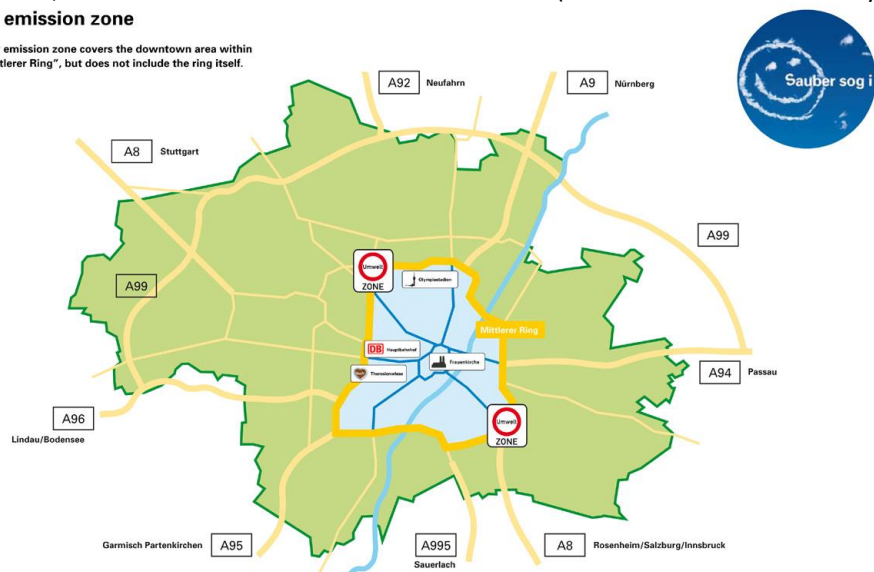
¹⁰¹ StattAuto's website offers a cost calculator and estimates that "the fixed costs for private vehicles e. g. an Opel Corsa (new 12,000 €) average at around 3,100 € per year" (stattauto-muenchen.de. Last retrieved: 31/1/2020).

Apart from trying to offer its citizens convenient alternatives to the private car, Munich was one of the first German cities to create a map of emission zones (see map 2). More than a decade ago, the city was divided into two areas. Vehicles entering its core need to have emission-control windscreen stickers on them. This system was introduced in 2008 and has been adjusted several times: Emission standards have progressively been raised. Since 2012, only vehicles with a green environmental sticker can be driven inside the city core, and those drivers who do not have a green sticker need to bypass the city core (for passenger cars, this applies to diesel cars made before 2006 and petrol cars made before 1993). There has been debate among researchers over whether Low Emission Zones (LEZ) are an ideal solution¹⁰².

Map 2. In 2008, Munich was divided into two emission zones (low-emission zone in the city core)

Low emission zone

The low emission zone covers the downtown area within the "Mittlerer Ring", but does not include the ring itself.



Source: Landeshauptstadt München – Kommunalreferat Vermessungsamt (geoinfo-muenchen.de)

On top of this, Munich is a testing ground for innovative mobility alternatives. The city is strongly committed to progressively become “greener”. Back in the year 2015, Mayor Dieter Reiter was reported to have claimed in an interview that all their electricity will be “green” by 2025¹⁰³. He backed a pioneering housing project (“Domagkpark”) that built an e-station in the garage of a community where residents can share several fully-electric cars, scooters

¹⁰² A study conducted before and after the implementation of the LEZ in 2008 concluded that the initial result was a relatively small reduction in PM 10-related pollution (Particulate Matter, 10 micrometres or less in diameter), especially significant at traffic sites, which was mainly caused by diesel cars and had effects on human health (Cyrus, Peters & Wichmann, 2009). A more recent work on the impact of LEZ in German cities found that “in total, the LEZ are evaluated to be positive considering its overall impacts on fleet composition and emissions as well as the reduction of number of exceedance days” (Scheuven et al., 2017: 3384). However, other research studies question the effectiveness of Low Emission Zones. After analysing the same data that Cyrus, Peters and Wichmann (2009) had used in their study, Morfeld et al. (2013) concluded that their analysis did not prove the benefits of Munich’s Low Emission Zone. As another example of this debate, we find this conclusion on another academic publication on the matter: “LEZ effects are small and bias control is of paramount importance. Based on our analyses we conclude that the point estimate of monetary health benefits calculated by (...) is probably too high and the uncertainty reported possibly too small” (Morfeld, Groneberg & Spallek, 2015: 255).

¹⁰³ The full interview with Mayor Reiter can be consulted at: “Interview with the mayor of Munich, Mr. Dieter Reiter” (edcities.org, 11/6/2015).

and e-bikes¹⁰⁴. This building incorporates solar panels for powering its e-station. This project can be taken as an example of what future urban built environments might look like. In fact, Munich is considered to be one of the “smartest” cities at the world scale¹⁰⁵.

Figure 14. Domagkpark’s e-station offers five cars, two scooters, two bikes and a cargo-bike



Source: sueddeutsche.de (Catherina Hess)

Another example of Munich’s important role is that this German city also hosts start-ups that are working on innovative mobility solutions. One of them is Sono Motors (one of their managers participated in the interviews). Sono have created a fully-electric automobile that adds extra power to its batteries by incorporating solar panels on its body¹⁰⁶. This is another example of the way in which future mobility might look like.

Figure 15. Sono held driving tests in which drivers could try their “solar cars”



Source: Own picture

A relevant aspect to be also underlined is the city’s effort to make sustainable mobility visible and desirable through advertising. Public transport has boards where “green” options are highlighted and shown as a desirable way of moving around. In a place like the Bavarian

¹⁰⁴ Based on:

“Munich neighbourhood opens e-mobility service for residents” (erticonetwork.com, 15/6/2016).

¹⁰⁵ Based on: “What are the smartest cities in the world?” (El País, 9/11/2016).

¹⁰⁶ For more information on these innovative electric cars, visit Sono Motors’s website (sonomotors.com. Last retrieved: 31/1/2020).

capital, where the car has an enormous weight, the local authorities are trying to influence people’s mindsets and make “green mobility” appealing.

Figures 16 and 17. Hipsters cycling, powerful trains, etc. These campaigns targeted people’s mindsets



Source: Own pictures

But there are also negative sides and difficult challenges to face in this transition towards a more sustainable mobility. For example, Munich has had problems in managing the arrival of free-floating bikesharing platforms. The Asian giant company O-Bike has tried to start its mobility business in the city, but this has brought complaints and social debate. The lack of control over where these bicycles are left in the streets, and vandalism, have led to chaotic outcomes and debate on banning this kind of alternatives¹⁰⁷.

All in all, Munich’s modal split is quite balanced, and the local authorities are working on further improvements. Munich was ranked as the fifteenth friendliest city for cyclists in the year 2017 (Copenhagenize Index)¹⁰⁸. According to the local transport entity’s (MVG, 2016) report on sustainability, the city’s modal split would approximately be the following: 32% automobiles, 30% public transport, 23% walking and 15% cycling. The Bavarian capital keeps working works on taking these achievements further.

4.2-IN-DEPTH INTERVIEWS WITH KEY STAKEHOLDERS

4.2.1-The path to a new paradigm based on mobility services

The information gathered through the semi-structured in-depth interviews with urban mobility managers and other experts can provide us with a comprehensive understanding of the stakeholders’ views on current and future mobility issues.

According to the German sociologist Sven Kesselring, the city’s current success is mainly due to the collaboration between its stakeholders¹⁰⁹. Kesselring considers that there was a turning point in the nineties that has led to the current situation. While many advocated for

¹⁰⁷ Based on: “Oh dear, Obikes” (The Munich Eye, no date provided).

¹⁰⁸ The Copenhagenize Index can be consulted at copenhagenizeindex.eu (Last retrieved: 31/1/2020).

¹⁰⁹ An interview with the sociologist and expert on mobility Sven Kesselring can be found at: “Mobile Politics – Lessons Learned from 20 Years of Governing Mobilities in Munich” (Mobile Lives Forum, 11/5/2015).

building more roads and tunnels for cars, the newly-elected mayor decided that the best solution was to gather the most relevant stakeholders in play and have a long debate on the strategies for the future of mobility. Led by the city council and by BMW, more than twenty stakeholders attended these meetings. The year 1995 Inzell Initiative made it possible to establish a set of principles that have helped to develop mobility in the city. After having conducted more than twenty-five interviews with stakeholders, and having participated in several strategic meetings, Kesselring concludes that *“Munich is a sort of laboratory for the new politics of mobility in Germany. The so-called Inzell Initiative has been founded in 1995 to solve conflicts and to enable collaborative planning in the major city in the south of Germany”* (2016: 67).

In 2012, this forum on mobility started to develop the so-called “Vision 2050” for the city of Munich. Kesselring and Tschoerner explain that the stakeholders behind these initiatives are *“a powerful network of stakeholders, who over the past twenty years have influenced and significantly shaped local mobility politics in Munich. The network propels the mobilities of ideas, concepts and perspectives on the future of mobility and transport in Munich”* (2016: 380). The “Vision 2050” initiative is an effort to set the guidelines for the future of mobility in Munich. However, Kesselring argues that

the forum’s subject has not been mobility in a broader, sociological sense. The Vision 2050 has a strong instrumental and functionalistic approach. It is less the technocentric outset that shows up strongly in the data. Rather it is the instrumental planning approach and the idea that collaboration, organization and regional cooperation need to be optimized to provide better conditions and opportunities for sustainable mobility. (Kesselring, 2016: 80-81)

As we can see, the intense collaboration among stakeholders has been a key feature of the successful management of mobility in the Bavarian capital. Stakeholder discourses and narratives surely have an important role. Scholars (such as Tschoerner, 2018, in her work *“Sustainable Mobility in Munich: Exploring the Role of Discourse Analysis in Policy Change”*) have tried to assess their impact. Tschoerner (2018) highlights the importance of discourse analysis for policymaking, for assessing competing approaches to mobility and for the city’s cycling and electric mobility promotion.

The local stakeholders interviewed stated that they were interested in anticipating the future of mobility, which, according to them, will be based on intermodality and mobility services. Both the private and the public sectors are developing innovative and efficient mobility solutions. Bavaria being a wealthy and developed region, it can be a good testing ground for change, and the local stakeholders are working on it: *“It seems that we are soon approaching car peak in industrialised markets. The new mobility is about the utilisation of all transport modes. This is what we will see here, but not so much in other places (think of Asia or Africa) where car sales will grow for the next 30 years”* [Business strategy manager, BMW-Alphabet]. A couple of examples of private and public sector initiatives were offered:

“We want to offer a triple sharing service: carsharing, ridesharing and power sharing. We are developing solar-energy-fueled cars. At the moment, we have the Sion model,

which offers extended range through solar panels. Future commuters will probably be able to rely on solar energy.” [Office manager, Sono Motors]

“The MVG is being transformed into a mobility services provider. In this context, we have raised important European Union funding for a district project (Smarter Together) that consists of implementing multimodality, electric vehicles and charging stations, e-bikes and regular bikes, etc.” [EU-funded project leader, SWM (Stadtwerke München)]

CarpoolWorld is an international company that is not based in Munich but has started to run its business in the Bavarian capital. They are opting for an innovative carpooling service: *“Our service is based on private carpooling matching for individuals (which is free of charge) and for organisations that want to match workers, parents... Driving alone is not sustainable, so it will eventually be restricted”* [Chief Information Officer, CarpoolWorld].

For the moment, the most innovative initiatives are being tested as pilot programs. Pilots are meant to prove that a certain idea works in a specific area before launching it at a larger scale:

“It’s good to test innovations first. Moreover, mobility projects are usually expensive. Therefore, we believe that pilot tests are the best option possible, as there might be costly measures that do not work in practice and should not be expanded further. We chose a district in which many young people live, as we thought that they would easily adopt innovative mobility solutions.” [EU-funded project leader, SWM (Stadtwerke München)]

When asked on whether their successful model could work in other cities and could easily be “exported”, the expert interviewees stated that there is no unique path and that any city could take their example but must adapt to its circumstances: *“There are many factors that need to be taken into consideration: demography, topography (hilly or not: e-bikes or bikes more suitable), urban design and available space, the pre-existing mobility alternatives, etc.”* [PhD researcher on mobility 1, TUM university’s Mobil.Lab].

BMW-Alphabet’s manager, who held a PhD in economics on the interaction of cities and mobility providers, believed that *“it will all be heterogeneous, as every city is different from the rest. Regulations and demographics differ, and topographies also vary. There is no ‘one-size-fits-all’ approach to the matter”* [Business strategy manager, BMW-Alphabet].

4.2.2-The impact of mobility and expectations for the future

There were high expectations on a new mobility paradigm. It was supposed to transform Munich into an eco-friendlier environment, and money and resources would be saved, as mobility would be more affordable. According to the interviewees, Munich is on its way to become a “greener” city:

“We are building multimodal-mobility stations that are meant to discourage car use and car ownership in a pilot district. Single-component initiatives are cheaper, but our project is more ambitious. We would like to reduce emissions through offering several ‘green’ alternatives.” [EU-funded project leader, SWM (Stadtwerke München)]

“We connect people in order to save money and to reduce their environmental impact through sharing their vehicles when their journeys are compatible. We help in limiting the number of cars used and car-related emissions.”

[Chief Information Officer, CarpoolWorld]

“Cities will be cleaner, and mobility will be significantly more flexible. Sharing services, and eventually autonomous driving and the regulations imposed on car manufacturers, will drive this trend.” [Office manager, Sono Motors]

Moreover, this new mobility model is expected to bring the adoption of mobility services that are affordable. These services would be more accessible and cheaper, so we would find less inequalities linked to the way in which people move around as mobility would be further democratised: *“Products like DriveNow and AlphaCity give people access to driving cars that they would not normally have access to. They are also a solution for those who want to avoid car ownership”* [BMW-Alphabet business strategy manager].

However, it seems that these high expectations are not easy to fulfil. According to a PhD researcher who focused on these issues, more needs to be done before virtually anyone has access to these new mobility services, as there are hidden structural inequalities underlying this phenomenon:

“Will mobility be more equal? Maybe, but we still have no clear and empirical evidence. For example, if you analyse who makes use of DriveNow’s carsharing, you will find out that sixty per cent of their users are male, between 20 and 50, white and well-educated. This is only a relatively small group of the population.”

[PhD researcher on mobility 1, TUM university’s Mobil.Lab]

This researcher talked on what could be done in order to make these services accessible for the majority, so that mobility would be more equal:

“If this new mobility was to be more socially just, several things should be taken into account: Carsharing should not only be available in the city centre, advertising and the system must target the general public and not only ‘early adopters’, as for the moment they clearly target those who might bring them more revenues. These services have the potential to become accessible to everyone, if they were not conceived as a luxury.”

[PhD researcher on mobility 1, TUM university’s Mobil.Lab]

Innovative mobility services are also expected to bring social benefits by strengthening social ties. People would be less encapsulated, as solo car driving would be less common:

“We have observed that parents who carpool become more socially engaged, and so do their children too (they have more friends, etc.). We believe that solo car driving and Uber-like services that promote single-occupancy rides will eventually be restricted. By sharing rides, people save parking space and money, and stress levels are reduced.”

[Chief Information Officer, CarpoolWorld]

The status component of mobility is expected to remain, at least to a certain extent. New ways of showing social status through the way in which we move around will probably arise, as it seems that using vehicles as status symbols is a universal feature:

“Mobility, meaning the way in which we get from point A to point B, has always been used (through horses, carts, cars, aircrafts...) and will always be used as a status symbol.

It is to be seen whether in the future a high status will be attributed to having a certain car or to having access to a specific fast, convenient, environmentally-friendly mode.” [Business strategy manager, BMW-Alphabet]

There could even be a process of redefinition of what is fashionable, and of what a status symbol is. According to a local PhD researcher whose work focused on the reconversion of the German automotive industry, for certain people *“being eco-friendly is becoming trendy. Indeed, it is becoming a new status symbol. This could be a problem in the future, if it led to a wave of consumerism based on buying as much eco-friendly stuff as possible (cars, vehicles, gadgets, etc.)”* [PhD researcher on mobility 2, TUM university’s Mobil.Lab].

The in-depth interviews were closed with a few questions on the stakeholders’ views on future urban mobility. They agreed in underlining that mobility is changing, and that urban environments are expected to leave the twentieth-century mobility paradigm behind. The city of Munich is an example of this societal transformation:

“The city will tackle pollution, as they have been sued for their NOx emissions. BMW is already working on mobility services, and they expect to boost them exponentially and combine them with car production. Our politicians will not speak against car ownership, as they could face a lot of powerful enemies, but they will definitely tackle car use.” [PhD researcher on mobility 1, TUM university’s Mobil.Lab]

“Electric mobility and charging stations will be enhanced. The next step would be to try to get all the electricity needed from ‘green’ sources of energy.” [EU-funded project leader, SWM (Stadtwerke München)]

This could lead to the new generations growing up without strong attachments to driving private cars: *“Public transport and shared services will be encouraged further. The youth will grow up acquiring new patterns that will eventually become normal to them. Moving around in one way or the other is very much a matter of habits”* [PhD researcher on mobility 1, TUM university’s Mobil.Lab].

Whether mobility will also be autonomous is to be seen. Even though automated vehicles are expected to make future urban mobility more efficient and cheaper (through the use of on-demand services), some people are already anticipating the potential negative effects of self-driving vehicles being run in the streets:

“We will see whether they are successfully implemented in dense urban areas. People will know that a self-driving vehicle has sensors and they will ‘safely’ step into the roads. For this not to happen, physical restrictions would probably be needed. Is that what we really would like to have in our cities?” [PhD researcher on mobility 1, TUM university’s Mobil.Lab]

Another relevant matter is whether automated vehicles will be individually owned or not. Better results in terms of sustainability and other types of impacts can probably be expected from shared schemes. Glotz-Richter argues that

the development of autonomous vehicles, when combined with the principles of car sharing, offers even more potential for a reorganisation of urban mobility. A fundamental decision must be made as to whether the introduction of fully autonomous (driverless) cars will happen under the principle of individual ownership

or fleet ownership (shared use). If we follow the path of fleet ownership and integration with high capacity collective modes, there is huge potential to reduce the number of cars on the road – and to reclaim space that is currently used for parking. (Glott-Richter, 2016: 1303)

Glott-Richter (2016) concludes that the potential of autonomous cars could be eroded if they were not appropriated in the best way possible.

4.3-IN-DEPTH INTERVIEWS WITH SPANISH CITIZENS

As explained in chapter 3 on the methodology, a set of in-depth interviews with Spanish citizens living in Munich was conducted in parallel with the interviews made with important stakeholders. The interviewees' profile summary can be found in chapter 3. This summary reflects their generally car-free lifestyles.

What follows is a summary of the most relevant comments, which have been distributed into several categories or topics: daily mobility patterns, stages of advancement, inequalities and the cost of daily mobility, the car as a status symbol and the appropriation of new trends, and the interviewees' conclusions.

4.3.1-Daily mobility patterns: a normal week

The participants were asked a few introductory questions on their daily mobility and their use of different modes of transport. This was meant to offer a preliminary outline of how these people moved around in a normal week, before starting with more specific questions on mobility. They briefly summarised their use of both private and public vehicles, as well as how often they walked to their destinations. As most of them did not have any cars, only a few participants could talk on their use of private cars. They talked on their specific cases:

“It is because of being a family that we have a car. Mainly because of the dog. Then, it is also for not having to find a car and adjust it to the baby's special seat every time we need a car. Our family car is only for the weekends. We use it once or twice a week for going shopping, visiting friends or going to our private orchard.”
[Woman, 32, engineer, couple with a child and a car]

“We have a car for the family: for us and our child. In a normal week, I do not take it. It is my partner who uses it for picking our child from school. We also take it for weekend trips once or twice a month, and once a month or so for going shopping.”
[Man, 33, engineer, couple with a child and a car]

Owning cars was associated with having children. The interviewees claimed that parents only need a car (if living in the city) while their children are young. Therefore, owning a car was seen as a temporary circumstance. Young people, as well as older adults whose children are old enough, do not experience this need. For example, a young Spanish couple who had no children regretted having brought a car from Spain: “*My boyfriend brought his car here. At first, we thought that it was a good idea. After a while, we realised that we didn't nearly use the car*” [Woman, 29, software developer (at BMW), couple with a car].

Another matter that was mentioned was the restrictions on emissions: *“We bought a new petrol car that can get inside the city core, although we were happy with our diesel car. We switched to a petrol-engine minivan because of the restrictions on emissions”* [Woman, 32, engineer, couple with a child and a car].

Those who did not own a car made emphasis on the idea that those who live in the city do not have the need for owning cars and that having a car could become a burden:

“For me, having a private car is not worth it here, unless you live in the outskirts. I have thought of buying one several times and have always got to the conclusion that it is not a good option. There are many pedestrian-only zones and traffic jams in the city centre. Besides, there are very few and expensive parking spots.”

[Man, 29, engineer, couple with a city motorbike]

“I’m not thinking of buying a car, as the public transport network is very efficient. Some time ago, I thought about it, but I got to the conclusion that isn’t worth it, and that it is not economically viable in my case.” [Man, 25, PhD researcher, shared flat]

Cycling was much more common than the use of private cars among these people. This seems to prove the city’s successful management of mobility. The interviewees claimed that a combination of public transport and cycling (and shared cars for specific occasions) can be the optimal choice in such a high-performing city: *“I wanted to use the bike for everything, but, as my commute takes 45 minutes and I would need to take a shower, I decided to go to work using public transport. I cycle for covering short gaps after work”* [Woman, 29, software developer (at BMW), couple with a car]. In the same vein, another participant claimed that *“I sometimes take my bike for commuting, but it depends on my mood. Twice a week or so, I’m willing to cycle for 35 minutes each way, but usually I’m not. It’s 20 minutes if I take the metro. My choices also depend on the weather”* [Woman, 34, commercial agent, couple].

Figure 18. Cycling is encouraged in Munich through offering good infrastructure



Source: Own picture

In other cases, bikes were seen as an alternative for nearly all the daily routine activities that do not need to be supplemented by other modes: *“I took my bike for coming here. I use it nearly always: I take it to both work and sports training, most of the times. I move around by bike”* [Woman, 29, tourist office worker, shared flat]. Another participant said that *“I use my bike for nearly everything, unless bad weather conditions”* [Man, 29, engineer, couple].

Even those who had children and a car also tried to avoid driving in weekdays. Some of them had adjusted their bikes for carrying their children with them: *“In weekdays, we take our bikes everywhere: to work, to the kindergarten, etc. The baby has a special seat and even a small carriage for the weekend”* [Woman, 32, engineer, couple with a child and a car].

Regarding their use of the public transport network, several participants said that (apart from being sometimes combined with bikes) public transport modes were their first choices. Public transport was usually considered to be the best option for dealing with long distances and bad weather conditions. The metro was their favourite mode:

“My daily commute to work is based on a 40-minute trip by U-Bahn (metro). I take the metro for going out too. I like the U-Bahn, as I consider it to be the fastest and the best option, but I also use other modes for specific tasks.” [Woman, 32, teacher, shared flat]

“I believe that the metro is the most efficient mode. For reaching unconnected places, I might also take the tram and the bus.” [Man, 25, PhD researcher, shared flat]

The public transport network was considered to be reliable and high-performing. Even though it mostly refers to tourists who visited the city for a short period, their perception is backed by a research study on visitor satisfaction with the local transport network (see Le-Klähn, Hall and Gerike, 2014).

The Spanish interviewees were familiar with new mobility trends, such as carsharing and bikesharing. Most of them could be labelled as “early adopters”, as they were already used to using innovative mobility options that made life without owning cars more viable: *“I use BMW’s carsharing service DriveNow for specific tasks, like buying furniture and so on. I also get these cars through their app for going skiing, as they have special package prices”* [Man, 29, engineer, couple]. Another interviewee explained that *“I use DriveNow once a week or so for tasks like going shopping to Ikea or going to the airport to pick somebody up”* [Woman, 32, teacher, living alone].

We can find three basic types of carsharing: free-floating carsharing (such as DriveNow), station-based carsharing (StattAuto, for example) and peer-to-peer carsharing, a scheme in which the car is made available by its owner (Glotz-Richter, 2016). Some of the participants had tried several carsharing services, and they had made a selection of those services that better suited their needs and/or preferences:

“I use StattAuto, even though I’m also registered in DriveNow. I use these cars as if they were taxis. StattAuto is not so immediate to hire, as you must go to a specific parking lot and get a car there. Afterwards, you must leave it there too. I have a parking lot next to my home. For me, it’s like having my own car.” [Man, 35, economist, couple]

“I was a DriveNow user, but now I use Car2go, as it’s cheaper. For me, it makes no sense to pay extra for driving a BMW when you can get a Smart, which is a cheaper option.” [Man, 29, engineer, couple with a city motorbike]

Bikesharing is another service that is becoming increasingly popular in Munich, but these Spanish citizens used it much less than carsharing, as all of them had bicycles.

4.3.2-Stages of advancement

In the second part of the in-depth interviews, the participants were asked whether they had switched to different mobility patterns, compared to their previous lifestyles (mostly in Spanish cities). They were also asked about their views on the city's advancement in mobility issues: Whether they considered that there are different stages of progress (Munich being a high-performing city) or just cities that have adapted to their specific circumstances. A last question asked them about what things worked better in Munich than in their Spanish cities and what other things worked better in Spain.

Most of them had adapted to new mobility patterns. For those who drove in Spain, cars had become less necessary. Some people already moved around in a quite sustainable way in Spain, and they had adjusted their habits to the city of Munich. For example, those who had lived in Barcelona and Madrid claimed having adjusted to smaller distances, while those who had lived in smaller cities (such as Bilbao) had become familiar with bigger distances. Distances have an impact on mobility choices, as walking and cycling are usually attributed to shorter distances in comparison with public transport and cars.

It must be taken into account that, like in many other metropolitan areas, driving is more common in the periphery of the city. Many of those who live or work in the outskirts drive, as there are not so many mobility services and the population density is lower: *“Those who live in the city do not need to own cars. However, there are workers who commute to specific zones in the outskirts that are not properly connected to their homes. They need private cars for going to work”* [Man, 29, engineer, couple].

Most participants agreed that Munich is more advanced in terms of mobility than their Spanish home cities. They made reference to two main aspects: Bavarian people are more conscious on environmental issues, and Munich offers better infrastructure. They reported the following:

“There's different degrees of advancement. Comparing Munich with Málaga, Munich is more evolved in terms of infrastructure and mindsets. For instance, here you can see elderly people cycling. They cycle for going shopping, and even take their grandchildren with them by bike.” [Man, 29, engineer, couple with a city motorbike]

“Transport is much more sustainable in Munich than in Sevilla. In Munich, people use bikes, electric cars, carsharing, etc. a lot more. Here, it is OK if people want to own cars, but they must buy new automobiles quite often due to the restrictions on emissions.” [Woman, 32, teacher, living alone]

“Here, public transport is managed better than in Barcelona. They are very strict with the timetables, and they don't collapse due to bad weather conditions. It is a matter of mindsets too. The locals trust public transport.” [Woman, 32, teacher, shared flat]

“Munich is ahead of other cities. It is much better adapted for cycling. You won't find a street without bike lanes. Even during street works, they try to keep bike lanes working. Barcelona is not so bike-friendly, and drivers are less respectful with cyclists.” [Woman, 29, tourist office worker, shared flat]

Figure 19. The authorities are working on offering bike infrastructure across the entire city



Source: Own picture

Munich was perceived as a high-performing city that offers a reliable and punctual public transport network. Nevertheless, the participants missed a few things. For example, public transport was blamed for having a zoning/ticketing system that was difficult to understand. According to one participant, *“most of the fines are probably due to this lack of clarity. Think of foreigners and so on: many rings, zones, etc. I was sent a whole package with information on transport when I arrived here. It’s really complex. They’d rather keep it simple”* [Woman, 29, tourist office worker, shared flat]. These Spanish citizens reported a few more negative aspects about mobility in Munich:

“The opening hours are too limited. If you hang out until late at night, you will need a taxi or another alternative.” [Man, 29, engineer, couple with a city motorbike]

“One of its few negative sides is the lack of rings in its network. Wherever you are going, they get you to the city centre and then to your final destination.”
[Man, 29, engineer, couple]

“For instance, nearly all S-Bahns go through a single tunnel in the city centre and then they are diverted. When this funnel point has a problem, everything collapses.”
[Woman, 34, commercial agent, couple]

This is corroborated by experts on mobility in Munich. Kesselring notes that

despite Munich being structured into many functionally mostly independent neighbourhoods developed from old village structures, its transport infrastructure follows a monocentric logic. All public transport fast tracks concentrate into one so-called “Stammstrecke” (trunk route) between Pasing in the West and Ostbahnhof in the East. The capacities of the trunk route, once built for the Olympic Games in 1972, were almost exhausted already in the beginning of the 1990s. (Kesselring, 2016: 67)

4.3.3-Social inequalities linked to mobility

The majority of the interviewees found the prices of moving around in the city of Munich quite high, but proportional to the average Bavarian income. Some of them found the prices in Munich too high, not only for Spanish standards of living, but even for Bavarian standards. Single tickets were usually blamed for being too expensive. According to the interviewees,

long-term passes made more sense, as they are proportionally cheaper. In any way, most of them agreed that these high prices were not surprising in such an expensive context:

“Transport prices seem to be proportional to incomes. In my view, single tickets are too expensive. This is a problem for people like me, for tourists, for all those who use public transport only occasionally.” [Woman, 29, tourist office worker, shared flat]

“Prices are adequate for the standards of living. Comparing to Barcelona, it could even be considered cheaper, in a proportional sense. I have also lived in Lima, in Perú, where transport is crazily expensive in proportional terms.”
[Man, 29, engineer, couple]

A negative consequence of having expensive single tickets is risking that those who would use public transport only occasionally drive their cars (if they have a car): *“I buy no monthly passes, as I don’t need them. I find the prices so high that I take the car as my second option when I’m not cycling”* [Man, 33, engineer, couple with a child and a car].

Like in many other cities, housing is expensive in the city core, but those who live or work in the periphery must pay extra for moving around: *“For me, all modes are quite expensive. I pay 135 euros per month, as I work in the outskirts. It’s true that they are good and efficient, but this amount of money is quite a lot”* [Man, 35, economist, couple].

But, although prices are an important matter, the most important thing that I wanted to know is whether these high prices and other factors (such as area of residence or age) lead to some kind of segregation in the use of the different options. According to the participants, some segregation exists, but it is mild and less noticeable than in their Spanish home cities:

“I think the structure of users is the following: Top executives always drive cars. Those who are not so much in the top, but are managers too, often use public transport. You won’t see this in Barcelona. Here, many managers keep their BMWs at home, and they use them only at weekends.” [Man, 29, engineer, couple]

“I see some inequality behind the use of transport modes, but much less than in Madrid. Some of my bosses go to work by bike. Some of them don’t even own cars. In this sense, Munich is different.” [Woman, 32, engineer, couple with a child and a car]

Something that seemed to impress the interviewees is that elegantly-dressed managers avoid commuting by car. They seem to be quite affluent, and (apparently) could easily afford private modes. Nevertheless, many local managers opt for using public transport and cycling to work: *“Many well-dressed managers commute to work by bike and using public transport. It might perhaps be connected to the type of companies that are settled here. This is a very ‘snobbish’ city”* [Woman, 29, tourist office worker, shared flat].

However, the participants observed certain social inequalities linked to how people move around:

“One factor that leads to inequality is a person’s technological skills. Citizens who know how to surf the Net use carsharing and other new schemes. It is not that much a matter of income or wealth.” [Man, 29, engineer, couple]

“Certain people live in the periphery because they want to live in big houses, and others because they don’t have much money. The first group uses private cars, it’s part of their lifestyle, whereas the second group relies on public transport.”
[Woman, 29, software developer (at BMW), couple with a car]

The difference between being expelled to the periphery of a city and voluntarily choosing to live there was mentioned here, a duality that is common to many metropolitan areas and that has a significant impact on daily mobility.

4.3.4-The car as a status symbol and the adoption of new trends

As explained in the contextualisation, certain car brands have a significant economic and cultural weight in Bavaria (especially BMW, in the case of Munich). There was full consensus among the participants about it: Bavarians have a certain proneness to show social status through their automobiles, at least those who are seen as prototypical Bavarians. As well as for daily commuting, there appears to be a perceptible social structure underlying the use of cars (the privately-owned ones, although there are new emerging trends that could lead to similar attitudes through carsharing services like DriveNow, as they only offer BMWs and Minis, and you have the option of hiring convertible models) as symbols of status. According to a former resident of Barcelona:

“The car is definitely a status symbol here. Most of the automobiles are luxury models. When the weather is sunny, you see many convertible cars. In my view, their drivers’ message is: ‘Look at me, I have so much money that, although it is sunny just a few days a year, I have a convertible car’. Most of the cars are BMWs, Audis, etc.”
[Woman, 32, teacher, shared flat]

What are the logics behind? It appears that the idea of using cars as status symbols that can be carried everywhere by their owners is mostly linked to someone’s background and to gender. The interviewees perceived a division between those who care about the implicit messages that their cars send to the rest of the society and those who do not. Those who care about it were stereotyped as German native, young and elderly men from middle-class backgrounds. For example, a participant described her boss as *“a prototypical Bavarian for whom only Porsche, Audi, BMW and so on are worth buying. I wouldn’t dare to say that the majority of the Bavarians think like him, but it is definitely a typical Bavarian trait. I guess that it is usually a male trait”* [Woman, 34, commercial agent, couple]. Another interviewee had asked himself on this and had drawn some conclusions:

“When I arrived, I saw many young people driving luxury cars and asked myself about the reasons. Then, I observed that these people live with their parents and spend their money on cars, before emancipation. They think that their youth is a time for showing off and impressing the girls. Older people also love luxury cars. It is middle-aged people the ones who care the most about their cars’ functionality.”
[Man, 29, engineer, couple with a city motorbike]

Apart from their ambition of showing off, or showing the others their success in life, the prototypical Bavarians were said to have some kind of irrational and passionate relationship with their automobiles:

“There is some kind of loyalty to the local car brands: 90% of the cars that you see here are German. They produce BMWs here, and Audis close by, in Ingolstadt, and families from Munich who bought a BMW keep always buying BMWs, even if they sometimes struggle to afford another one.” [Man, 37, architect, couple with two children]

“At work, I have sometimes told my colleagues about car brands like Hyundai and their reasonable prices, but they would just answer: ‘No way, we the Bavarians only want to buy BMWs, Audis and so on’. They are big fans of BMW here in Munich.” [Man, 29, engineer, couple with a city motorbike]

“My flatmate commutes to Ingolstadt and she says that they drive many Audis there. It is the same here with BMWs. It is some kind of ‘war of egos’.” [Woman, 29, tourist office worker, shared flat]

“There’s a great car culture or tradition. They have BMW here in Munich, Mercedes in Stuttgart, etc. They tend to think, not everyone of course, that you are somebody if you drive a Porsche, a BMW, a Mercedes or an Audi.” [Man, 29, engineer, couple]

But, surprisingly, such a strong attachment to cars does not mean that people’s mobility habits are strictly incompatible with sustainability. The private automobile and other modes appear to cohabit in harmony, as many citizens leave their cars parked at home in weekdays and commute by bike or using public transport. The participants explained that:

“The Bavarians have mixed feelings. They are big fans of cars and they produce BMWs. I don’t think that they could take all the cars out of the city. But, at the same time, they are eco-friendly people. They are starting to ban diesel cars and limit car use by setting emissions categories.” [Man, 29, engineer, couple with a city motorbike]

“It’s a ‘cultural duality’. On the one side, the Bavarians love cars, and their kids feel this passion. They are great car producers. But, on the other side, they are concerned about sustainability, so they also love cycling and public transport.” [Man, 29, engineer, couple]

“People use public transport a lot, but families own one or two cars. Families have a lot of vehicles, but they usually use them for leisure trips only.” [Man, 37, architect, couple with two children]

As explained before, trends such as bikesharing or carsharing are being implemented in Munich. Electric cars are also becoming popular, and they are accessible through carsharing. Several interviewees could be labelled as “early adopters”. However, they found that other people are being left behind or are reluctant to change:

“I believe that using carsharing is a matter of budgeting and openness to change. It is quite expensive to own a car and buy a new one every a few years. You need a positive attitude towards new things. The digital natives are the ones who are pioneering this.” [Woman, 29, tourist office worker, shared flat]

“Elderly people don’t get access to these new trends. They don’t understand how they work, and they don’t trust the Internet. They won’t provide personal information, they are quite afraid of doing so.” [Woman, 32, engineer, couple with a child and a car]

“Young people seem to be more prone to adopt innovations like electric vehicles. Most of the electric cars that I see are driven by people between the ages of 25 and 40, more or less.” [Woman, 32, teacher, living alone]

4.3.5-Interviewees' conclusions

By way of conclusion, the interviewees argued that, even in such a high-performing place, the private car is still associated with freedom, at least in the case of families with children. Big families might find carsharing inconvenient, as they need to adapt every car they hire to their young children. This is a complex issue to solve for this type of companies. Moreover, they are asked to lower their prices: *"Having a car is still a must for a family like ours. When your kids are very young, you really need it: school, doctors, adapting a car to your kids, etc. The car gives us freedom. We also take it to the mountains at weekends. Shared cars are too expensive for doing all this"* [Man, 33, engineer, couple with a child and a car].

However, most of the participants could be defined as "early adopters", as they already use new mobility trends with great frequency. Among them, carsharing is probably the most popular one, as it was said to be a good alternative for specific tasks. In those cases in which cars are not needed on a regular basis, using shared cars was regarded as a more reasonable option than car ownership: *"Thanks to carsharing options, for me, owning a car is needless. A private car is an inefficient asset in an economic sense, as it loses its value all the time, and in a spatial sense, as it is parked most of the time. I prefer the idea of pay-per-use"* [Man, 29, engineer, couple].

A balanced combination of all the available mobility options was usually thought to be the ideal solution for avoiding car ownership or, at least, frequent car use: *"Ideally, private cars would only be needed by very few people inside cities. Most people would definitely not own a car and use taxis, Uber or carsharing for specific tasks. Public transport would be their main choice for daily mobility"* [Man, 29, engineer, couple with a city motorbike].

According to the interviewees, Munich was already close to this ideal situation: *"It is very close to an ideal situation, and it is a good reference for other cities. I don't need to own a car here, I take shared cars. Public transport is efficient and covers nearly all areas. Bike lanes can be found everywhere. You have many options for moving around"* [Man, 35, economist, couple].

Another important matter that was mentioned is that achieving an ideal urban mobility would not only consist of offering proper infrastructure and mobility alternatives but also of reshaping people's values and attitudes in such a way that they embrace the new paradigm: *"Cities must be bike-friendly, whether incorporating cycling lanes or not. I think it is easier to feel safe when you cycle in segregated lanes. It is hard to achieve that car drivers are careful, although it would be an ideal situation as well. I love walkable city cores too"* [Woman, 29, tourist office worker, shared flat].

4.4-CONCLUSIONS: "EARLY ADOPTERS" AND THE CAR AS A STATUS SYMBOL

Munich was chosen mainly because of two elements that seem to cohabit in harmony: its powerful car industry and culture (strongly influenced by BMW) and its high-performing urban mobility ecosystem. The city seems to have achieved a quite balanced combination

between car ownership and sustainable mobility: Those who do not live in peripheral areas were reported to own cars but to use them only occasionally.

This successful coexistence or duality is backed by the local authorities, as encouraging the Bavarians not to buy cars could damage the region's economy. Moreover, automobiles are prototypical status symbols in the Bavarian culture. Not only BMW but also other high-end car brands, such as Audi, Mercedes and Porsche, have a strong influence and are based near by. As sustainability is taken seriously and is managed with care, people are encouraged to buy brand-new automobiles and leave them parked at home (at least on weekdays).

For those who avoid taking their cars on a daily basis, and for those who do not own cars (like most of the Spanish citizens interviewed), the city offers a variety of reliable mobility options. A new trend that is becoming popular is using carsharing through apps and services such as BMW's DriveNow. Bikesharing is a growing trend too. Munich offers a well-designed and extensive network of bike lanes. Their public transport is reliable and efficient, and it is the cornerstone of a successful management of daily mobility.

Munich is an innovation hub where the collaboration among multiple stakeholders, led by BMW and the city council, has helped in successfully managing mobility issues since the early nineties. According to the in-depth interviews with key stakeholders, Munich is a good example of a pioneering city in the field of mobility. They have clearly opted for encouraging sustainable mobility, which seems not to be incompatible with car ownership, as car use is often attributed to special occasions such as weekend trips or holidays. Bavarian citizens are expected to embrace intermodality, a mobility paradigm in which all the means of transport would seamlessly be accessible to nearly anyone. However, it is still to be seen whether the new services are eventually democratised (or certain social groups are left behind). It is also to be seen to what extent the peripheral areas of Munich become less car-dependent.

The interviews with Spanish citizens showed that they had adjusted their lives to a high-performing mobility ecosystem. As they do not have a strong attachment to car ownership, they could be labelled as "early adopters". Most of them already use new mobility services such as carsharing and commute by bike and using public transport. They take shared cars for specific tasks, such as buying furniture and going shopping. These "early adopters" are young and well-educated and they have attitudes and values that correlate with their habits. They said that they highly value walkable city cores, bike-friendly cities and efficient public transport networks. They also value the idea of pay-per-use, and not so much the burden of having to buy a new car every a few years and do its maintenance.

Their perception was that the Bavarians generally are very loyal to their local car brands but care about the environment at the same time. Thus, a prototypical family would have a car or even more (mainly BMWs) but would make a limited use of their cars and would avoid commuting by car, unless they live or work in the outskirts and have no alternatives. The car seems to be both an important status symbol and a deeply-rooted component of the culture that is dominant in the region. All in all, we could take Munich as an illustrative example of how the mobility transition should be managed. The local authorities appear to be afraid of speaking against car ownership, but they are working on offering convenient alternatives to private cars, so that the local families leave their cars parked at home most of the time.

5 - THE MOBILITY TRANSITION IN A DISPERSED AND POORLY-PERFORMING CITY. THE CASE OF PAU (FRANCE)

5.1-CONTEXTUALISATION OF THE CASE STUDY

Doing a stay in Pau (a city located in the South of France) was an opportunity for analysing the mobility transition in an urban setting that is dispersed and extremely dependent on the private car. Moreover, Pau was being redesigned for implementing an innovative hydrogen-fueled Bus Rapid Transit (BRT) system. My stay there was relatively short (a month) and was made possible by an AquiMob grant. AquiMob is a collaborative program led by the regional governments of Navarra, the Basque Country and Aquitaine (France). The stay took place by the end of 2017 at the Department of Sociology of the UPPA (“Université de Pau et des Pays de l’Adour”). My codirector there was the French sociologist Francis Jauréguiberry.

Even though the local administrations were making efforts for heading towards a more sustainable mobility, it was not clear whether the new Bus Rapid Transit system would make a significant difference. The metropolitan area has mainly been designed for automobiles: Many shopping malls and leisure centres are located in the suburbs, and the city core also has several shopping malls and big parking spaces for cars. Reverting the massive use of private cars seems to be an enormous challenge.

As part of my fieldwork, a set of in-depth interviews was carried out in the main city and in nearby places. On the one hand, I had access to important local stakeholders, such as the manager in charge of the innovative BRT project and several managers from companies that develop innovative mobility solutions. On the other hand, I carried out over ten interviews with Spanish citizens living in Pau and its surrounding areas. They reported that they became extremely car-dependent since they moved there. The fieldwork reflects that several factors are involved in mobility-related issues: public and private investments, built environments and urban planning, mindsets and cultural components, etc.

Pau is a relatively small city located in Southern France, close to the Pyrenees. The city of Pau has a population of nearly 80,000 residents¹¹⁰. The metropolitan area, which adds to it peripheral towns and villages, is nearly double in size in terms of population (approximately 150,000 inhabitants). Pau is a dispersed urban environment. The city of Pau covers over 30 square kilometres (31.5 km²). Thus, its population density is low: 2,450.5 inhabitants/km²¹¹¹. The case of Pau is paradigmatic in France, as other French cities present similar features.

The metropolitan area of Pau has historically been designed for the car. There are several underground and surface parking lots right in the core of the main city, even though the city is relatively small and the centre can easily be reached on foot from the neighbouring areas.

¹¹⁰ According to the Insee (the French national statistics entity: insee.fr/statistiques), the population of the main city of Pau was 77,215 in 2015.

¹¹¹ Main city of Pau’s surface and population density data (year 2015) obtained from the Insee (the French national statistics entity: insee.fr/statistiques).

Moreover, there are numerous suburban shopping and leisure centres, to which many locals drive their cars and that offer free-of-charge parking spots. It would be difficult to live in Pau without owning and driving a car. Not having a private automobile might be associated with disadvantaged social groups, such as young students, the elderly, the poor and immigrants. Furthermore, the automobile is present in Pau's popular culture. The city is proud of hosting car races every year, and the Pau Grand Prix is a famous local event.

On top of this, Pau has lacked important investments in alternatives to private cars. Bike lanes are scarce and unconnected. Public transport is not very efficient and is usually blamed for offering limited working hours and frequencies (for example, on Sundays, there are very few bus services). There are public bikesharing stations, but they are not very popular either.

The local administrations are starting to work on tackling the massive use of private cars. However, this seems to be an extremely difficult task, as the car has achieved a hegemonic role in the city's built environment and infrastructure and in the local people's mindsets and attitudes towards mobility. One of the first measures that have been taken is charging car drivers for parking in the city centre. For example, one of the most emblematic parking lots in the core of the city, located in the Verdun Square (see figure 20), became payable in the year 2017.

Figure 20. Charging for parking in the city core is intended to discourage the massive use of private cars



Source: *sudouest.fr*

But the iconic sample of the determination to evolve towards a more sustainable mobility is Pau's innovative hydrogen-fueled BRT system. At the time of my stay, there were works in progress in many areas and the city was being fully redesigned for giving traffic priority to this new service. Its main line would cover the city's north-south axis, from the local hospital to the railway station. The inclusion of a second line (east-west axis) was still being assessed. The BRT (or BHNS: "Bus à Haut Niveau de Service") would deploy "zero-emission" buses that run on hydrogen. This is an important feature, as powering vehicle batteries with hydrogen is a new trend that is raising debate: Some experts argue that it makes it possible to recharge

the batteries much faster (only in a few minutes), whereas others blame this technology for risky manipulation¹¹².

Figures 21 and 22. The local administrations campaigned for the BRT project



Sources: pau-circulation.fr and reseau-idelis.com

There is a smaller project that also proves the city’s intention to implement change. The Coxitis is a “zero-emission” electric shuttle bus that services the old town. It is free-of-charge and is meant to discourage the use of cars inside the core of Pau. This bus line offers a ten-minute-frequency service that stops at some of the main points of interest.

Figures 23 and 24. The Coxitis electric shuttle bus services the city core



Sources: pau.fr and larepubliquedespyrenees.fr (Marc Zirnheld’s files)

¹¹² There is debate on whether hydrogen is more dangerous than conventional fuels (as an example of an academic publication on this type of risk assessment, see Kikukawa, Mitsuhashi and Miyake, 2009). Certain experts even believe that hydrogen is safer than conventional fuel options and argue that it has been used in the industrial sector for over a hundred years (see, e. g., Kumar, Britter and Gupta, 2009). In any case, the city of Pau is convinced that hydrogen is the best option for having “green” and efficient public transport axes in a relatively small city (where other “green” alternatives such as metro lines might not be viable). According to Anstrom, “the attraction of fuel cells for transportation is their potential for improved fuel economy coupled with low carbon footprint and zero tailpipe emissions when compared to conventional petroleum-fueled vehicles” (2016: 24). The implementation of hydrogen-fueled mobility is a growing trend at a world scale that is taking place in parallel with the general growth in popularity of electric vehicles: “consumers calling for the protection of the environment on a regional and global scale are demanding the use of vehicles that do not emit harmful exhaust. It is anticipated that one response to this demand is the widespread use of fuel cell vehicles (FCVs)” (Kikukawa, Mitsuhashi & Miyake, 2009: 1135).

Other entities, such as the UPPA and several companies, are also working on promoting sustainable mobility. For example, the university has created a website (called “Covoiturage Facile”) for boosting carpooling among its students¹¹³. Some local companies participate in the annual initiative “Challenge de la Mobilité”, which is based on encouraging the workers to try alternatives and competing with other companies for prizes and seems to be having a positive impact on mobility¹¹⁴. After the 2017 edition, 64% of the total participants reported having switched to an alternative mode at least once a week. This highlights the importance of engaging not only the public administrations but also the private sector.

At a regional level, Aquitaine hosts small but highly innovative companies that focus on developing mobility solutions. One of them, Pragma Industries (based in Biarritz), claims to be the first company to offer commercially available fuel-cell bicycles that run on hydrogen. Even though for the moment their prices are too high for regular citizens, they are convinced of being developing a viable alternative for future (light) mobility.

Figures 25 and 26. At Pragma Industries, I was shown their futuristic vision of hydrogen-powered mobility



Source: Own pictures

At the national level, the government is making efforts to tackle the negative impacts of the country’s automobile-based mobility, even if their motorisation index is not alarmingly high in comparison with other European countries. In fact, the French motorisation index is lower than the European average¹¹⁵. Electric car sales are being heavily subsidised in France. Charging points are becoming available in points of interest, such as public parking lots and shopping malls. In parallel, numerous national private companies are working on innovative products for what they believe will be the mobility of the future. One of these companies is Navya, which has developed two innovative vehicles: a self-driving minibus and a robo-taxi.

¹¹³ The students can register at “Easy Carpooling” (covoiturage-facile.univ-pau.fr. Last retrieved: 31/1/2020) and try to find compatible drivers and car passengers among peer university students.

¹¹⁴ Information on the annual “Mobility Challenge” available at challengedelamobilite.com (Last retrieved: 31/1/2020).

¹¹⁵ According to Eurostat data (Number of passenger cars per 1,000 inhabitants, 2017), the country’s motorisation index was 478 in 2017 (the EU-28’s average being 512).

Both are fully electric. These high-tech vehicles are being tested and sold in France, as well as in foreign markets, not only for urban environments but also for rural settings¹¹⁶.

One of the most successful French contributions to the new mobility paradigm is the idea behind the French company BlaBlaCar. This service has become so popular that many French cities have built carpooling stations. The company started a business that is based on the so-called collaborative economy and consists of offering an online service where drivers and passengers can be matched with compatible people for sharing medium and long-range car-based journeys. At the weekends, many peripheral meeting points connecting cities through highways have even become overcrowded. Even though the clients' main goal generally is to share costs, carpooling is also supposed to cut emissions. Being socially active is another factor that is usually valued by BlaBlaCar users.

Figure 27. BlaBlaCar, which is very popular in France, aims to reduce costs and emissions



Source: blablacar.fr

The greatest challenge concerning carpooling seems to be exploring the possibilities of bringing change to short car-based journeys. BlaBlaCar (which has created a service called BlaBlaLines) and several French start-ups are trying to make this happen. However, none of them has achieved a high demand of this type of services. The idea behind these services is to match commuters and other people who would be willing to share short journeys.

Pau and other dispersed French cities are far from achieving a balanced modal split. The efforts made are expected to lead to a better situation, but the goal of bringing a noticeable change seems to be difficult to accomplish, as according to an Ipsos and BCG comparative study cited in La Croix the French use cars above the European averages in all the basic types of journeys (commuting, going shopping, etc.)¹¹⁷. The massive adoption of private cars and its impact on French cities has been analysed by researchers such as Pflieger et al. (2009), who explore the case of the city of Clermont-Ferrand. Even though change is a very difficult

¹¹⁶ Based on: "The transport operator Bertolami has chosen the NAVYA AUTONOM SHUTTLES for their mobility offer in rural territories" (Navya, 13/11/2018).

¹¹⁷ Based on the conclusions of the report cited in: "The car, indispensable for daily mobility in France" (La Croix, 26/4/2017).

task to accomplish that would mean a profound societal change, Kaufmann and Ravalet (in a survey-based prospective study about France in 2050) conclude that *“the car may one day no longer be the primary mode of transport for daily mobility. A decrease in car use was not imaginable until quite recently, but the development trends (...) show that such change is now within the realm of possibilities”* (2016: 30).

5.2-IN-DEPTH INTERVIEWS WITH KEY STAKEHOLDERS

The city of Pau is making efforts to evolve towards a sustainable mobility paradigm, even though this task appears to be extremely difficult in such a car-dependent environment. The collaboration between the public authorities and the private sector will surely be of strategic importance. Reaching a successful cooperation among all the stakeholders will not probably be easy. In fact, in a recent research study on French mobility policies and Sustainable Urban Mobility Plans (SUMP), Reigner and Brenac argue that they observed *“the relative chaos in interests, the complexity of their arrangements and the sincerity of the commitment by a large number of players often working for sustainable mobility, their uncertainties and their dissatisfactions”* (2019: 219).

As said before, Pau’s flagship project is its new BRT (the BHNS), which will cover the main axes. Therefore, the manager in charge of the project and one of the mediators (whose role is to explain the project to the local communities) participated in the interviews. Two other local stakeholders were also interviewed: the president of the association for defending the transport users and an environmental science engineer and researcher from a company that promotes change in the private sector.

Some French companies that are developing innovative solutions are represented too. I was invited to visit Pragma Industries (in Biarritz) for interviewing their sales manager, who showed me their factory and how their hydrogen-fueled bicycles work. I was also given the opportunity to interview a project manager from Navya (the French leader in autonomous mobility), who answered my questionnaire by email.

These interviews offered relevant insights on several issues, such as the implementation of change in a car-centred society, the adoption of innovative solutions and the participants’ expectations for the future.

5.2.1-Trying to implement change in a car-centred urban environment

The key informants described the situation in Pau. They argued that bringing change to the city will be a very hard task, as its built environment has mainly been planned for cars:

“Approximately 80% of the residents move around by car inside the metropolitan area. This bad habit is reinforced by the huge amount of parking spots offered in the city. It is estimated that Pau has a similar number of parking spots to Nantes, which is a much bigger city. This gives an idea of our structural problem. Moreover, large shopping malls are being built in the periphery.” [President, D. U. T. (Defense of Transport Users)]

Figure 28. City-core malls encourage car use through offering free-of-charge parking for customers



Source: Own picture

Furthermore, Pau is a dispersed region. Collectivising nearly all journeys by offering good public transport options seems to be an extremely hard task. Thus, some people advocate for only covering the main axes with proper public transport (the new BRT system), as well as the central areas, and offering dissuasive parking for those who come from the periphery. According to a key informant, *“the city’s main axes are being rebuilt so that the BRT and the bike are incorporated into urban mobility. Nevertheless, we are demanding that dissuasive parking areas are also built”* [President, D. U. T. (Defense of Transport Users)]. The manager in charge of the BHNS argued that *“some central lines run buses every 10 minutes. Everyone who lives in the metropolitan area would like to have such a service next to their doorsteps, but people must understand that this is nearly impossible in the low-density suburban areas”* [Manager in charge of the BRT project, City of Pau].

One of the most debated topics was the implementation of Pau’s innovative hydrogen-fueled BRT. Two expert participants who worked on this project offered valuable insights on this matter:

“The BHNS corridors are expected to become the backbone of our urban mobility. Their magnitude will depend on budget questions. For the moment, we are working on a first axis and have projected a second East-West axis. More axes ought to be progressively incorporated. These axes will have bus-only lanes, in some stretches at least, as well as bus-priority traffic lights. Our buses will be ‘zero-emission’ buses and will be run every 7 minutes.” [Manager in charge of the BRT project, City of Pau]

“The first corridor will cover our main points of interest, such as the railway station, the university and the hospital. It is similar to the former bus line T-2, but we will offer faster frequencies and 80% of this corridor will have bus-priority lanes.”
[BRT project mediator, City of Pau]

The positive sides of this project seem to be clear, but it must be noted that not everyone is happy with it, as for example some people have been relocated from their homes. It is not clear whether future politicians will keep opting for this system. The BHNS project manager

made emphasis on the key importance of future political decisions: *“For redesigning the city and crossing its core, we depend on political decisions. In certain parts of the city, we haven’t been given permission to set bus-priority lanes. We don’t know whether they will keep opting for hydrogen-fueled buses, as it was our current mayor’s choice”* [Manager in charge of the BRT project, City of Pau].

5.2.2-Innovative mobility solutions and expectations for the future

The private sector is also working on implementing change. One of the interviewees was an engineer and researcher who works for a local company. This participant offered relevant insights into how French private companies are trying to adopt a more sustainable mobility:

“Part of what we do is shaping mobility plans for enterprises. It is compulsory for French companies to have home-work mobility plans. We specialise in offering them help for reducing solo driving. There are numerous initiatives that could be assessed: telework, video conferences, carpooling, company buses, subsidising public transport, etc.”
[Environmental researcher and engineer, Apesa]

Certain local companies such as Apesa are going one step further (from the governmental impositions) in what refers to encouraging sustainable mobility alternatives:

“Our company is very flexible. We offer the option of teleworking, and 10 out of our 40 workers cycle to work. If you use your bike, you are paid some extra tax-free money per kilometre. We encourage carpooling too. We avoid having a company car, and we have a company bike instead. As we give speeches to others, we must lead by example.”
[Environmental researcher and engineer, Apesa]

Moreover, they had some creative ideas to promote sustainability: *“An idea that we had consisted of gathering workers for a brunch and dividing them into their areas of residence. They get to know each other and boost their opportunities for carpooling”* [Environmental researcher and engineer, Apesa]. Apesa won Pau’s local Mobility Challenge, which consists of going to work in an alternative way once a year. According to this expert, these initiatives have proven useful. He also pointed out that upgrading infrastructure and trying to influence people’s mindsets are probably the two main elements of success: *“Offering infrastructure that is adequate is needed, as change without it is nearly unviable. For example, many more workers started to cycle to work when we installed showers. The other key factor is reshaping people’s attitudes towards mobility”* [Environmental researcher and engineer, Apesa].

Numerous French companies and start-ups are working on the current mobility paradigm shift, as change towards sustainability is expected to boost the alternatives to the traditional private-car-based mobility. In this context, I had access to managers who offered insights on the opportunities that they had foreseen and the challenges that they expected to face. The companies Pragma Industries and Navya are developing very different but complementary alternatives for future mobility. While Pragma is focused on light personal mobility, Navya is working on shared driverless vehicles, such as robo-buses and robo-taxis.

Navya is a successful but relatively small mobility company that has become well-known for producing autonomous vehicles that are being tested worldwide: *“Big companies, such*

as Waymo, Lyft and Baidu, are also working on this. They are transnational companies that have more resources. However, our company is easy to manage, flexible and has the capacity to make fast decisions” [Project manager, Navya]. Navya’s manager was questioned on the benefits of autonomous mobility. He highlighted the positive outcome of incorporating self-driving vehicles into mobility: *“We will have cleaner vehicles and less pollution. We will enjoy a more fluid traffic, without traffic jams. Road accidents are expected to be reduced by 90%. Self-driving vehicles will offer cheap 24/7 mobility services that will be shared and connected to other modes”* [Project manager, Navya].

But these very optimistic perspectives are not shared by all experts. In fact, the existing research on the matter tends to conclude that the results are yet to be seen, and that this issue should be managed with care. In this sense, Hula et al. pose a relevant question:

Will system efficiency improvements resulting from autonomous technologies reduce the overall environmental impact of transportation, or will the impacts of increased travel demand overwhelm any efficiency improvements and result in increased emissions and other environmental negatives? (Hula et al., 2018: 91)

Furthermore, there are challenges that need to be faced before self-driving vehicles are fully integrated into our lives. One of these challenges was highlighted by Navya’s manager: *“The greatest challenge is to make autonomous vehicles and traditional ones work in perfect harmony. Humans and robots must be successfully synchronised”* [Project manager, Navya].

Another challenge is achieving that people become familiar with this new technology and incorporate it into their lives. In a research study based on year 2014 Eurobarometer data, Hudson, Orviska and Hunady conclude that

people tend to be lukewarm to AVs, particularly driverless cars. However, a simple average hides the fact that many people, young and old, are totally hostile to the concept and a smaller number totally in favour (...) We find the young to be more in favour than the elderly. There are other differences, with males, those in cities and the more educated being more in favour, as well as differences between countries. There is also some evidence that support for AVs is greater in countries with high accident rates. (Hudson, Orviska & Hunady, 2019: 164)

In another example, Pettigrew et al. (based on a survey to Australian citizens) found that *“where concerns were expressed, they typically related to perceived safety, trust, and control issues, and tended to be more emotional in nature”* (2019: 19).

Similar questions were posed to Pragma Industries’ manager, on light personal mobility (fuel-cell bicycles). He explained that: *“Our e-bikes offer a very fast charging time of a couple of minutes. This is the main advantage. Even though the bike is too expensive for the general public, our production costs are expected to be lower in the future”* [Sales manager, Pragma Industries]. However, the development of this technology seems to be still in an initial phase (Anstrom, 2016), even though assessments on the viability of incorporating fuel-cell bicycles as an alternative option are starting to be made (see for example Minutillo et al., 2018).

Pragma’s manager claimed that this innovative light mode could become popular in the near future: *“Many people are familiar with e-bikes (...) We have the intention to launch a*

model that will be recharged by putting tiny cubes bought in the supermarket into the bike's cell. These innovations come from the military field and have been proven safe in industrial processes" [Sales manager, Pragma Industries]. This comment made reference to the debate on whether manipulating hydrogen is safe enough. Moreover, there are other challenges: *"For now, our bikes make more sense for the public administrations than for average citizens. The main handicap is the lack of charging infrastructure. As charging stations are expensive to build, it is an alternative for workers who always return to a certain point"* [Sales manager, Pragma Industries].

As we have seen, Navya and Pragma Industries are working on mobility solutions for the general public, even though they are in an initial phase. Their success will depend on several factors, such as lowering production costs, citizens becoming familiar with them, enabling legal frameworks, private and public-sector investments, etc.

Those who work on specific innovations developed by their companies strongly believed that these innovations will succeed in the near future. Pragma's sales manager claimed that *"people are starting to realise that e-bikes can also be used for daily mobility. We are happy to see that they are becoming popular and can help specific social groups like the elderly. As our bikes make more sense than traditional e-bikes, we expect them to be a growing trend"* [Sales manager, Pragma Industries]. According to Navya's manager, *"self-driving vehicles are a mobility solution for fast urban-population growth. According to certain estimations, 17% of all vehicles worldwide will be driverless by 2035. By 2055, there will be more autonomous vehicles than conventional ones"* [Project manager, Navya].

Apart from the progressive incorporation of autonomous vehicles into our lives, French companies and the public sector have hopes on hydrogen to become an important source of energy for replacing conventional combustion engines. Pragma's sales manager argued that *"citizens might eventually become used to hydrogen. It is of strategic importance to get rid of oil, not only because of the environment but also because our country is dependent on foreign states for importing oil"* [Sales manager, Pragma Industries]. The manager in charge of Pau's BRT project optimistically stated that *"here, many people think that hydrogen is the future. Even carmakers are starting to use it. We want to be a pioneering city, with our BRT project. Nevertheless, it is also true that we need to make huge investments before fuel-cells become widespread"* [Manager in charge of the BRT project, City of Pau].

However, it is not clear whether Pau will succeed at effectively bringing a deep paradigm change. The stakeholders interviewed agreed on the positive outcome that the new BRT will bring, but they were not sure about it meaning a turning point and an overall competitor for the private car: *"We have doubts about it making a great difference, as we must see whether the central corridor is successfully fed, and for feeding it with a lot of people we need to have a synchronised metropolitan network"* [President, D. U. T. (Defense of Transport Users)].

Even those who were working on the BRT system were cautious about assuring that it will eventually lead to a significant change in Pau's modal split. Even if they were optimistic, they knew that much more must be done in order to radically change such a car-dependent environment. They said that they have more hope in a distant future than in the near future:

“There is people who commute and move around in alternative ways, but most of our people move around by car. For changing this habit, we must work on offering a good combination of alternatives, such as trains, buses and bikes. Thanks to the BRT, and to other future projects, I believe that our car-centred society will very slowly evolve into a more balanced situation.” [Manager in charge of the BRT project, City of Pau]

“It is a matter of mindsets as well. We are detecting that the new generations are less obsessed with car use. They take into consideration other options, such as the bike and public transport. We have faith in them as catalysts of change.”
[BRT project mediator, City of Pau]

Change was not expected to happen spontaneously. Like in many other places, the public authorities were asked to implement and enforce mobility measures: *“We will not achieve a radical change until citizens understand that there is an environmental crisis very close to happening. Many enterprises will not do much about it until they are forced to reach a better emissions balance by upgrading their home-work mobility”* [Environmental researcher and engineer, Apesa].

All in all, we can conclude that the stakeholders were only moderately optimistic about change in Pau. There are reasons for being optimistic, as significant efforts are already being made, but the experts believed that numerous factors (such as demographical dispersion, a car-oriented urban planning, a lack of efficient public transport and cycling infrastructure, a lack of culture of using bikes for daily mobility, etc.) make it extremely difficult to drastically change the situation. Small steps will probably follow what has already been achieved. Pau is likely to progressively become a less car-oriented urban environment. However, the pace of this paradigm shift is expected to be very slow and very challenging.

5.3-IN-DEPTH INTERVIEWS WITH SPANISH CITIZENS

The interviewees’ profiles reflected their extremely car-dependent lives. Their narratives illustrated their everyday mobility strategies and their perceptions on mobility issues. Their views have been distributed into several topics: mobility patterns, stages of advancement, inequality and the cost of mobility, a utilitarian approach to the private car, the adoption of new trends and the interviewees’ conclusions.

5.3.1-Daily mobility patterns (a normal week) and stages of advancement

Their households had at least one car, and nearly all the interviewees were frequent car drivers. A participant summarised his use of his car in a normal week as follows: *“I drive my car nearly everywhere. I take the car to work and back home daily. Then, I go shopping and to other places by car too. I take it to the city core, and for our weekend trips too”* [Man, 41, engineer, couple with a child and two cars]. In a similar vein, another participant said that *“I take my car to work and for doing errands. At weekends, I also drive. I only leave the car at home when my destination is close enough, so I can comfortably go there on foot”* [Man, 27, physical therapist, living in a shared flat and owning a car].

Owning a car was not seen as a temporary circumstance (like in the case of Munich), but as a permanent need. The interviewees argued that any other option would be much more inconvenient. Those who had the intention not to drive everywhere felt forced to do so, and those who had looked for viable alternatives had come to the conclusion that no mode could compete with the private car in such a car-oriented environment:

“I felt forced to bring my car from Spain and to drive nearly everywhere, even though my initial intention was to avoid driving so much. We thought that we could manage with my husband’s car, but it was impossible. We really needed a second car.”

[Woman, 34, unemployed/scientist, couple with two children and two cars]

“I drive my kids to school every day. As we only live two kilometres away, we had no right to apply for the school bus. There is a shared school taxi, but I find it expensive. My kids are very young, so I won’t make them walk for half an hour each way.”

[Man, 38, mechanic, single with two children and a car]

Only one of the participants did not drive. Due to living in such a car-based context, she felt that she was dependent on lifts for moving around efficiently. With her boyfriend’s help, she could often avoid using public transport, which was blamed for being very inconvenient: *“I don’t drive, but my boyfriend drives me to many places, so that I don’t need to rely on the public buses or other alternatives. He drives me to work, to the university, to the library, etc.”* [Woman, 28, doing her PhD, does not drive, couple with a car].

Cycling is not common in Pau, and those few who cycle sometimes do so for practising some sport, not as a way of moving around. The interviewees described why Pau is not ready for encouraging cycling for daily mobility. The city lacks both a culture of the bike and proper infrastructure. No participants used their bicycle as a mode for their daily routine activities. One interviewee explained that *“we wanted to cycle to school with our children, but we soon realised that it wasn’t safe at all. There are no bike lanes and cycling on the roads makes you feel in danger. Many streets are narrow, and people drive too close to cyclists”* [Woman, 34, unemployed/scientist, couple with two children and two cars]. Another interviewee added that *“there’s too much traffic and no proper bike lanes, so I don’t feel safe. That’s why I don’t cycle to work, even though my workplace is just a kilometre away from my home”* [Woman, 54, doctor, household with two cars in peripheral village].

Public transport was also seen as an inconvenient option. Some interviewees used it on very specific occasions: once a week or less. It was seen as a last resort, when the car was not available, and many of these Spanish citizens had not even taken a bus since they arrived to Pau:

“No service on Sundays, thirty-minute frequencies... Pau’s public transport is not good enough. I don’t use it anymore, even though I gave it a chance when we lived closer to the city core.” [Woman, 35, translator, couple with a child and two cars]

“We tried it, but it was extremely inconvenient. For taking our children to school, we needed a transfer, so we spent around two hours. It is a twenty-minute journey by car.”

[Woman, 34, unemployed/scientist, couple with two children and two cars]

“In my view, having just two buses every hour is unacceptable. I only take the bus when my car is being repaired, or for going to the airport and to specific places. Taxis are very expensive here, so they are not a reasonable alternative.”

[Woman, 42, school coordinator, living alone and owning a car]

Most of the participants were familiar with the French carpooling service BlaBlaCar, but not with other mobility services. BlaBlaCar was used as an alternative for long journeys such as going back home to Spain:

“I share my car with other people through platforms like BlaBlaCar for travelling long distances and for going back to Spain.”

[Woman, 27, physical therapist, living in a shared flat and owning a car]

“I always use carpooling services like BlaBlaCar for travelling to Bilbao. In fact, I usually join other people in the designated carpooling areas located in the outskirts of Pau.”

[Man, 27, physical therapist, living in a shared flat and owning a car]

“I use BlaBlaCar, and informal social networks like Facebook groups, for going home to Spain.” [Woman, 53, sociocultural animator, single with two children and a car]

Those who travelled with relatives usually avoided using carpooling schemes. Moreover, some people blamed these services for having increased their prices. They put into question the real intentions behind the so-called collaborative economy:

“Before, we always used BlaBlaCar. Now, we have stopped using it when other people are driving. We only use it for sharing our car. They have increased the prices too much, and it has sometimes become more expensive than going by coach. It seems that they are giving up their initial values, as many drivers are trying to make business out of it.”

[Man, 26, butcher, couple with a car]

Furthermore, it is also interesting to notice that not everyone feels safe and comfortable while sharing rides with strangers. One participant said that she avoided using services like BlaBlaCar due to this lack of perceived safety: *“I don't like BlaBlaCar much, because I would feel uncomfortable while driving my car, alone, with a stranger sitting next to me”* [Woman, 54, doctor, household with two cars in peripheral village].

As we have seen, the private car was reported to be the king of mobility in Pau. The rest of the options were only seen as alternatives for very specific occasions. Lifestyles are based on owning and driving cars, while other modes are scarcely ever taken into account. Indeed, most of these Spanish citizens had become more car-dependent than in their Spanish home cities, where their cars were not so necessary, as their cities were not so poorly-performing. What is surprising about Pau is that even those who live inside the city seem to be very car-dependent, even though the inner city has less than 80,000 residents. However, as we have seen, urban sprawl and other factors make daily life in Pau nearly unviable without owning and driving cars.

According to the participants, Pau could do much better, but they understood that such a dispersed urban environment is hard to manage. Moreover, they blamed the situation not only on the lack of alternatives to the private car and Pau's car-centred urban planning, but also on the local people's car-oriented mindsets:

“I went everywhere on foot, by metro or by bus in my home city. Since I arrived to Pau, I started walking longer distances and became car-dependent. I believe that dispersion is not the only problem. There is a negative cultural component as well. People are very attached to their cars and they are used to driving to virtually all their destinations.”

[Woman, 28, doing her PhD, does not drive, couple with a car]

“Competing with private automobiles is nearly impossible here. You drive to any place in the city in 15 minutes or less, without too much traffic or trouble for finding a parking spot. For instance, I drive to work for just about 7 minutes.”

[Man, 41, engineer, couple with a child and two cars]

“There are places around Pau that are impossible to reach by public transport. You feel forced to make do if you want certain jobs. Many workplaces are isolated or have very impractical public bus frequencies. Some workers are given permission to adjust their timetables to the buses, but others aren’t.” [Man, 26, butcher, couple with a car]

“Pau is so disproportionately car-oriented that I see very old citizens who keep driving, as life without cars would be extremely tough as a consequence of this mobility model.”

[Woman, 54, doctor, household with two cars in peripheral village]

Even though dispersion makes it difficult to manage, Pau was blamed for having a design that intentionally encourages car use, as well as a car-centred mentality that does not take into serious consideration other modes. An interviewee concluded that *“driving everywhere is so deeply rooted in the locals’ mindsets that nearly no one seems to take other alternatives into consideration”* [Man, 38, mechanic, single with two children and a car].

5.3.2-Inequalities linked to mobility and a utilitarian approach to the car

Car use was perceived as the hegemonic mobility option and other options were ignored. The participants offered their views about how expensive it is to own cars and keep them in good state. Some of them did not even know how expensive a bus ticket is. This fact showed how extremely car-oriented Pau is and made it clear that their reason for moving around by car was not saving money. They claimed that it is strictly a matter of convenience:

“Having a car and paying for fuel and so on is more expensive here than in Spain, but it is seen as necessary. Besides, they encourage it by offering advantages like paying your insurance month by month. Public transport is so inconvenient that I don’t even know how expensive it is.” [Man, 38, mechanic, single with two children and a car].

“We do the car’s maintenance in Spain, when we go back home. Insurance and fuel are expensive in France but, anyway, having a car is viable for nearly anyone here as well.” [Man, 27, physical therapist, living in a shared flat and owning a car]

“It is not a matter of money, not at all. If salaries are taken into consideration, the prices are OK. People just look for convenience.”

[Woman, 42, school coordinator, living alone and owning a car]

These Spanish citizens have become part of Pau’s car-centred mobility, but not everyone can drive and/or afford a car. The participants argued that they could see that specific social groups are left behind. Certain people, such as the elderly, the young, poor immigrants, etc., were seen as the victims of this extremely car-oriented environment:

“Public transport is mainly used by students, old people and people living on benefits. This doesn’t happen in my home city: in Zaragoza. There, you can see all kinds of people using public transport.”

[Woman, 53, sociocultural animator, single with two children and a car]

“When I took the bus, I usually found myself travelling with students, immigrants with children and old people. There is a clear segregation, as, for example, all my friends use private cars.” [Woman, 35, translator, couple with a child and two cars]

“In many cases, it is a matter of money. Certain students might not be able to afford to drive everywhere. Car maintenance is expensive. You see students taking the bus and cycling.” [Woman, 42, school coordinator, living alone and owning a car]

According to the interviewees, we could conclude that Pau’s mobility is clearly stratified. It seems that nearly everyone who can drive and afford to move around by car does so. The alternatives to private automobiles were perceived as very inconvenient, so the participants tried to avoid them or limit their use to very specific situations. This mobility model leaves vulnerable people behind, as those who do not drive are forced to rely on poorly-performing alternatives.

Figure 29. Students, elderly people and immigrants are frequent users of public transport in Pau



Source: larepubliquedespyrenees.fr (N. Sabathier’s files)

According to the interviewees, the locals’ attitudes towards their cars are very different from what was observed in Munich. In Pau, using a car as a status symbol does not seem to be important, not at least in most of the cases. The participants said that most of the French have a utilitarian approach to their cars. As long as their car keeps working, they do not care much about its appearance and what other people might infer if they see them driving it. In Pau, many families have a car, or several cars. When they need to buy a car, they appear to be more interested in pushing the national economy forward (by buying French makes, in a similar way to what happens in Munich with BMWs and other German cars) than in showing any kind of social status through their cars:

“The French care less than the Spanish about what other people think of their cars. For instance, some of my colleagues have ugly old cars. They just don’t care, as long as their cars are useful for commuting. They have enough money for buying nicer cars, but they just don’t want to.” [Man, 41, engineer, couple with a child and two cars]

“Since I arrived to France, I was surprised, as cars are usually newer and better in Spain. It is a matter of mindsets, as the living standards are higher here. The French sometimes drive cars that are extremely old, but they don’t care at all about their scruffy looks.”
[Woman, 34, unemployed/scientist, couple with two children and two cars]

“The locals have many cars, but they don’t usually use them as status symbols. A normal family might even have up to three cars, most of them French makes: Peugeot, Renault, etc. You won’t see many luxury cars in Pau.”
[Man, 27, physical therapist, living in a shared flat and owning a car]

It was interesting to see that the interviewees observed an opposite attitude to what was perceived in Munich: Instead of showing off through driving nice cars, affluent local people were said to prefer to avoid being noticed. They were said to be jealous of their privacy and to prefer not to rise any special attention or envy among their neighbours:

“Those French who are wealthy won’t usually show their high status through their cars. They won’t probably buy a cheap car, but most of them prefer French makes to luxury German cars.” [Woman, 53, sociocultural animator, single with two children and a car]

“No one seems to care about their neighbours’ new cars. Rich local people don’t usually like to be envied because of having very nice cars. They prefer to spend their money on expensive holiday trips, for instance. It is a cultural matter.”
[Woman, 54, doctor, household with two cars in peripheral village]

Nevertheless, these attitudes towards the car may not be ideal in terms of sustainability. Automobiles seem not to be used as status symbols or totems, but this utilitarian approach can lead to a lack of interest in switching to newer and more efficient cars, as well as a very intensive use of old cars.

5.3.3-The adoption of new trends and interviewees’ conclusions

As seen before, among the trends that are emerging in France, there is one that is being really successful: carpooling services (mainly BlaBlaCar). They are an alternative to coaches, trains, etc. for long-distance journeys, and a way of sharing expenses and reducing emissions when travelling by car. Their urban-mobility versions (for commuting, going to school, etc.) are not succeeding (at least yet).

According to the interviewees, BlablaCar has become a huge phenomenon in France and in Pau:

“The use of BlablaCar is amazing here. It is very common to carpool. When we arrived, we couldn’t understand why so many people gathered just outside of the city, mainly at the weekends.” [Woman, 35, translator, couple with a child and two cars]

“We are astonished by the BlablaCar phenomenon. During the weekends, you can find carpooling areas that are overwhelmed. It had a great boom because people were not happy with the coaches and trains that connected the cities.”
[Man, 41, engineer, couple with a child and two cars]

“Carpooling is so popular in France that virtually anyone uses BlaBlaCar. For instance, I have travelled as a passenger in both a very posh Mercedes and a hippie’s car.”

[Woman, 28, PhD researcher, does not drive, couple with a car]

Figure 30. Many carpooling areas can be found in the French territory, mainly next to cities



Source: ouest-france.fr

Another growing trend in Pau (and in the country overall) is electric cars. Although none of the participants had bought an electric car, they had noticed that important efforts were being made in order to implement electric (auto)mobility:

“They have built a Tesla charging station in the outskirts. Supermarkets and businesses are starting to offer charging points. Besides, the French government subsidises electric car sales (...) Anyway, it all means a car-centred strategy.”

[Man, 38, mechanic, single with two children and a car]

“You can see many more electric cars here than in Spain. It is a matter of money, as the French government is investing a lot of money on subsidies. Besides, it is also a matter of awareness about environmental issues, as the French seem to be more concerned.”

[Man, 27, physical therapist, living in a shared flat and owning a car]

Thus, cars would remain the main mode, but the French are trying to rationalise their use by promoting carpooling services and electrifying their fleets.

In the case of Pau, in contrast with Munich, no one would imagine life without a private car. Thus, the interviewees could only dream of the city evolving towards a more limited use of cars, as reflected by a participant: *“We didn’t plan to have two cars in Pau. In a more ideal situation, we would only have one car and we would use it for specific tasks and for weekends trips”* [Woman, 34, unemployed/scientist, couple with two children and two cars]. In what refers to public transport, they were pessimistic about both the BHNS project (in the sense that it could help to improve the situation, but it was not expected to mean a radical change) and the city offering a high-performing network in the near future:

“We should have a better public transport network, with more frequencies and working hours. It is needed for commuting and leisure purposes. For me, it is not so much about the innovative BHNS. It is more about the network as a much more complex whole.”

[Woman, 28, PhD researcher, does not drive, couple with a car]

“I don’t think that we will get to a future situation in which we will be able to live in Pau without owning cars, but I have some faith in carpooling services for going to work and so on. Besides, it is to be seen whether the BHNS succeeds.”

[Woman, 27, physical therapist, living in a shared flat and owning a car]

“I am of the opinion that the BHNS was not necessary. This huge investment could have helped to create a network of cycling lanes instead. Pau is a small city where distances are not big and cycling makes sense.”

[Woman, 35, translator, couple with a child and two cars]

Finally, urban mobility was blamed for having fallen into a vicious circle to which it would be difficult to put an end. If change eventually took place, it was expected to be incorporated little by little, as reverting the situation appears to be extremely challenging: *“It’s difficult to offer a better service with reasonable frequencies when many areas are very spread out, but it’s also hard to think that citizens will switch to public transport without improving it a lot. It’s a vicious circle”* [Woman, 35, translator, couple with a child and two cars].

5.4-CONCLUSIONS: PUSHED TO SOLO CAR DRIVING IN A POORLY-PERFORMING CITY

Pau can be considered a stereotypical example of how the twentieth-century paradigm led to shaping cities for the car. The turn of the century has brought new concepts and ideas on how mobility should be managed, but this type of territories has been designed in such an extremely car-oriented way that retrofitting Pau is very challenging.

As we have seen, there are several factors that need to be assessed: not only an upgrade in infrastructure, but also the need for reshaping the locals’ mindsets and attitudes towards mobility. Demographical dispersion makes things worse. The pace of this paradigm shift is expected to be extremely slow.

In such a context, the interviewees reported that they felt forced to own cars and drive for going nearly everywhere. Any other mode was generally attributed to those who cannot drive and/or afford an automobile. The alternatives to the private car for daily mobility were perceived as scarce and were blamed for not performing well enough. The private car was seen as the only option that allows people to adapt to their built environment and make the most of their time.

Both the public and the private sectors are working on mobility issues and on developing solutions, but they must face numerous challenges. The stakeholders interviewed were only moderately optimistic about change in Pau. Important efforts are being made, but there are numerous problems that make a drastic change nearly impossible to happen, at least in the short term.

In such a dispersed and car-oriented environment, mobility will probably evolve towards a sustainable paradigm through a complex and long process. Whether this objective will be achieved in the future is to be seen. Urban sprawl and the lack of efficient and reliable public transport and proper bike infrastructure, as well as mobility services in a broad sense, have led to the appropriation of extremely car-based lifestyles that are inextricably connected to car ownership.

6 - THE MOBILITY TRANSITION IN A DISPERSED BUT HIGH-PERFORMING CITY. THE CASE OF HELSINKI (FINLAND)

6.1-CONTEXTUALISATION OF THE CASE STUDY

Doing a stay in Helsinki was an opportunity, as the Finnish capital city is a paradigmatic example of successful management of mobility. Like Munich, Helsinki is usually ranked as a top performer at the European and world levels. Moreover, this city is an example of how dispersed urban settings can tackle the negative impact of massive car use. It is, like Pau, a dispersed city in terms of population density. Even though this makes things harder, Helsinki has achieved a balanced mix in the use of the different mobility options.

My stay in Helsinki, the capital of Finland, took place by the end of 2018 and lasted for about three months and a half. I counted on extra funding from the Government of Navarra and from an Erasmus programme. I joined the Department of Geosciences and Geography of the University of Helsinki and the Digital Geography Lab, a research group that is focused on mobility and accessibility. It is a multidisciplinary group led by the Finnish geographer Tuuli Toivonen, who was my codirector in Helsinki.

The case of Helsinki brings hope for dispersed urban environments, as this type of cities is generally thought to be nearly incompatible with a sustainable mobility paradigm, due to the difficulty of collectivising people's mobility needs in non-compact environments.

Furthermore, the headquarters of several Mobility as a Service (MaaS) companies are located in Helsinki. These innovative Finnish companies were testing their mobile apps there before launching them on a global scale. MaaS Global, with its Whim app, appeared to be leading this phenomenon and was already expanding its business to other countries. Their idea is to integrate all alternative mobility options in a single platform, so that citizens have access to an overall alternative to the private car. As MaaS was being heavily advertised and tested in Helsinki, my stay there was an opportunity to analyse this innovative system that is claimed to be the future of mobility.

The fieldwork carried out in Helsinki was more ambitious than in the previous stays, as this stay was longer. Several local stakeholders (including MaaS Global's founder and CEO) were interviewed, as well as Spanish citizens living there. Extra items of fieldwork, such as the "image-based rating exercise", were added to it. This made it possible to evaluate the cultural components and social values underlying such a high-performing city.

Finland is a highly-advanced welfare state that is located in the Scandinavian Peninsula. It is a country of very low population density where only 5.5 million people live. Therefore, Helsinki is not a big capital city. The city has around 650,000 inhabitants, a figure that more than doubles to approximately 1.5 million if taken as a metropolitan area. In fact, two of its adjacent towns (Espoo and Vantaa) are the second and the fourth largest municipalities in

Finland¹¹⁸. In terms of density, Helsinki is nearly as dispersed as Pau. The city has a density of approximately 2,950 inhabitants per square kilometre¹¹⁹. It is mainly made of relatively low residential buildings, detached and semi-detached houses, and parks.

Map 3. Helsinki and the neighbouring municipalities are Finland’s main socioeconomic hub



Source: City Executive Office’s (2018) “Helsinki Facts and Figures 2018” report

As the rest of Finland is even less densely populated, it is even harder to offer alternatives to the private car there. The Finnish government is determined to tackle car emissions and try to implement solutions, but, for the moment, the rest of the country has not achieved a good balance between the use of private automobiles and other options. In fact, according to the 2016 National Travel Survey, slightly over 60% of the total trips made in Finland were car-based (this percentage is much lower in the city of Helsinki). According to Eurostat, the country’s motorisation index is one of the highest among the countries that pertain to the European Union (617 cars per 1,000 inhabitants in 2017, the EU-28’s average being 512)¹²⁰.

¹¹⁸ According to Statistics Finland (stat.fi), Helsinki’s population was 648,042 by the end of 2018. Espoo and Vantaa had 283,632 and 228,166 inhabitants, respectively.

¹¹⁹ According to the annual City Executive Office’s (2018) “Helsinki Facts and Figures 2018” report, the city’s population density was 2,934 inhabitants/km² in 2018.

¹²⁰ Based on Eurostat data (Number of passenger cars per 1,000 inhabitants, 2017).

Even though it is significantly more dispersed than Munich, Helsinki also has an efficient public transport network that comprises several modes, such as trains, tramways, buses and the metro. In addition to them, the city council has incorporated a bikesharing system that is becoming popular. More recently, they have also started to build stations with shared e-scooters. The public administrations are working on providing citizens with a wide variety of alternatives to private cars. However, there is still work to be done, as most of the mobility services are mainly available in the city centre and the neighbouring areas, but not so much in the peripheral areas. As a logical result, suburban residents are more car-dependent than inner-city residents.

According to Deloitte (2018a) City Mobility Index, the Finnish capital is a top performer and a global leader in all the fields measured but affordability. Even though its prices might be high (this problem is being assessed, and there is a 2019-2021 Operational and Financial Plan for restructuring fares and zones), the local public transport network is considered to be popular and efficient. Furthermore, there are many bike lanes and the cycling network is well-connected. Deloitte's 2018 report concluded that

the public transport system is highly reliable and accessible throughout the city. Cycling is also popular, although it lags behind other cities. Helsinki is leading the way with Future of Mobility concepts such as MaaS and shared mobility. The successful launch of self-driving public transport buses could provide early lessons to cities looking to adopt similar technologies. (Deloitte, 2018a)

Deloitte (2018a) estimated the metropolitan area's modal split to be the following (it has to be taken into account that, as they referred to the whole metropolitan area, private-car use may be considerably lower in the city): 39% cars, 30% public transport, 21% walking, 8% cycling and 2% others. In fact, the 2013 local survey on mobility (City of Helsinki, 2013) found that car use represented a much lower 21% and cycling a higher 11% in the city. Moreover, estimations might vary, as, for example, according to a report on the Kutsuplus experience in the Helsinki City Region (HCR), the share of public transport in the HCR was 43% of all the journeys made (Jokinen, Sihvola & Mladenovic, 2017).

Apart from all this, the city of has a reputation for being an innovation hub where MaaS (Mobility as a Service) platforms have emerged. This phenomenon is growing global and was started in the Finnish capital. As an innovative alternative to the private car, several Finnish companies came to the same conclusion: No alternative mode could compete with private automobiles, but all of them together put into a single platform could do so. Their business model consists of reaching agreements with complementary mobility modes, so that they are included in their app-based services. Once this is done, customers can pay-on-the-go or buy monthly subscriptions and have limited or unlimited access to all the services offered. This concept is being tested in Helsinki by several companies, such as MaaS Global and Kyyti. Kyyti does not only act as an intermediary agent, but it also adds its own fleet of on-demand minibuses.

MaaS Global's Whim app is being heavily advertised. Many claim that this kind of services will be the cornerstone of the mobility revolution. They are sometimes called the "Netflix of mobility", as they aim to offer a wide variety of mobility options for a monthly subscription.

Whim integrates a variety of mobility services, such as public transport modes, shared bikes, taxis, rental cars and shared cars. It is intended to compete with car ownership, as the sum of all these alternatives is expected to replace it, or at least to reduce the use of private cars (holidays, weekend trips, etc.). However, it is still not clear whether these new services will succeed on a global scale. For the moment, the Whim app is deficitary, and it needs external investments (MaaS Global has been funded by big companies such as Toyota)¹²¹.

Figures 31 and 32. MaaS aims to integrate the alternatives to the private car in a mobile app



Source: *itsinternational.com*

Maas Global and the Whim app are achieving widespread media coverage. According to Forbes contributor Carlton Reid, MaaS Global's CEO said that MaaS is *"better than owning your own car"* and argued that it is *"the 21st century equivalent to the Ford Model T, which gave people the freedom to go wherever and whenever they wanted"*¹²². They have high expectations and hope to convince the public authorities that MaaS is beneficial in terms of sustainability. According to Sampo Hietanen (MaaS Global's founder and CEO), *"if this plays out right, it is a blessing. Less congestion, less pollution, more efficient use of energy, shorter travel times, better cities"*¹²³.

Audouin and Finger point out that the implementation of MaaS is a good example of the need for cooperation among multi-level stakeholders, as MaaS

has the potential to help break away from the current automobility system of private car ownership towards a more sustainable 'post-car' system. While technology undoubtedly plays an important role in the development of MaaS schemes, coordinating the various stakeholders, from different levels of decision-making, seems to be an equally, if not even greater challenge. (Audouin & Finger, 2018: 24)

Cycling is also being encouraged as an alternative for commuting. Together with Munich and other cities, Helsinki was ranked as one of the top 20 friendliest cities for bicycling (18th position) in the 2017 Copenhagenize Index¹²⁴. Even though they performed reasonably well, Helsinki and the neighbouring town of Vantaa committed themselves to increasing the modal

¹²¹ Based on MaaS Global's announcement on their partnership with Toyota: "Toyota and its insurance partner make significant capital investment in Finnish company MaaS Global" (whimapp.com, 19/6/2017). In 2019, Mitsubishi announced that they would also invest in MaaS Global: "Mitsubishi Corporation Invests in Finland's MaaS Global Ltd." (Mitsubishi Corporation, 4/9/2019).

¹²² Cited from Carlton Reid's article "Netflix-of-transportation app reduces car use and boosts bike and bus use, finds MaaS data crunch" (Forbes, 28/3/2019).

¹²³ Cited from Sampo Hietanen's blog: "Why cities should call the shots in the mobility revolution" (14/2/2019).

¹²⁴ The Copenhagenize Index can be consulted at copenhagenizeindex.eu (Last retrieved: 31/1/2020).

share of cycling to 15% (HSL, 2015). The progressive extension of the bikesharing network is expected to contribute to reaching this objective. Like Munich and Pau (with its BRT project), Helsinki was advertising sustainable alternatives as desirable and attractive. This was, for example, the case of the bikesharing system, which was successful and was consolidating as an alternative for commuting.

Figure 33. The city bikesharing was advertised as an enabler of freedom in metro stations



Source: Own picture

Figures 34 and 35. The bikesharing system is proving successful in a city with good cycling infrastructure



Source: idonotdespair.com (blog)

Carsharing is also becoming a growing trend in the Finnish capital city, and services such as BMW's DriveNow are starting to operate there. According to an online survey carried out by DriveNow, 12% of their Finnish users had given up their cars or abandoned their intention to buy an automobile, 83% claimed that environmental awareness was an important factor for choosing this service, and 79% were male drivers (aged 34 on average)¹²⁵. These are facts that are relevant, as (as argued in the chapter on Munich) the profiles of these users appear to be limited (at least for the moment).

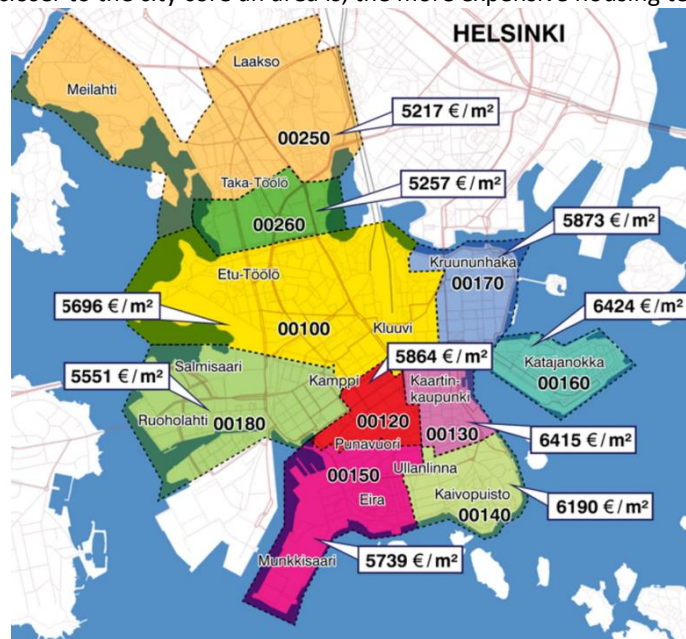
Figure 36. DriveNow's EVs (BMW i3s) can be seen parked or being driven inside the city



Source: DriveNow (drive-now.com)

¹²⁵ The customer survey was conducted as a questionnaire-based study among the customers of DriveNow Finland in February and March 2018 and was responded by 1,387 registered users. This carsharing service started operating in Finland in May 2017.

Map 4. In many cities like Helsinki, most of the mobility services are concentrated in the core, and the closer to the city core an area is, the more expensive housing tends to be.



Source: Yle Uutisgraafiikka (yle.fi)

In the future, bikesharing and carsharing could converge with other innovative trends such as autonomous driving. For example, Finnish researchers have tested self-driving bus shuttles (some of them made by the French company Navya, on which I have spoken in the chapter on Pau) in Helsinki and its surroundings and have surveyed the first users in order to analyse their perceptions about this new technology.

Figure 37. The Helsinki RoboBusLine: a pilot programme testing the maturity of automated bus shuttles



Source: Eetu Rutanen; mySMARTLife project (helsinkirobobusline.fi)

Nevertheless, the city has also experienced certain drawbacks such as the cancellation of a pioneering flexible public transport system called “Kutsuplus”. This pilot program lasted for only three years (the executive board cancelled it by the end of the year 2015). According to HSL’s (Helsinki’s public transport authority) final report, “Kutsuplus” was “*apparently the world’s first fully automated, real-time demand-responsive public transport service*” (2016: 1). A qualitative research study on this pilot program, based on a user-perspective survey, led to certain conclusions on the adoption and viability of flexible micro-transit services (see Weckström et al., 2018).

In any case, Helsinki is probably one of the best examples at a world scale of how future urban mobility will probably be like. It is not only an innovative hub in this field, but also a paradigmatic case of how a dispersed urban setting can be successfully managed. Moreover, new mobility services are constantly being implemented. For example, since summer 2019 the city offers shared e-scooters. Another example (similar to Domagkpark in Munich) is that certain Finnish construction companies are offering shared electric cars in their newly-built communities. Helsinki probably is one of the best samples of how future mobility will ideally look like: a wide range of mobility options integrated into a single service (like MaaS Global's Whim app). Whether these services and platforms are public, private or mixed is to be seen. This city seems to be the perfect testing ground.

6.2-IN-DEPTH INTERVIEWS WITH KEY STAKEHOLDERS

Helsinki is a high-performing city that hosts important stakeholders in the field of urban mobility. The participants came from both the public and the private sectors. For example, one of the interviewees was MaaS Global's founder and CEO, and two interviewees came from the Finnish Ministry of Transport. The in-depth interviews offered relevant insights on several inter-related issues.

6.2.1-Towards a new paradigm that embraces MaaS

Helsinki's stakeholders agreed that future urban mobility will incorporate MaaS (Mobility as a Service) and intermodality as two of its main features. The public and private sectors are developing alternatives to the current private-car-oriented model. Even though there is a wave of optimism, this task seems hard to accomplish, as not only citizens must embrace a new mobility paradigm but also many players must efficiently work together: *"To enable these conditions, a diverse range of actors would need to cooperate: mobility management players, telcos, payment processors, public and private transportation providers, and local authorities with responsibility for transportation and city planning"* (Goodall et al., 2017: 118).

The Finnish public administrations are working on a legal framework that encourages the implementation of MaaS solutions. Mobility services are expected to help in reducing car-related emissions by offering last-mile solutions in combination with public transport modes and bikes: *"The idea of 'mobility as a service' is something that we are encouraging. If MaaS could offer a reliable and seamless experience through the combination of different mobility modes, we would tackle car use and tailpipe emissions"* [Ministerial advisor, Finnish Ministry of Transport]. Another participant from the Ministry of Transport added that

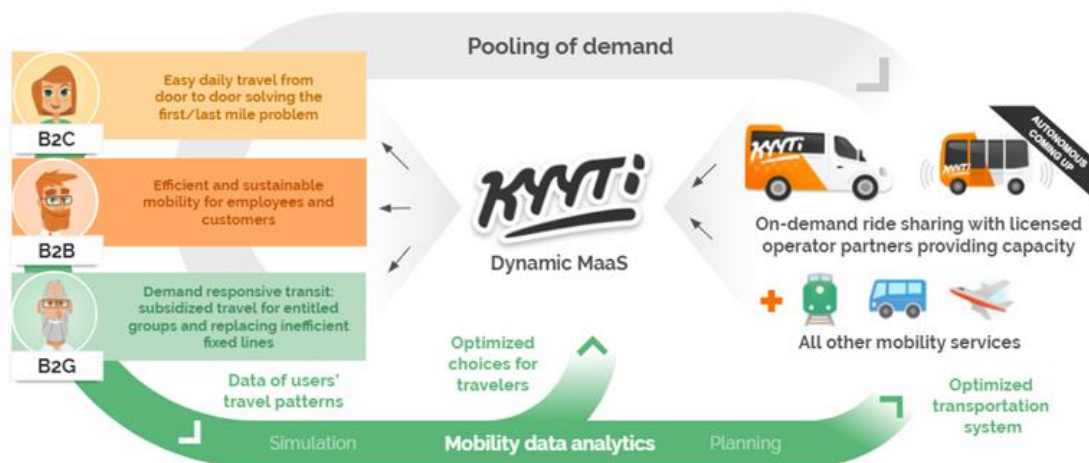
"we are trying to achieve an accessible and sustainable service-based mobility model. We would like people to think of mobility as going from point A to B, whether by bike, using an electric car or any other option. This could be enabled by MaaS operators that promote sustainability and the use of public transport."

[Senior specialist in markets unit, Finnish Ministry of Transport]

The Finnish Government is setting a legal framework aimed at encouraging eco-friendly business initiatives and sanctioning those that imply high emissions: *“Our legal framework is unique at enabling trials and the creation of mobility businesses. We believe that offering more alternatives is a positive thing. Enabling private companies to succeed leads to more competition, and this brings better services and prices”* [Ministerial advisor, Finnish Ministry of Transport].

In this context, MaaS companies have flourished in Finland, especially in Helsinki: *“This is a testing ground. We aim to become global. We have launched our services in other parts of Europe and we are getting started in countries like Vietnam. The case of Spain is a tough one. Taxis are a strong political force there, and Spanish laws are not enabling”* [CEO, Kyyti]. Kyyti is a MaaS company that runs on-demand small-capacity vehicles (mini-buses) that can be combined with public transport and other modes by using an app. They believe that there is a need for offering shared rides that are somewhere in between public transport and taxis, both in terms of flexibility and prices: *“We made estimations and got to the conclusion that we could reach a significant 7% of the modal split if we offered MaaS services that are flexible in combination with public transport. It could be a solution for suburban areas and it could work for feeding the main corridors”* [CEO, Kyyti].

Chart 1. Kyyti offers on-demand mini-buses that are expected to be autonomous in the future



Source: ePress (epressi.com)

As explained by Kyyti’s CEO, this type of flexible mobility services, labelled as Flexible Micro Transport Services (FMTS), uses on-demand mini-buses and is meant to *“provide an alternative between the high flexibility and high cost taxi service, and the low price, and medium flexibility bus-based public transport”* (Weckström et al., 2018: 84). Kyyti’s CEO also explained why he thought that the public sector’s “Kutsuplus” initiative had failed to offer a successful service: *“They basically had our same idea. They ran on-demand small-capacity vehicles. It did not work, as their cost structure was a failure. The demand is not flat, so you must be more flexible and use your vehicles for many purposes, like taking children to school”* [CEO, Kyyti]. According to an expert, Kutsuplus mainly failed due to a lack of understanding on how to attract potential users and how people’s mindsets work: *“They had technical and economic problems, but their main problem was that they took a mechanistic approach to*

citizens. Successfully incorporating an innovative option implies changing social perceptions”
[Scholar/researcher on sustainable mobility].

Figure 38. Kutsuplus provided an on-demand public transport service that was meant to be complementary with conventional fixed corridors



Source: Unesco Creative Cities Network (unesco.org)

The greatest Finnish game-changer appears to be MaaS Global. This company, led by its founder and CEO Sampo Hietanen, is increasingly becoming well-known on a global scale. Hietanen explained that

“from the market perspective, starting in Helsinki was not the most profitable option. However, the city was ready to embrace our business model. We need that the mobility providers are technically ready, and willing to cooperate with us. The pieces for making our product available are easily reachable here. However, HSL is not cooperating much, not yet at least.” [Founder and CEO, MaaS Global]

Another interviewee underlined that this initial reluctance to be integrated into the new MaaS platforms was not an exception: *“This is not just happening in Helsinki. For a long time, we have had a limited playing field in which you could take your car, public transport, a bike or walk. Now, mobility is changing, but the public sector prefers not to take risks”* [ITS chief advisor, City of Helsinki/Forum Virium].

MaaS Global’s Whim app has already attracted thousands of users¹²⁶. Sampo Hietanen suggested that their greatest challenge is to convince their users about the convenience of monthly subscriptions (which are much more profitable than pay-per-go options): *“For the moment, most of our users prefer pay-per-use. This brings nearly no profits. We would like them to reflect on the global price of owning a car and to opt for monthly subscriptions, even if they are more expensive than using public transport isolatedly”* [Founder and CEO, MaaS Global].

6.2.2-The forces behind MaaS: a revolutionary notion of freedom

The inception of the innovative concept of Mobility as a Service comes from a different notion of what freedom of movement is and how it is socially perceived. In the last century,

¹²⁶ According to Ramboll’s (2019) Whimimpact report, 70,000 people had registered by late 2018.

freedom was mainly associated with possessing and driving an automobile. Many societies embraced a car-centred mobility paradigm that is now being challenged by new alternatives such as MaaS platforms.

MaaS does not only imply a new business model but also a disruptive interpretation of the concept of freedom that is opposite to the traditional one. For Hietanen (MaaS Global), this question was key. According to him, people have always dreamt of being free. But, will most people change their mindsets and embrace a new definition of freedom?:

“Why do we have cars? It is about a huge dream of freedom. Henry Ford’s cars started a dream that is now being challenged. Cars are not so desirable for young generations. We want to offer them an even bigger dream. I was inspired by the telecommunications companies’ world. Could we offer people some kind of ‘mobility roaming’? That would mean freedom.” [Founder and CEO, MaaS Global]

Hietanen highlighted the importance of marketing. For a long period, advertisers have successfully spread a vision of freedom that is linked to car ownership. This is also being put into question nowadays: *“The automobile industry has been extremely good at branding and selling cars. They have presented them as desirable products, even though buying a car has never been a rational decision. This is more about emotions, so we must make people desire our services”* [Founder and CEO, MaaS Global]. His point was shared by another participant:

“Automobile brands have a deep understanding of the importance of meaning. Status and meaning are two central concepts for them. Commercials have always shown us the positive sides of having a car. If you analyse them, cars are not stuck in traffic jams, tailpipes seem not to pollute, etc. They sell us an unrealistic image of automobiles.” [Scholar/researcher on sustainable mobility]

The car industry has been very successful at selling a vision of freedom and success that is closely linked to owning an automobile. Other spheres of our societies have also embraced a stereotyped image of how success can be expressed through owning a specific car. This is being put into question as well: *“How many super heroes took a train or cycled? Not many... However, this is already changing. This is not the 70s or the 80s, when the lure of the car was just unquestionable”* [Scholar/researcher on sustainable mobility].

In an ideal situation for MaaS companies, the competition among the car manufacturers would be replaced by a free-market competition among many mobility services providers: *“Our greatest competitor is the private car. We like freedom. Forcing citizens into a unique option is not a good strategy. It is better to have many MaaS players and compete”* [Founder and CEO, MaaS Global].

Can this vision of freedom be radically implemented and replace private cars? According to another stakeholder, it is a frequent mistake to think of MaaS as a fix and narrow concept that cannot be compatible with car ownership: *“The concept of MaaS is not ‘black or white’. There are grey areas. MaaS could also work for those who own cars. For example, there was a Swedish pilot program that had as its main goal that families gave up their second cars”* [ITS chief advisor, City of Helsinki/Forum Virium].

Furthermore, in order to reduce car use, MaaS could integrate and be combined with other mobility options that can help to compete with the private car:

“This general disruption should be encouraged, as it means less traffic congestion, less need for parking spaces, etc. It is not only about MaaS. When we switch to carsharing services like DriveNow, it is a positive thing as well. For example, in certain US cities the authorities are subsidising Uber journeys that connect citizens to transport hubs. This is another alternative to private cars.” [ITS chief advisor, City of Helsinki/Forum Virium]

Whether MaaS or the combination of MaaS with other services as a disruptive dream of freedom will succeed on a global scale is to be seen. What seems to be clear is that Ford’s dream is no longer so unquestionable as a consequence of rising environmental and social concerns: *“It is a reaction to Ford’s dream. Whether it was a real dream or a marketing trick, Ford was selling freedom”* [Scholar/researcher on sustainable mobility].

6.2.3-Rural MaaS and autonomous mobility

Finland is pioneering pilot tests in rural regions too. Will MaaS be restricted to changing mobility in urban settings or could it be implemented in rural areas as well? Even though it might be less profitable, rural MaaS could perhaps be viable in the future: *“MaaS is already being tested in rural settings. For example, pilot programs with Uber-like services for remote rural areas are currently being assessed”* [ITS chief advisor, City of Helsinki/Forum Virium]. Based on a study comprising interviews with stakeholders such as Uber Finland, Eckhardt et al. note on the implementation of MaaS in Finnish rural areas that these areas *“have also a major potential to organize transport services more efficiently. The collaboration of different stakeholders - businesses, the public sector and people - is key to the success”* (2018: 75).

MaaS services would ideally be implemented in both urban and rural settings, as they are closely linked to each other. As explained by an expert interviewee:

“Should cities care about mobility in rural areas? Yes, because once someone has taken a private car, it is more likely that this person tries to drive to their final destination. For example, a car driver might be afraid of leaving their car in a train station due to a lack of security. Cities must encourage people to leave their cars in peripheral areas.” [ITS chief advisor, City of Helsinki/Forum Virium]

Sitowise is a Finnish company that designs more sustainable and “smarter” settings. They are working on incorporating MaaS into rural regions: *“Demand-responsive services, sharing rides... They are all arriving to rural areas too. In the future, autonomous and electric vehicles could also be added to this new mobility ecosystem”* [Senior consultant, Sitowise].

The interviewees were optimistic about MaaS achieving some popularity in rural areas, even though it was expected to change urban mobility first. If rural MaaS services became a successful initiative in the future, which helped in reducing the current car dependency in this type of areas, it would be easier to live in remote places without private automobiles. This could be a great help for those who cannot drive.

As mentioned before, pilot tests with autonomous vehicles have already taken place in Helsinki and its region. The private sector and the public authorities are studying the results

obtained from testing this technology, which could be combined with MaaS: *“There seems to be both hype and reserved attitudes towards autonomous vehicles. There is an illusion of automated driving coming very soon and easily, but we are seeing that it is a complex thing to implement, especially in rough conditions like the Finnish wintertime”* [Senior consultant, Sitowise].

Not only this complex technology but also people’s mindsets must be ready for change. University professor Salonen has been working on analysing the attitudes of users towards self-driving vehicles by conducting surveys:

“The buses that were being tested were quite small, fitting only ten people. When they were full, they were perceived as less secure. People are generally afraid of using modes that are too crowded. We had a pilot program in rural areas where the buses were used by fewer people. Security was not perceived as a problem there.”
[Metropolia University, Scholar/researcher on sustainability]

The surveys suggested that, perhaps due to the lack of drivers, perceived security was an important issue inside self-driving bus shuttles. Another matter that was important was the perceived safety of this innovative technology: *“Road safety was ranked very highly. People were not afraid at all of using our automated buses. They mentioned that they felt like being in a tramway”* [Scholar/researcher on sustainability, Metropolia University]. As summarised in one of his works, Salonen argues that *“informants assessed perception of traffic safety to be better in the driverless shuttle bus than in a conventional bus with a driver. However, they were lacking personal in-vehicle security”* (2018: 106). He notes that, apparently, there was a gender issue, as *“men assessed their experiences of traffic safety, in-vehicle security and emergency management to be overall better than those of women”* (Salonen, 2018: 106).

Furthermore, the interviewees argued that automated vehicles and MaaS services could perfectly work together, meaning that on-demand automated shuttles could be added to the wide variety of mobility options included in MaaS platforms: *“Self-driving vehicles are coming because they are expected to become safer than traditional ones. I believe that MaaS platforms will succeed too. It will enable us to take a bus, a taxi, a bike and anything available as if it was a chain”* [Scholar/researcher on sustainability, Metropolia University].

But, again, the stakeholders made emphasis on the key role of shaping people’s mindsets and attitudes towards car ownership and its alternatives: *“An evolution in people’s mindsets would be of an even greater value. It will all depend on whether citizens find the new mobility paradigm more appealing than owning and driving cars”* [Founder and CEO, MaaS Global].

However, not everyone was optimistic about the adoption of autonomous mobility. In a similar vein to what was argued by a participant from Munich, certain Finnish experts also feared that incorporating automated vehicles into the city could have negative side effects:

“Technologically, many things can be achieved. But, should we achieve them? We tend to have the so-called ‘optimism bias’ that makes us think that a technology brings all positive things. But there might be negative sides as well. The implementation of self-driving vehicles would imply that we reshape our cities’ built environments. We should probably block pedestrians from accessing certain roads. Is that what we really want?”
[Scholar/researcher on sustainable mobility]

Regarding the effort to anticipate the introduction of self-driving vehicles in the Helsinki City Region, Mladenovic points out that this disruption *“also relates to societal values and norms. Pushing the thought experiment even further, further changes can be imagined in a range of societal norms, such as trust and perception of safety and security in connection to interaction between inside and outside of the vehicle”* (2019: 107).

6.2.4-The environmental and social impact of change

The transition towards a new mobility paradigm is expected to bring social changes and a “greener” mobility. If there were successful alternatives to the private car, daily mobility would probably be healthier (not only because of a decrease in emissions but also because of a rise in active modes such as walking and cycling). Mobility could also be more equal, in the sense that moving around could become more affordable (sharing rides is expected to lower the costs of mobility, for example).

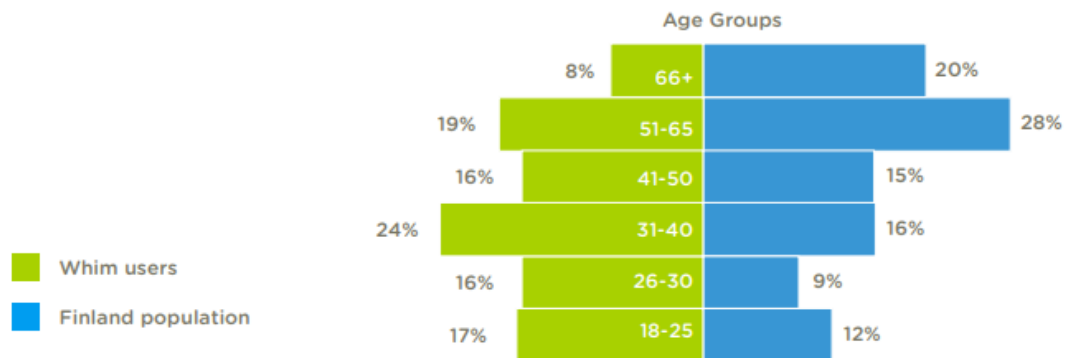
MaaS is supposed to contribute to these goals. However, some might fear that, if MaaS is run by private companies, these services will offer the most profitable options, instead of the “greenest” and healthiest ones. Pangbourne et al. claim that, *“in the drive to develop a customer base, MaaS could feed unsustainable individual practices rather than restraining and redirecting people to more sustainable transport modes”* (2018: 40).

However, an interviewee from the Finnish Ministry of Transport said that they believed that MaaS users would reject this kind of practices: *“If a MaaS company cheated on their customers and made them pay for short distances for which walking is the best option, the company would not last long. It is the customer’s satisfaction what they need to care about”* [Ministerial advisor, Finnish Ministry of Transport].

In any way, a certain regulation will be needed, if sustainability is a city’s strategic goal, as self-regulation by itself might not lead to prioritising the citizens’ interests: *“MaaS won’t be sustainable just like that. Governments and cities must be awake and set sustainability-oriented goals”* [Founder and CEO, MaaS Global]. Thus, MaaS packages should be designed and priced in such a way that they do not push people to make extra motorised journeys: *“Users will experience regret if they do not ‘use up’ their trip allowance, potentially resulting in induced trips adding further pressure to the system”* (Pangbourne et al., 2018: 40).

Whether MaaS services will become affordable for nearly everyone is hard to predict. An expert argued that the notion of MaaS makes that this will depend on external factors: *“The idea of Maas mainly consists of packaging and reselling mobility services. If these services imply social inequalities, how can MaaS be equal? Think of taxis, for example. They are not as affordable as public transport”* [ITS chief advisor, City of Helsinki/Forum Virium]. Another relevant question would be whether certain social groups would be left behind, as the new services are mostly Internet and app-based. According to this same expert, the differences between the younger generations and the older ones are not so important as we may expect (see chart 2, which shows that Ramboll’s study found that many people aged over fifty are also interested in using MaaS platforms, even though their relative proportions are lower).

Chart 2. Ramboll's (2019) Whimpact report found that not only young people used MaaS



Source: Ramboll (2019)

It is also relevant to note that a change of paradigm could have a noticeable impact not only on the environment and health but also on more “abstract” matters such as happiness. According to experts such as university professor Toiskallio, this might (at least partly) be linked to increased levels of sociability among those who avoid driving. His point was shared by another scholar:

“Driving is very impersonal, mainly if you are travelling alone. There might be moments in which someone wants to be alone, but options such as walking are more social than driving. Sharing spaces is a good thing, although there is a risk of conflict, for example when pedestrians and cyclists converge in a very narrow pathway.”
[Scholar/researcher on sociology of traffic, Aalto University]

“Driving everywhere is bad for a person’s physical and mental health. You don’t interact with anybody and you lock yourself in a bubble. It disconnects you from the rest of the society.” [Scholar and researcher on sustainable mobility]

In fact, university professor Salonen suggested that health-related issues should be the main focus when trying to make sustainable mobility more appealing, as they are “*the most powerful ones when it comes to influencing people’s attitudes. Thinking about our health is more immediate than caring about the environment. My health is part of me, it is not outside of me. We must focus on this*” [Scholar/researcher on sustainability, Metropolia University].

Toivonen (my codirector in Helsinki) and other fellow researchers (Salonen et al.) argued in an article that local suburban residents were not only motivated by choosing the fastest mobility options (which may usually be private cars in their case), an insight that brings hope for further implementing a less-car oriented mobility:

Daily trips are typically short and non-motorised travel modes are the most popular. Even though car travel is the fastest travel mode on trips longer than 1 km, our data shows that many respondents are ready to choose a comparatively slower - and often less carbon-intensive travel mode on their journeys. (Salonen et al., 2014: 438)

6.2.5-Expectations for the future

As an interviewee suggested, it seems that many citizens in very developed societies are starting to abandon their materialistic goals and are starting to embrace a post-materialistic approach to their lifestyles. Helsinki is a city in which the standards of living are high. These high living standards and the high Finnish education level may have an influence on people's values: *"Our values are changing. We are becoming more prosperous and we are losing our interest in material things such as cars. More and more people just want to get from point A to B. It is not important to them whether this means driving or opting for any other mobility option"* [Scholar/researcher on sustainability, Metropolia University].

However, the key informants were not sure about whether this new mobility paradigm will be embraced by everyone. In certain cases, citizens might think that their lifestyles are being threatened, or that the alternatives to their private cars are not as convenient as they would like them to be:

"We must admit that certain people might lose in this mobility transition. Many people are expected to give up owning and driving cars. But, will everyone be willing to share rides with other people? We will need to wait for 5, 15 or 30 minutes to be picked up (...) Will most citizens be willing to make some sacrifices and give up some freedom for the common good?" [Scholar/researcher on mobility]

Moreover, there might also be citizens who think that their use of cars does not need to be reduced further. Salonen, Siirila and Valtonen, after carrying out surveys, concluded that the *"Finns seem to estimate that their personal car use is already at the proper level"* (2018: 104). Therefore, greater restrictions on car use could be unpopular.

The concept of prioritising the common good could be compared with the way in which smoking has been managed by the public authorities. A participant suggested the following idea:

"Politicians appear to be afraid of the car industry, but they should treat cars as if they were cigarettes. Smoking was stylish in the past, but when we started to worry about health issues, politicians raised taxes and imposed on commercials stickers saying that it kills. Why not do the same with cars?" [Scholar/researcher on sustainable mobility]

In any case, future urban mobility is expected to be increasingly based on sharing rides and using public transport as well as sustainable modes such as bikes. Not to have a problem of negative competition among these alternatives, some experts argued that the definition of public transport should perhaps be re-examined:

"It is a challenge to combine private businesses and public transport. Cities have their goals for their public transport, which can be opposed to introducing other alternatives. We could re-define what public transport is. It could be much broader. For example, if carpooling was interpreted as public transport, it would probably be subsidised." [ITS chief advisor, City of Helsinki/Forum Virium]

Multimodality was expected to become a key feature of urban mobility. In fact, according to Ramboll's Whimprint report, MaaS users are prototypical "multimodalists":

Typically in Helsinki, 3% of all taxi trips are made in combination with public transportation trips. With Whim, 9% of all taxi trips are made either 20 minutes before or within 30 minutes after a public transportation trip. In addition, there is a clear rise in density of bike trips before and after the public transportation trip. These findings suggest that Whim users are avid multimodalists, using both bicycles and taxis to solve the first/last mile problem. (Ramboll, 2019: 28)

Finally, it is relevant to note that mobility services were expected to become more global than ever before. Hietanen (MaaS Global) described the idea of offering a similar service to the telecoms' roaming packages or to worldwide-valid Netflix accounts: *"For example, I can already use the city bikes in Antwerp with my subscription from Helsinki. The mobility modes already exist, we need to put them together and create a global service"* [Founder and CEO, MaaS Global].

6.3-IN-DEPTH INTERVIEWS WITH SPANISH CITIZENS

6.3.1-Daily mobility patterns: a normal week

The interviewees' profile summary can be found in the chapter on the methodology. It reflects their generally car-free lifestyles. As most of the participants did not own a car, only a few of them could talk on their use of private cars. Being a family with children was one of the main reasons for having a car: *"I have a car, but I just drive it twice a week for taking my son to an activity that cannot be reached using public transport. This is the main reason. I do most of my shopping in nearby shops and I generally cycle"* [Woman, 48, human resources, single with two children and a car in peripheral town]. Living in a peripheral area instead of living in the city was another reason that was mentioned. Taking weekend trips was also an explanation: *"We lived without cars, but eventually decided to buy a car mainly because of having the option of travelling at the weekends. Then, I started to drive for taking my kid to school and for going to work, as I save twenty minutes each way"* [Man, 47, engineer, couple with a child and a car].

Private cars are mostly needed by those who live or work in the outskirts, where there are less mobility services and the population density is even lower than in the rest of the city (as mentioned before, Helsinki is a low-density urban area). The difference in terms of car dependency between suburban areas and the city was exemplified by a participant who had moved from one part of the metropolitan area to the other: *"I moved to the city core and sold my car. Before, I lived in a peripheral area and I was more dependent on the car. Public transport was less efficient there. I usually drove to the nearest train station and then commuted by train"* [Woman, 54, fashion designer, living alone]. The different phases in a family's life cycle can also determine their need for driving. For example, a mother who lived in a small peripheral village claimed that *"we have two cars (...) We live in a dormitory village without shops or services. We are not well served in terms of mobility, so we rely on our cars. I will start to commute using public transport when my son gets his driving license and I don't need to drive him to his activities any longer"* [Woman, 47, researcher, couple with children and two cars in peripheral village].

The use of bikes was more extended among these people than the use of private cars, a fact that proves the city's successful management of mobility. Similar to the case of Munich, the Spanish citizens living in Helsinki argued that a combination of public transport, bicycles and shared bikes (and shared cars in specific occasions) could be an optimal choice in such a high-performing city:

"I take the city's shared bikes everyday. I commute using them. I take them to the gym and to other places. I live next to the core of the centre, so I have several bike stations in nearby locations. The only negative thing is that the city closes this service during the winter season." [Woman, 29, embryologist, couple]

"In Spain, I used my bike for exercising and leisure. Here, it is a real alternative for daily mobility. In the city core, at peak hour, cycling may be faster than driving. I use the bike when the weather is fine. When it is not, I opt for the train or the tramway." [Woman, 33, translator, shared flat]

"When the weather is fine, I cycle anywhere that is less than 15 kilometres away, more or less. I usually commute by bicycle, but I prefer to take public transport when it is very cold outside." [Man, 30, software engineer, living alone]

"At work, we have showers and changing rooms, so I usually commute by bike. If I'm in a hurry, I might take my bike with me into the metro." [Man, 32, auxiliary nurse, couple]

It is relevant to note that the Finnish private sector enables workers to opt for alternative mobility options, as many companies offer facilities for those commuters who cycle to work. Even though traditional bikes are more common, e-bikes are a growing trend in the Finnish capital. A participant explained that *"I have two bikes: a normal bike and an electric bike. I take my e-bike to work in summer. It takes me 45 minutes, as I live far away. E-bikes are very convenient for hill climbing, but I don't feel any difference in flat surfaces, as they are limited to a certain speed and heavier"* [Woman, 48, human resources, single with two children and a car in peripheral town].

As we have seen, public transport and bicycles can be combined for commuting. Weather was said to be an important factor, as well as the distances that need to be covered (cycling tends to be avoided for the longest distances): *"I commute using public transport when the weather is bad. It takes me 50 minutes. Cycling is five minutes faster, as I avoid wasting time with transfers"* [Woman, 30, nursery-school teacher, living alone].

The Spanish citizens were also asked on their appropriation of new mobility trends, such as carsharing and MaaS. Like in the case of Munich, several interviewees could be labelled as "early adopters". They were already familiar with innovative mobility options that made life without owning cars more viable:

"If I'm in a hurry, I might take a DriveNow shared car. I live right in the city core, so I can find plenty of shared cars parked close by. However, it is difficult to find a car if I want to drive back from work, as I work in the town of Espoo and this service is concentrated in the city core." [Woman, 30, nursery-school teacher, living alone]

"We use shared cars very often, mostly in wintertime. I don't drive, but my boyfriend does, so we take a shared car whenever we go outside of the city or to the airport."

[Woman, 29, embryologist, couple]

“My company pays for my Whim app basic subscription. Whim makes my life easier. I use it on a daily basis, and I sometimes pay for extra services like hiring rental cars.”

[Man, 30, basketball coach, living alone]

Nevertheless, not everyone had used or heard of MaaS Global’s service. Furthermore, in some cases, certain people would prefer to avoid private companies if they needed services that could potentially be run by the public sector: *“I know the Whim app, but I prefer not to use it. I don’t trust private companies much (...) I would prefer that this type of services was run by public entities”* [Woman, 30, nursery-school teacher, living alone].

Finally, the participants argued that walking is an option as well, but a restricted one that only works for short distances. This is not usually the case, as Helsinki is not a compact city. In any case, the perception of how big distances are might sometimes be a matter of scale. Those who are used to living in a bigger city may enjoy walking when they move to a smaller one:

“As a Madrilian, I find many distances in Helsinki not too big. I walk as much as possible, even though it is not always viable. When I lived in Pamplona, I was next to the old town and I walked everywhere (...) For the people from Pamplona, and even for those from Helsinki, walking for half an hour is too much. For a Madrilian, it is not that much.”

[Woman, 24, PhD researcher, living alone]

6.3.2-Stages of advancement

The participants were asked to reflect on whether they considered that there are stages of progress. Most of them agreed that Helsinki is more advanced in terms of mobility than their Spanish home cities. Like the Spanish interviewees living in Munich, they highlighted two main aspects: the people from Helsinki are usually more aware on environmental issues and Helsinki generally has better mobility infrastructure.

Figure 39. HSL offers reliable public transport and is progressively electrifying its bus fleet



Source: HSL (hsl.fi)

According to several interviewees, mobility in Helsinki is just “perfect”. Public transport and cycling infrastructure were seen as its cornerstones:

“Even though Helsinki is vast, as it is very dispersed, its public transport network is very efficient and it can get you nearly everywhere. You are offered many options, with good frequencies.” [Man, 47, engineer, couple with a child and a car]

“It’s amazing how safe you feel when you cycle around in Helsinki. I felt safer than in my home city from the very beginning. In Madrid, I only dare to cycle late at night, when there are less cars on the roads. This says a lot about Helsinki.”

[Woman, 24, PhD researcher, living alone]

“Cycling is very easy here. There are cycling lanes everywhere, and the network is well designed and well connected. You can get from the airport to the city, using bike lanes uninterrupted.”

[Woman, 48, human resources, single with two children and a car in peripheral town]

Moreover, the participants perceived a culture of respect and a positive attitude towards cyclists, public transport modes and other options, as the people from Helsinki were said to be environmentally-conscious: *“Both young and old people cycle, and people from different social backgrounds can be seen moving around by bike. Citizens respect cyclists”* [Man, 44, construction company worker, couple with a child]. Another interviewee pointed out that the alternatives to private cars are usually prioritised: *“Apart from offering mobility services (...) it is a matter of social behaviour. Bikes are highly prioritised. No one steps onto a cycling lane. Public transport is given priority too”* [Man, 32, auxiliary nurse, couple].

Their environment had influenced these people’s mobility patterns. Since they arrived in Helsinki, many had switched to more sustainable modes:

“Before coming to Helsinki, I saw the car as indispensable. Now that I live here, I have changed my mind. There are wonderful alternatives like cycling, but Spain is not ready for implementing them.” [Man, 44, construction company worker, couple with a child]

“In Zaragoza, I took my car on a daily basis (...) Here in Helsinki, I rely much more on public transport modes, because they are very convenient. I adapt my daily routine to their schedules, and I know that I will always be on time.”

[Man, 30, software engineer, living alone]

The outstanding reliability of the public transport network was seen as a crucial element. With frequencies of ten minutes (or even less) and reliable timetables that were constantly updated on the Internet and mobile apps, many people adjusted their routines and activities to the metro, the tramways and the buses: *“In Bilbao, it might sometimes happen that the bus you are waiting for doesn’t arrive on time or doesn’t even arrive at all. This would never happen in Helsinki. Their network is so reliable that people check the schedules and organise their daily lives in accordance with them”* [Man, 32, post-doc researcher, living alone].

Like Munich, Helsinki was perceived as a high-performing city. However, the participants claimed that certain things could be improved further: *“The services and the frequencies are suitable during the day, but not so much during the night. If I need to get back home late, I may take a taxi or walk a long distance”* [Woman, 30, nursery-school teacher, living alone]. Another demand was that the metro network was expanded: *“Helsinki has a better mobility than Madrid in nearly all aspects, but I find its metro network too limited. It basically has one main line, which seems not to be enough”* [Woman, 24, PhD researcher, living alone].

6.3.3-Inequalities linked to mobility and the role of the private car

Like in the case of Munich, most interviewees agreed that the prices of moving around in Helsinki are high but proportional to people's average salaries. The problem of adjusting the prices of public transport to the average income is that those who come from the lowest social classes struggle to afford mobility. The participants also reported that owning a car is not affordable for the poor, as buying and maintaining a car is expensive in Finland:

"Prices are high but affordable for an average Finn. The problem is that there are people below this average, and some of them may decide not to use public transport. Lowering prices would probably lead to an increase in the demand."

[Woman, 54, fashion designer, living alone]

"A car is not usually a basic need here, and not everyone can afford to have one. A car implies many extra expenses like parking, which is incredibly expensive here. The poor cannot afford cars." [Man, 47, engineer, couple with a child and a car]

"I work in a nursery school in a neighbouring town. I observe that Finnish parents bring their children by car. Suburban Finnish citizens tend to drive big cars. Poorer immigrant families come using public transport, as they don't drive cars."

[Woman, 30, nursery-school teacher, living alone]

When public transport is not cheap enough, there is another risk: Big families might opt for driving cars, as paying for single tickets or monthly passes can be very expensive in their case. If they live in the suburbs, this risk is even greater, as those who live further away must pay extra for their commutes, as they cover longer distances (a single ticket and a monthly pass may even cost double for those who live in the periphery): *"We live quite far away from the city core and must pay around 7 euros each way. Monthly passes are very expensive for us. As we are four, taking the car is cheaper"* [Woman, 47, researcher, couple with children and two cars in peripheral village].

I also wanted to know if some kind of segregation based on social background is present. Most of the interviewees agreed that nearly anyone can be seen using public transport or a city-council bike, as the locals were said to be "green". But some segregation was detected. It was not directly attributed to mobility, but to housing, which can have a significant impact on mobility: *"I live in a posh central area where I see that people move around by all modes available. However, I see that poor people who live in other less central areas exclusively rely on public transport"* [Man, 30, basketball coach, living alone]. According to another person, *"the distribution of people in the different modes is quite balanced, but you usually see more immigrants using public transport, mainly the bus. It makes sense, as the buses reach distant areas in which there is no metro or tramway coverage"* [Woman, 30, nursery-school teacher, living alone].

We can see here the apparent correlation among income, housing and mobility. Helsinki is just another case in which these trends can be observed, as this is a common phenomenon in modern cities.

In Helsinki, like in Pau (but in opposition to Munich), the status component of the car was not perceived to be relevant by the interviewees. According to them, the Finns have a mainly utilitarian approach towards their automobiles, so only those who really need a private car usually have one:

“Car ownership is more closely linked to practical matters than to a question of status. In the city centre, driving is discouraged. It is very hard to find a parking spot and, if you find one, it is very expensive to leave your car there.”

[Woman, 48, human resources, single with two children and a car in peripheral town]

“People who live and work in the city don’t usually own and drive cars. It is those who commute to more isolated suburban areas or those who commute to the city from this kind of areas the ones who usually have automobiles.”

[Woman, 54, fashion designer, living alone]

An interesting point to underline is that a high status was associated with not owning an automobile. The interviewees agreed that living in the most expensive areas of the city core and not needing a car (due to having access to convenient alternative mobility services) is a stereotypical feature of the lifestyles of the local affluent residents: *“A car is not a measure of social status here. If people want to know your status, they will ask where you live”* [Man, 47, engineer, couple with a child and a car]. Another participant suggested that *“not owning a car could be interpreted as a symbol of status, as it suggests that you live in the city core, probably in a nice and well-served area”* [Woman, 47, researcher, couple with children and two cars in peripheral village].

Helsinki could also be an example of how the cores of the cities may increasingly become a desirable place to live in, as mobility services, as well as other types of services, are usually concentrated in the city core. In the context of the mobility transition, it would be logical to expect that, in any city, the implementation of new mobility services started from the core of the city and was later extended to other areas. Thus, at least for a certain period, living in the city core could make an important difference in terms of having access to a wider range of mobility services, as illustrated here: *“A few years ago, I lived right in the city core. I never used the car. I listened to music or thought about my stuff while moving from point A to point B using public transport or just walking. I miss that lifestyle. Now that I drive more often, my life is more stressful”* [Man, 47, TV/media worker, couple with two children and a car].

6.3.4-The adoption of new trends and interviewees’ conclusions

As mentioned before, several participants could be labelled as “early adopters” who have incorporated new mobility services (such as carsharing, bikesharing or MaaS apps) into their lives. But, apart from their use of these services, they were asked on who tend to adopt this new mobility. They agreed that young citizens are the ones who are more likely to be seen using these services:

“It is usually the young the ones who are more interested in new services. Some of them might not have a bike, or a car, and they just rely on bikesharing, carsharing and so on.”

[Woman, 47, researcher, couple with children and two cars in peripheral village]

“Young people, those who have no kids, expatriates who haven’t bought a car... they are generally the ones who use mobility services. It is probably hard to think of a person aged fifty who uses a mobility service like DriveNow and travels with their children.”
[Woman, 29, embryologist, couple]

“Nearly anyone can be found using mobility services, but it is clearly young people the ones who are more familiar with mobility services like bikesharing.”
[Woman, 30, nursery-school teacher, living alone]

The interviewees argued that having access to mobility services is clearly determined by people’s ability to use apps and other new trends. Furthermore, embracing the new mobility paradigm requires openness to change, as well as finding these mobility services convenient (as, for example, big families may prefer to avoid the inconvenience of having to adjust cars, bikes and other modes to their children).

Like in the case of Munich, the participants said that car ownership makes sense for those who have young children. It is a matter of place of residence too, as suburban dwellers were said to be more prone to have car-oriented lifestyles. One of the interviewees described an ideal situation as follows:

“I would use app-based intermodal platforms, but also own a car, unless carsharing, car rental and other mobility services were more convenient and less expensive. If I needed a car every weekend, the new mobility services would not be cheap enough. This is an important problem, as once I bought a car I would probably use it too much.”
[Man, 30, basketball coach, living alone]

An option that is already been implemented in some residential constructions is including shared cars as part of the facilities provided by a new community. This is an innovative idea that is being tested in Helsinki (and in other cities such as Munich). In any case, Helsinki was generally described as a city where most people can comfortably live without owning cars, as public transport and other alternatives are high-performing and reliable.

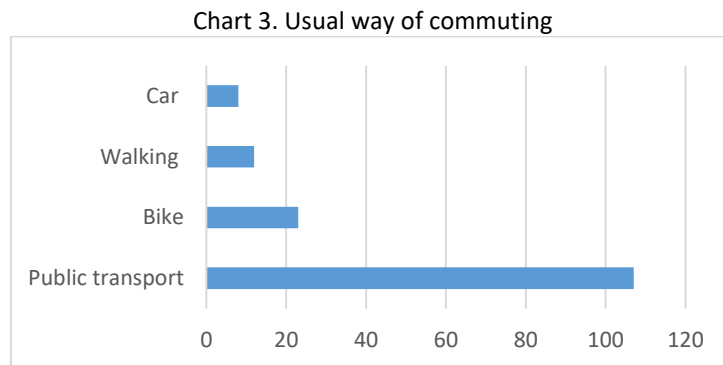
6.4-SUPPLEMENTARY FIELDWORK

My stay in Helsinki allowed me to carry out some supplementary fieldwork. It consisted of three main parts: the image-based experiment, a short online survey and testing mobility services (such as DriveNow’s shared cars and MaaS Global’s Whim app).

6.4.1-“Image-based rating exercise”

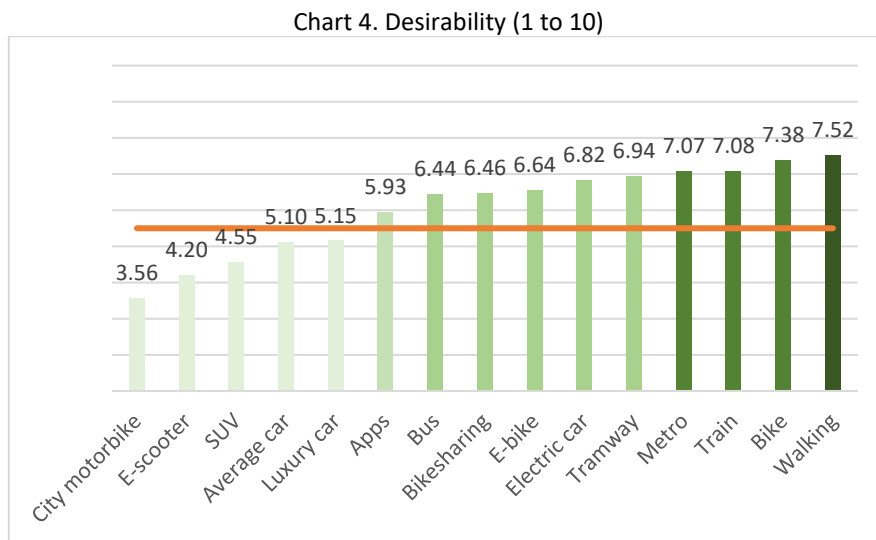
I carried out the image-based exercise in several lectures held in my host department at the University of Helsinki. The most relevant conclusion that was drawn is that the students’ answers seemed to have a correlation with the city’s performance. The survey respondents highly valued active and sustainable modes, while the weight of the private automobile was far less significant.

Most of these students reported commuting to university using public transport. Cycling was their second option. Going to campus on foot was also more common than commuting by car (see chart 3).



Source: Own elaboration (absolute numbers; answers containing more than a mode counted separately)

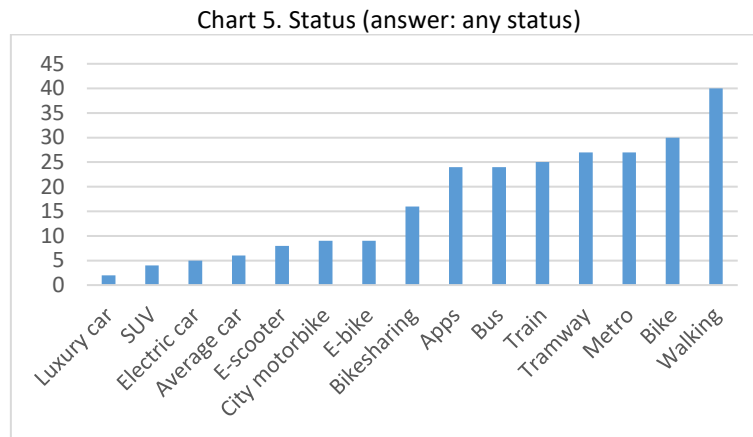
The local students ranked the images linked to active modes and sustainable options as very desirable. The scores attributed to the different mobility options reflected the values of a modern advanced urban society: walking was ranked as the most desirable choice, and it was closely followed by cycling. They are both healthy active modes, being the most basic and primitive of them (walking) the one that received the highest scores. Public transport modes (train, metro, tramway) were generally ranked as the second most desirable choices, just after the active modes. Only the bus was not seen as so desirable, but it was also ranked above an intermediate score (see chart 4).



Source: Own elaboration (averages)

Regarding cars, we can see that conventional cars (average, SUVs and luxury cars) were ranked below an intermediate score. Electric cars, which might be associated to a “greener” mobility, were seen as the only desirable type of cars. Mobile apps received an intermediate score, while e-scooters (which would be later incorporated into the city’s mobility) were not expected to be successful (perhaps, due to the extreme Finnish weather).

Another result to be remarked is that I found an apparent correlation between the most desirable mobility options and the background or status attributed to them. Mainly walking, but also cycling and public transport, were generally attributed the answer “any status”. It could be interpreted as a positive thing, as it means that those modes that were seen as the most desirable ones were considered to be accessible for anyone (see chart 5).



Source: Own elaboration (absolute numbers)

6.4.2-Online survey

In the online survey about habits and attitudes towards mobility, 85% of the respondents reported having a driving license, but only 7% had an automobile. A total of 13% had access to other household members’ cars (such as their parents). This probably meant that not only the students but also their families had non-car-oriented lifestyles, as a vast majority (80%) of the participant students did not own a car and had no access to a household car.

Slightly over a third of these students claimed that they adapted their commuting habits to the weather. Walking was their first choice with good weather, the bus being their second most frequent option. With bad weather, the bus became their first choice, and walking the second. Cycling was the third most frequent choice in good weather conditions, but the bike was overtaken by the metro and the (commuter) train in bad weather conditions.

Their average commute lasted for about 25 minutes (one way). The survey respondents did not only rely on traditional options, such as public transport and their bicycles. Helsinki’s bikesharing system was popular among them, as a total of 42% of these students had used a public bike, and 23% reported to be frequent users. However, the innovative Whim MaaS app was not popular at all among them, as none of the students claimed using it.

Helsinki is usually considered to be a high-performing city. Therefore, it is not surprising that over 90% of the participant students ranked its public transport system as “good” (60%) or “excellent”. Even though the Finnish capital city is also considered to be bike-friendly, the respondents did not rank cycling so highly: 47% ranked it as “average” and 43% ranked it as “good”.

Saving time, convenience and price (in this order) were the participants' main priorities when it came to deciding how to move around. Sustainability was an important factor too (fourth position).

Over 60% of the respondents said that they had no intention of buying a car in the future. Less than a third (30%) stated that they had the intention to buy one. Very few students had a car. Living in Helsinki without driving was generally perceived as viable. In fact, 65% of the participant students believed that living with no car was viable not only in the inner city but even in the suburbs.

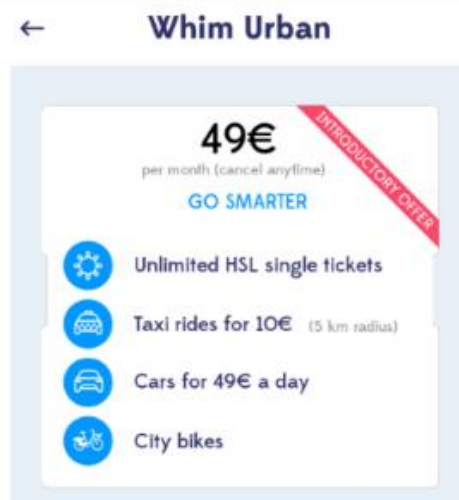
As cycling infrastructure was perceived as not as good as public transport, improving bike infrastructure further was the main demand. In fact, these students generally said that they would be willing to pay higher taxes for this purpose.

All in all, we can see that Helsinki was generally perceived as a high-performing city where most people can live without owning cars. Most of the participant students had no intention of buying a car in the future. They ranked the city's public transport system highly and, even though Helsinki is usually considered a cycling-friendly environment, they asked for further improvements in cycling infrastructure.

6.4.3-Testing innovative mobility services

In order to try some innovative mobility services that had been implemented in the city, I used BMW's carsharing service DriveNow and MaaS Global's Whim app for a few weeks, so that I could have my own view on how they functioned and the challenges that they must face. First, I downloaded the Whim app and subscribed for a month. I chose its basic version ("Whim Urban"), so I only had access to public transport and the city's bikesharing network (plus some discounts if I took taxis). I had no rental cars included. After this short experience with Whim, which was probably the most successful MaaS app at that moment, I drew some conclusions.

Figure 40. The basic subscription included an unlimited use of public transport and bikesharing



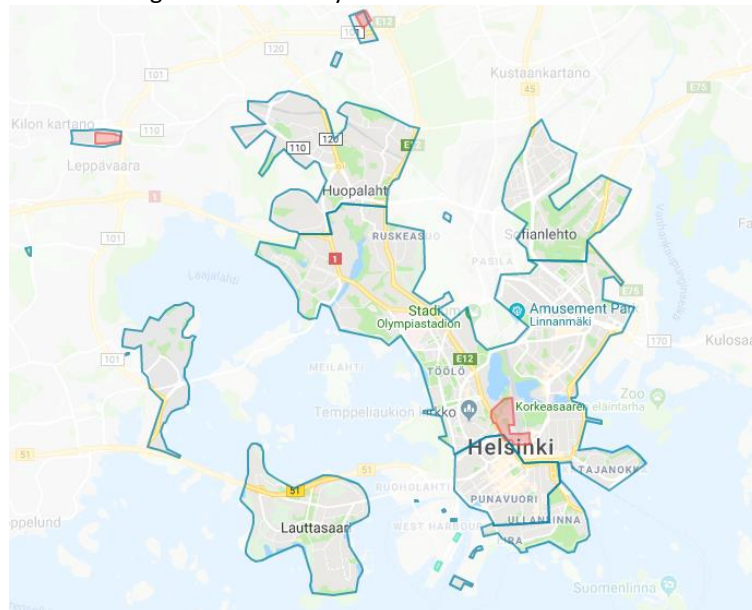
Source: Own mobile-phone screenshot

On the one hand, the idea behind MaaS seems to be disruptive and appealing. However, in practice, daily life with these apps might not be as smooth as it is claimed and advertised to be (I had some technical problems: updates, etc.). On the other hand, users always need to have their mobile phones charged. They also need to have Internet coverage and data. This helped me to realise that having access to these innovative services is not only a matter of being tech-friendly, but it also requires that users pay a permanent attention to elements such as battery and data management.

I also tried DriveNow. As it was also based on using a mobile-phone app, DriveNow had similar characteristics concerning the matters that have just been mentioned. The positive side of using DriveNow was that I did not have any technical problems, but the negative side was that I always needed to reach one of the city's central areas before having access to this carsharing service.

After the trial, I came to some conclusions. First, carsharing services offer specific models that their users might not have ever driven before. It could take some time to adapt to them (mainly, for example, in the case of driving an EV for the first time), so the experience could be stressful at the very beginning. Secondly, it will take time for this kind of services to reach all the areas of the city. Meanwhile, it will be those living in the central areas who will usually benefit the most. Living in the city core is usually expensive, so this can lead to inequality in terms of access.

Map 5. DriveNow's carsharing service was only available in some of the most central areas of Helsinki



Source: DriveNow (drive-now.com)

6.5-CONCLUSIONS: “EARLY ADOPTERS” IN A PIONEERING CITY

Helsinki is an important hub for innovation in the field of urban mobility. Not only MaaS (Mobility as a Service) platforms but also other compatible solutions such as autonomous vehicles are being tested there. The city of Helsinki is probably one of the best examples of how future urban mobility might be. Apart from incorporating the latest trends, it is a high-

performing city in terms of the development and popularity of the traditional alternatives to the private automobile, such as public transport and the bike.

Like Munich, Helsinki offers a wide variety of mobility alternatives, ranging from a reliable public transport network and an extensive cycling lane network to mobility services such as shared bikes and carsharing. However, like in many other cities, mobility is more car-centred for those who live in peripheral areas. Even so, the city is being successful in managing the negative effects of the Fordist mobility paradigm.

According to the key Finnish stakeholders interviewed, Helsinki is a testing ground for future global mobility. It is seen as an ideal environment for implementing the new mobility paradigm, as it has a high-performing mobility ecosystem and the authorities are opting for the incorporation of further improvements and innovative services. MaaS Global is probably the Finnish company that is becoming more popular as a consequence of the attempt to switch to a new model. Their Whim app offers integrated mobility services through pay-per-use and monthly subscriptions. Other Finnish mobility services providers are starting their businesses in the city too, as well as international companies such as BMW (with DriveNow). They are all trying to make the city a less private-car-dependent environment.

This new mobility paradigm based on MaaS and a wide range of alternatives is expected to make mobility “greener” and more affordable, as many rides would be shared. However, the Finnish expert interviewees believed that governments should set environmental and societal targets, as self-regulation might not lead to a more sustainable and socially inclusive mobility by itself. MaaS is expected to be offered in rural areas, where pilot tests are being carried out, even though rural MaaS might be less efficient and less profitable.

The interviews made to Spanish citizens who lived in Helsinki led to the conclusion that a high-performing city can enable its citizens to avoid car ownership and rely on using public transport, mobility services and cycling. Unless they had young children, most of those who lived in inner-city areas (not so much those who lived in peripheral towns and villages) could easily manage without private automobiles. Among them, we could find people who could be labelled as “early adopters” who were familiar with using bikesharing and carsharing and even with MaaS mobile apps in some cases. Similar to what was observed in Munich, these “early adopters” were quite young and highly educated. They valued walkable city cores, bike-friendly cities and efficient public transport networks.

I tested a couple of new mobility services and carried out an online survey, but the most important part of my supplementary work was the image-based exercise. The local students ranked active modes (walking and in a second place cycling) as the most desirable ways of moving around. Moreover, public transport was highly valued. This showed that there was a certain correlation between their values and attitudes towards mobility and their high-performing environment. Indeed, Salonen and Ahlberg point out that “*an intervention in the context of society would seem a more effective way to reach sustainability than encouraging individuals to change their attitudes and behaviour*” (2013: 48).

Mobility providers might have found a way of offering “urbanites” a valuable alternative to the private car. As we have seen in the cases of Helsinki and Munich, those people who could be labelled as “early adopters” were eager to commute by public transport and bike, but they found carsharing and rental cars expensive for weekend trips outside of the city. Even though their success will depend on several factors, such as prices and convenience, it seems that MaaS is being designed in the right direction and could become successful in the near future. If combined with non-expensive carsharing, or if they included shared cars for specific weekly chores and weekends, they could perhaps become significantly successful¹²⁷.

All in all, we could say that Helsinki is probably one of the best examples of how a city’s mobility should be managed and how being open to further improvements and achieving a balanced mobility portfolio can have a positive impact on the citizens’ values and attitudes.

¹²⁷ It is relevant to note that, not long after my stay in Helsinki was finished, MaaS Global launched a new subscription that lied in between the basic subscription and the unlimited one. It is still to be seen if this new subscription becomes successful. This type of subscription could meet the demands of the “early adopters” interviewed. “Whim Weekend” adds rental cars for the weekends to the basic services (public transport, city bikesharing and discounts on taxi rides). This subscription is priced in between the basic and the unlimited packages. Much of the interviewees’ criticism about the new mobility services focused on the lack of inexpensive alternatives for taking weekends trips.

7 - THE MOBILITY TRANSITION IN A COMPACT BUT POORLY-PERFORMING CITY. THE CASE OF TORONTO (CANADA)

7.1-CONTEXTUALISATION OF THE CASE STUDY

Even though Toronto performs well for North American standards, as North American cities are generally more car-oriented than European cities due to the great weight that the US car industry and its lobbies had in the last century, Toronto is a poorly-performing urban environment if compared to many European cities, such as Helsinki or Munich. Doing a long stay in Toronto was an opportunity for analysing the mobility transition in a North American city that has mainly been made for automobiles and is making efforts to implement a more sustainable mobility.

Toronto is the largest city in Canada and an important socioeconomic hub in which new measures and innovative trends in the field of urban mobility are being implemented. The stay lasted for around three months and it was over before summer 2019. I counted on extra funding from the grant programs of the Public University of Navarra. I joined the Geography and Planning Department of the University of Toronto and the “SAUSy” (Spatial Analysis of Urban Systems) Lab. The research group focuses on urban mobility mainly from a geographic approach, but they also work on sociological issues connected to it. Professor Steven Farber was my codirector there and is one of the two head researchers of the research lab (together with professor Michael Widener).

The city could be divided into “two Torontos”: the downtown performs well, while the rest of Toronto performs poorly. Those areas that are not part of the core of the city usually lack proper alternatives to private cars, and many of these areas resemble the prototypical North American suburbs where life without cars is nearly inconceivable. Downtown Toronto performs much better than the rest of the city, being an exception inside this metropolitan area.

Toronto hosts the headquarters of several innovative mobility companies, such as the mobility giant Uber and smaller entities such as the local mobility company Pantonium. Both the public sector and the private sector are working on the transition towards a “greener” and less car-centred Toronto. Key stakeholders were interviewed, as well as Spanish citizens living in Toronto. Moreover, extra items of fieldwork, such as the image-based experiment and an online survey, were also carried out. This made it possible to explore the social values and cultural components that underlie this (“dual”) mobility model.

Even though it is not the capital of the country (its capital city is Ottawa), Toronto is the largest city in Canada and its main economic hub. It lies close to the border with the United States of America and to cities that have a long car-sector tradition (such as Detroit). Toronto is the capital of the province of Ontario and it is a relatively dense city (it has approximately 4,350 inhabitants per square kilometre)¹²⁸. According to Statistics Canada, its population

¹²⁸ According to Statistics Canada (statcan.gc.ca, 2016), the land area of the city was 630.2 km², resulting in a population density of 4,334.5 inhabitants/km².

was close to three million in 2016, the metropolitan area being approximately double in size in terms of population (nearly six million)¹²⁹. Both the city and suburban areas were growing steadily and fast, this growth being more intense in the suburbs than in the inner city (as the average for the metropolitan area was 6.2% for the previous five years, and the average for the inner city was a lower 4.5%).

Map 6. The Greater Toronto and Hamilton Area (GTHA) is Canada’s main socioeconomic hub



Source: Google Maps. Own elaboration

Public entities usually refer to Toronto together with its periphery as the Greater Toronto and Hamilton Area (GTHA), a definition that adds the smaller city of Hamilton to the Greater Toronto Area (GTA). They pertain to the so-called “Golden Horseshoe”, which lies along the Lake Ontario and is Canada’s largest economic hub.

As a neighbour that has been strongly influenced by the first car-based society (the U.S.), it is not surprising that Canada has a high motorisation index (of approximately 625 cars per 1,000 inhabitants) that is linked to a car-oriented mobility¹³⁰. Transport is the second largest source of pollution in Toronto (41% of its greenhouse emissions), and cars, SUVs, light trucks and vans account for the vast majority (77%) of all transport-related emissions (City Planning et al., 2018).

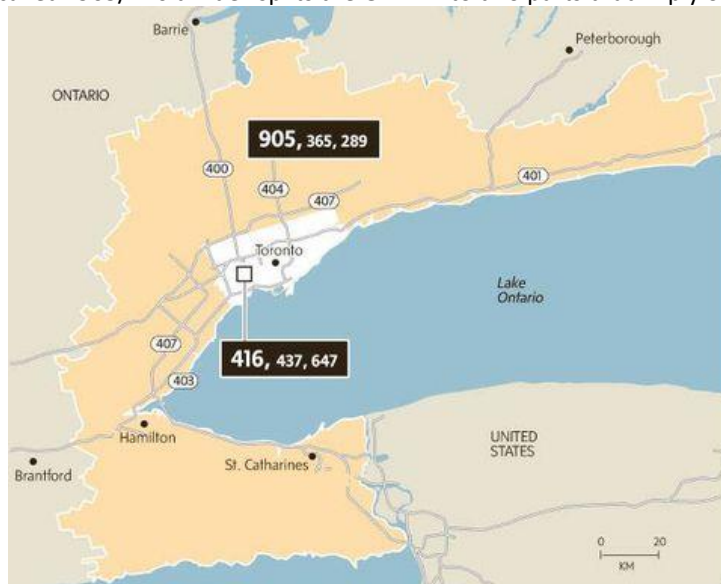
¹²⁹ According to Statistics Canada (statcan.gc.ca), the 2016 census found that the population of the city of Toronto was 2,731,571, while the metropolitan area had 5,928,040 residents.

¹³⁰ According to Statistics Canada (statcan.gc.ca), the country’s population was 37,058,856 in 2018 and the total number of light motor vehicles was 23,137,203, resulting in a motorisation index of 624.

There is a clear divide between downtown Toronto and the rest of the metropolitan area. Indeed, it is estimated that their modal splits vary in an extreme way. While the downtown is estimated to have a much more balanced modal split (only a total of 22% of the journeys to work are estimated to be car-based there, while 32% of the workers use public transport, and the rest walk or cycle), the metropolitan area has a car-oriented mobility (City Planning et al., 2018). According to Deloitte’s (2018b) report on mobility, 70% of the journeys made in the metropolitan area are car-based (like in many other parts of North America). Bicycles and walking only account for 6% (public transport accounting for 23%, and other modes for the remaining 1%).

This deeply rooted urban-suburban divide has been referred to as the “905/416 divide” (see map 7), as the telephone area codes reflect the divide in terms of mobility and lifestyles between the urban core of Toronto and the rest of the metropolitan area¹³¹. After the year 1998 amalgamation, certain suburban towns were incorporated into the city and became part of the inner city. These territories, as well as the adjacent peripheral towns, have mostly been designed for the private car and push their residents towards car-centred lifestyles.

Map 7. The so-called “905/416 divide” splits the GTHA into two parts that imply opposing lifestyles



According to the “Downtown Mobility Strategy” report,

the overwhelming majority of people living in the Downtown walk, cycle or take transit to get to work - nearly half of households don’t even own a car (...) Streetcar routes serving Downtown have had increased ridership as a result of new residential intensification both within the Downtown and beyond. (City Planning et al., 2018: 18)

But this “success story” only applies to the core of the city of Toronto. Deloitte’s report on urban mobility (Deloitte City Mobility Index) summarises the existing duality as follows: “Toronto has a well-developed public transport network in the city core, but suburban areas are underserved and highly congested” (Deloitte, 2018b). But, at the same time, this report

¹³¹ Based on:

“Twenty years later, 905/416 divide continues to define the city” (The Globe and Mail, 1/10/2013).

emphasises the city's openness to adopt technical advancements and try to evolve towards a more sustainable future: "Metrolinx is committed to reducing the reliance on private cars in the region through initiatives such as Smart Commute and development of rapid transit corridors" (Deloitte, 2018b).

In fact, although Toronto is not ranked as a top-performing city (but only as a proactive environment with some barriers), Deloitte's report highlights as one of its strengths that the city is a research hub on autonomous mobility. Both private companies and public entities such as Metrolinx are working on developing autonomous mobility. Uber has set a research lab on self-driving vehicles in Toronto. The rise of this technology and the investments made in alternatives to the private automobile are bringing hope to a territory whose car sector is increasingly being deindustrialised¹³².

Map 8. Ontario's long tradition of car manufacturing is nowadays being threatened

Auto assembly plants in Ontario



Source: CBC News (Industry Canada)

As an essential part of the contextualisation, two inter-related issues must not be missed. As mentioned before, the suburbs of Toronto are usually poorly served. This is not so much a problem for those who voluntarily opt to live in the suburbs and embrace the prototypical North American lifestyle consisting of owning a house with a garden and driving a big car or SUV. Nevertheless, experts argue that there is an on-going process of gentrification, leading to the poor being expelled from the city core. These people may struggle to afford privatised mobility. Therefore, not only sustainability but also inequality-related matters are becoming a major concern in Toronto.

Professor Hulchanski (2010) became well-known for his theory on inequality in Toronto and the concept of the so-called "three cities within Toronto". After having looked at trends for a 35-year period, Hulchanski concluded that

¹³² General Motors announced their intentions to close some of their plants in the U.S. and in Canada. In Canada, the number of jobs linked to the automotive industry is decreasing. According to Statistics Canada, the country's manufacturing sector lost nearly 300,000 jobs between the years 2000 and 2007. In any case, Canada and the province of Ontario are still important car producers at a world scale.

poverty has moved from the centre to the edges of the city. In the 1970s, most of the city's low-income neighbourhoods were in the inner city. This meant that low-income households had good access to transit and services. Some of these neighbourhoods have gentrified and are now home to affluent households. (Hulchanski, 2010: 1)

However, the fact that the poor are becoming under-served in comparison with the rest of the Torontonians as a result of gentrification has been put into question by other authors. For example, Foth, Manaugh and El-Geneidy argue about their research on this matter that

interestingly, these findings are in contrast with the conclusion of other research on Toronto (...) which claims that low income populations have lower job accessibility and longer access time to jobs compared to the rest of the region (...) Overall, we find that Toronto's transit system moves towards a more equitable distribution of transit-related benefits from 1996 to 2006, while maintaining a high level of these benefits for the most socially disadvantaged groups. (Foth, Manaugh & El-Geneidy, 2013: 9)

Not only the poor who have been expelled live in peripheral areas, but also more affluent people who opt for the so-called "American way of life". This lifestyle has traditionally been linked to suburban life and to owning a house with a garden. Nowadays, this typical North American trend that has also been adopted in many other territories (including Europe) is being combined with driving big SUVs (Sport Utility Vehicles). Many of those who drive SUVs apparently search for privacy and isolation from the rest of the society. The so-called "SUV model of citizenship" could be interpreted as a new expression of the still performing North American idealisation of the "purely atomic" individual (Mitchell, 2005).

Figures 41 and 42. The Chevrolet Suburban is an expression of suburban lifestyles associated with SUVs



Sources: *thedrive.com* and *own picture*

Walks interprets that "suburbanism" is one of the most characteristic features of modern cities globally: *"It is in the post-war suburbs of the new dispersed city that much of the urban population across the developed and developing worlds now lives. 'Suburbanism' would thus appear to have become the dominant mode of urban existence"* (2013, 1471-1472). Among those citizens living outside of the downtown (willingly, or because of having been expelled from there or not being able to afford living there), the poor are generally the ones who rely the most on public transport and those for whom a suburban private-car-oriented mobility could be more harmful. A report released by Toronto Public Health points out that *"mode of transportation to commute to work is related to income level in Toronto (...) The lowest income commuters are 1.6 times more likely to use public transit to get to work compared to the highest income commuters"* (2013: 3).

Some measures of densification are reaching certain Torontonians suburbs, even though there is a tradition of preference towards detached and semi-detached houses. However, according to Moos et al., this densification must be combined with an upgrade in the public

transport network, as the resulting drop in the use of private cars “seems to be limited to particular demographic groups, such as smaller households; and suburban high-rise condos are not an evident sign of a broader transition toward suburban sustainability among the population as a whole in the Toronto case” (2018: 15).

One last aspect of the transition towards a more sustainable mobility in Toronto that is relevant for understanding this process is the local politics. As we will see in more detail in the section about the interviews with experts and stakeholders, politicians are said to have a significant influence on mobility and its social impact. Apart from having several different transport agencies, Toronto also faces another challenge: decisions on mobility are taken at the regional (province of Ontario) and the municipal levels, the municipal level being split in many divisions (and the neighbourhoods have their own councillors). As we will later see in the discussion with experts, this makes managing the Torontonians mobility a complex task, as the decisions made at the municipal level may not coincide with those made at the higher provincial level. At the same time, councillors might have different views on urban mobility, depending on their neighbourhoods and specific circumstances.

Just as an example, the former mayor Rob Ford was accused of leading a “war on bikes”. During a speech, he polemically made the following statement: “Every year we have dozens of people that get hit by cars or trucks. Well, no wonder: roads are built for buses, cars, and trucks, not for people on bikes. My heart bleeds for them when I hear someone gets killed, but it’s their own fault at the end of the day”¹³³. In contrast, Mayor John Tory is considered to be a convinced advocate of public transport, cycling and sustainable mobility alternatives. Politicians and their views on mobility issues could have an important impact on Toronto’s mobility and its social implications. Overall, Toronto performs well inside its downtown, but the rest of the metropolitan area performs poorly and faces technical and social challenges concerning the transition towards sustainable mobility. This duality seems to be reflected in the Torontonians citizens’ and the local politicians’ views and attitudes towards mobility.

7.2-IN-DEPTH INTERVIEWS WITH KEY STAKEHOLDERS

Toronto hosts important stakeholders in the field of mobility. Key Torontonians experts and mobility managers from both the public and the private sectors were interviewed, the University of Toronto being the most represented entity, as there were numerous scholars doing research on mobility issues and their social impact from multiple expertise angles.

7.2.1-The North American context, new initiatives and pilot tests

Toronto’s stakeholders and experts on mobility agreed that contexts vary, North America being an even more car-centred society than Europe. After the boom of the private car, first embraced by thousands of Americans who bought the famous Ford Model T, cities started to be redesigned for automobiles. Pedestrians and other modes such as the tramway were

¹³³ Cited from “Cyclists accuse Toronto mayor Ford of 'war on bikes'” (BBC News, 3/5/2012).

left behind (see Sheller and Urry, 2000) after a “fight for the city” (Norton, 2008) that had a clear winner: the car. The irruption of the private car fostered the idealisation of suburban life. Many families fled to the periphery, where the automobile was the hegemonic mobility option. All this has had a great impact on today’s cities.

Figures 43 and 44. The “fight for the city” was won by the motorists. Cars became hegemonic in Toronto



Source: blogTO (blogto.com)

However, even though they share many common features, it seems that there are certain nuances between the Canadian and the US contexts. An expert interviewee suggested that Henderson’s (2006) notion of “secessionist automobility” as a motivation for adopting a car-based model does not apply to Canada: *“The prototypical racist white male would not find in Canada the type of suburbs that Henderson depicts. The proportions of African Americans, Asians and other races are relatively similar in the city and the suburbs”* [Scholar/researcher on mobility; politics of automobility, University of Toronto]. In fact, this expert explained that many Canadian cities are experiencing the opposing trend: *“US cities generally have a low-income inner city and a bunch of relatively rich suburbs. Here, cities are being gentrified and the poor cannot afford to live there anymore, so they are being expelled to the suburbs. They are forced to live in car-dependent places”* [Scholar/researcher on mobility; politics of automobility, University of Toronto].

In any case, suburban lifestyles have also become a common feature in Canadian cities. However, what was once seen as an expression of freedom is nowadays seen as a problem for implementing sustainable mobility. Urban planners were successful at designing suburbs that have later become a problem rather than a blessing (concerning sustainability issues):

“In the post-war era, urban planners were incredibly good at implementing car-centred suburbs. They sought the separation of land use, the creation of private spaces, etc. All those things were idealised back then and were successfully implemented. The irony is that now this type of areas is an obstacle.” [Independent urban planning consultant]

These post-war-era suburbs are very car-oriented and, unless they are retrofitted, many citizens who live in the periphery will aim to own and drive cars:

“Achieving change in North America will be a very hard task. Our city cores were built before the car, but other parts of our cities were designed in the auto-era. Some argue that what people call ‘European solutions’ won’t work here, as North American suburbs are extremely spread out and have exclusively been designed for driving.” [Executive director, University of Toronto Transportation Research Institute]

But this is not only a matter of urban design and infrastructure. Suburban lifestyles have given shape to a stereotypical North American mindset that highlights a close link between cars and individual freedom. Several stakeholders underlined that this feature of the North American context is having a negative impact on the efforts made to achieve a sustainable mobility paradigm: *“Our society has built something around driving cars. It is a cultural thing. We have pulled many of our ideals from the US media and their advertising. The idealisation of being free individuals who can travel anywhere on their own is deeply rooted in Canadian mindsets”* [Service planning director, Metrolinx].

In fact, this expert argued that, because of the great weight of this mentality, we would not see big campaigns on the promotion of sustainable alternatives (unlike other cases, such as those of Munich or Helsinki): *“We haven’t launched mass behavioural-change campaigns. Why? First, because advertising is very expensive. But, apart from that, due to this question: Are we ready for implementing change? We may not be ready yet. Our people are so tied to their cars...”* [Service planning director, Metrolinx].

In such a context, public transport providers such as Metrolinx are trying to attract those drivers who find that congestion and other annoyances are increasingly making driving less appealing for daily life in Toronto:

“Some people have nice drives to their workplaces, but others don’t. We must try to attract all those Torontonians who drive in congested routes and might get fed up with driving. We must provide them with reliable alternatives, as their drives are not as nice as the automotive industry’s marketing claims them to be.”
[Service planning director, Metrolinx]

Indeed, Metrolinx and Toronto seem to be obtaining better outcomes than the average North American city, even though the demand for public transport is not increasing:

“Transit ridership appears to be declining in US cities, but we are not experiencing this trend. We are holding the demand for public transit. In fact, as many people are being pushed to the periphery, certain services like GO Transit are experiencing an increasing demand. We mainly offer railway services that connect suburban areas and towns with downtown Toronto. Suburb-to-suburb links will probably be our next challenge.”
[Service planning director, Metrolinx]

Metrolinx, the regional transport authority, aims to provide Torontonians with reasonable alternatives to the private car. As many citizens do not live close to a station or a transport hub, offering “first/last-mile solutions” was seen as crucial: *“We mainly manage the railway corridors, but we need to establish partnerships in order to offer complementary services that help in feeding them. Mobility solutions are important for covering the gaps between train stations”* [Advisor on mobility management, Metrolinx]. Another interviewee from Metrolinx pointed out that they were *“investing on the heaviest infrastructures. Other public and private entities should ideally compete for offering those supplementary mobility solutions that are needed: e-bikes, e-scooters, etc.”* [Service planning director, Metrolinx].

Finally, another expert concluded that we cannot exactly know what factor is the most decisive (mindsets or the lack of proper alternatives in some parts of the metropolitan area): *“What could be done if our resources were not limited? Would it be possible to provide the*

suburbs with many more viable alternatives? Would suburban citizens change their habits in that case?” [University of Toronto Transportation Research Institute, Executive director].

In spite of the many challenges faced, public entities and private companies were making important efforts to progressively implement a sustainable mobility in the Greater Toronto and Hamilton Area. Scholars and experts on mobility explained the main projects that were being executed and assessed, as well as their environmental and socioeconomic impact. A few important initiatives were being tested or assessed for their future implementation.

Linking the cases of Toronto and Helsinki, a member of Metrolinx explained why Mobility as a Service (MaaS) has not been implemented in this Canadian city, even though he claimed that they are committed to offer this new concept at some point in the future:

“MaaS Global wanted to start their business here, but we had a problem of governance. We could not reach an agreement that applied to our ten local transit agencies. MaaS means packaging mobility, but we are not ready for it. Should we embrace MaaS as an ideal? Yes, absolutely. We are heading towards this, but slowly, step by step.”
[Advisor on mobility management, Metrolinx]

According to the executive director of the UTTRI, the first pilot tests in Toronto had been a success story and could lead to change being more easily implemented in the near future, as the Torontonians could already feel the difference: *“Citizens do not allow city staff to fail, so these projects had been carefully assessed. Decision-makers are very risk-averse, as they are asked to prove that something works not just somewhere else but specifically in Toronto”* [Executive director, University of Toronto Transportation Research Institute]. She provided a few recent examples: *“King Street’s redesign for prioritising streetcars over cars has been a success. We have data that proves this. Eglinton and Bloor are good examples too. Eglinton merchants opposed at first, but experts convinced them of the pros of having more cyclists and more pedestrians”* [Executive director, University of Toronto Transportation Research Institute]. In fact, according to the summary report on the economic impact of a new cycling lane,

most merchants reported a higher number of customers than before the bike lane’s installation, visitors gave higher estimates of spending and visit frequency, and vacancy rates were stable (...) Among customers to Bloor Street, cycling almost tripled as a travel choice (from 7 to 20%). Walking remained the most popular travel choice (48%) and driving is now the least (10%). (Smith-Lea et al., 2017: 41)

Not all the pilots were being tested in downtown Toronto, even though these were the ones that caught most of the media’s attention. Less well-known initiatives were also being run in other parts of the metropolitan area:

“There are many pilots being tested in other places. There is a micro-transit pilot in York that is taking citizens to the railway station, a bike-to-go pilot in Oakville, etc. We have several pilot programs for suburban areas too.” [Service planning director, Metrolinx]

“We have data suggesting that half of the journeys in suburban areas are cyclable. We are running pilots through which suburban residents are encouraged to cycle. It is being a liberating experience for these people: If driving was not an option, they waited a lot

for the bus or they avoided going anywhere (...) As the downtown already performs OK, the potential change is greater elsewhere.”

[Scholar/researcher on mobility; active modes, University of Toronto]

A small city near Toronto, called Belleville, was testing the transformation of certain fixed bus routes into on-demand routes. It was similar to Helsinki’s Kutsuplus service, which had eventually been cancelled. However, the Belleville experience was being successful (so far). This pilot, led by the company Pantonium with the support of the local administrations, had been implemented in night buses and had helped to increase ridership:

“Our new on-demand route has tripled ridership in comparison with the previous fixed route. We are selling our software, and local transport agencies keep running the buses, but in a different way. Fixed bus routes work better to serve high-demand corridors but on-demand bus services can be a good option to replace those fixed routes that have a low demand.” [Marketing director, Pantonium]

This manager admitted that further research was needed in order to assess the profiles of the new riders and the outcomes of this innovative service: *“These are the key questions: Were the new riders driving automobiles at night? Are we replacing other options instead?”* [Pantonium, Marketing director]. According to the company’s estimations, apart from tripling the number of riders, Pantonium’s pilot had meant a 30% drop in per-vehicle mileage and a 70% rise in the number of stops covered¹³⁴.

Finally, the interviewees analysed the services and measures that can be assessed for the future. For example, one of them was a University of Toronto professor who is an advocate of urban road tolls, although this measure is usually unpopular: *“The idea is that tolls would not benefit the rich and harm the poor. It is true that rich people would benefit the most, but the main point is that the rest would benefit too”* [Scholar/researcher on mobility; policy and economics, University of Toronto]. According to this expert, both public transport users and car drivers would experience an improvement in their situation. He estimated that the traffic would be more fluid: *“Many poor people use public transit, which could be improved further by reducing congestion. Traffic congestion has a negative impact on the society. The money taken from those people willing and able to pay could be reinvested”* [Scholar/researcher on mobility; policy and economics, University of Toronto]. Professor Hall considers that one of the problems is that, *“though economists have long advocated road pricing as an efficiency-enhancing solution to traffic congestion, it has rarely been implemented, primarily because it is thought to create losers as well as winners”* (2018: 113).

7.2.2-Ride-hailing, autonomous and electric vehicles and the impact of mobility

Toronto was experiencing a significant growth in the use of ride-hailing/sharing services like Uber. In parallel, the authorities were assessing the implementation of autonomous cars in the near future. These two trends could converge and shape future urban mobility. They

¹³⁴ Based on: “Initial results from Belleville’s on-demand transit pilot” (Pantonium, 19/11/2018).

could be combined with electrifying the fleets, which could potentially lead to a reduction in transport-related emissions.

Uber has established a strong foothold in the Torontonians society and economy. Scholars were already working on the assessment of two fundamental questions: Is it good news or bad news in terms of sustainability? What is its impact on the local society? The answer to the first question remains controversial, as different studies lead to opposing conclusions, even though it may be logical to a certain extent, as the contexts in which this is assessed vary. So far, a leading expert in this specific field from the University of Toronto had come to the conclusion that the irruption of Uber is beneficial: *“Our research suggests that Uber is having a positive effect, as it is more often used as a complement to public transit than as a substitute. It seems that ride-hailing can fill certain gaps both in terms of space and time”* [Scholar/researcher on mobility; policy and economics, University of Toronto].

Hall, Palsson and Price point out that *“Uber is a complement for the average transit agency, increasing ridership by five per cent after two years. This average effect masks considerable heterogeneity, with Uber increasing ridership more in larger cities for smaller transit agencies”* (2018: 36). Local contexts vary, so there is probably no overall conclusion for all circumstances. According to an expert interviewee, *“in some cases, where transit is poorly-performing or nearly inexistent, ride-hailing may help to cover certain basic mobility needs”* [Scholar/researcher on mobility; regulation and policy, University of Toronto].

Perhaps, certain research studies were failing to understand the potential of ride-hailing as a complement to public transport, as explained by an expert interviewee:

“Some surveys are biased in the sense that they have very narrow substitution patterns. They ask Uber riders what they would have used instead. If they say that they would have used public transit, their conclusion is that Uber is killing transit. However, in many cases, ride-hailing is being combined with public transit.”

[Scholar/researcher on mobility; policy and economics, University of Toronto]

This expert offered some illustrative examples: *“You decide to take public transit as, even though late at night you may not have a proper service, you know that you can take an Uber. Without it, you might decide to drive a car there and back”* [Scholar/researcher on mobility; policy and economics, University of Toronto]. He pointed out that ridesharing could work efficiently in combination with road tolls, as people would be encouraged to share rides in order to travel faster. Finally, this same expert introduced the next inter-related matter: the combination of ride-hailing/sharing with automated vehicles. According to him, there could be two radically different outcomes:

“Automated vehicles can lead us to different paths. The horror, pessimistic story would be that we end up owning self-driving cars and don’t mind sitting in traffic, as we can watch contents, read and work in the car. Traffic would be even worse. We must have policies that make this unlikely to happen and promote the use of mobility services.”

[Scholar/researcher on mobility; policy and economics, University of Toronto]

Autonomous vehicles could also have a great impact on lifestyles and on urban planning. That is why regulations were seen as a vital element, as governmental “inaction” could lead to negative outcomes for societies: *“Autonomous driving is expected to reduce congestion,*

but what would happen if cars end up being no-occupant vehicles? What if their owners send them home because parking is expensive?” [Service planning director, Metrolinx]. Another participant also had doubts about the potential impact of autonomous driving: *“What if they become cheap and convenient and drive us even further away? Will it lead to a greater urban sprawl? The role of policy will be very important”* [Scholar/researcher on mobility; regulation and policy, University of Toronto].

This debate is increasingly being assessed before autonomous cars become widespread. For example, Transport & Environment’s report on new mobility trends reflects on this type of questions:

Will automated vehicles be so cheap that they encourage people, or even vehicles without people in them, to travel more and for longer, causing more congestion and more car dominated cities, exacerbating the current mobility system’s failings? Or will they be electric, shared and integrated holistically with other mobility options such as public transport and new (micro)mobility? (Transport & Environment, 2019: 3)

In Toronto, the implementation of two types of automated vehicles was being assessed: micro-transit (robo-taxis) and macro-transit (robo-buses). The interviewees did not seem to be very enthusiastic about the future implementation of this technology at a large scale:

“Self-driving buses are being tested in very restricted and obstacle-free routes. It is not clear whether they will take off. Robo-taxis are being deployed in residential areas in small neighbourhoods with human drivers’ supervision. We will see whether they have a real practical value for increasing mobility at a larger scale.”

[Marketing director, Pantonium]

“For the moment, it seems that robo-taxis (Waymos, Ubers...) might be easier to adopt than robo-buses. Anyway, they don’t seem to be coming very soon. Besides, the driver usually plays a role, like helping disabled people, etc. (...) We’re assessing the option of testing some AVs that would link the residents with a train station in a designated area.”

[Advisor on mobility management, Metrolinx]

Companies such as Uber are working on the convergence of all these new trends. But, are these companies benefitting the cities that host them? Are they a problem? Researchers are trying to measure their impact on the local societies:

“We are working on measuring the economic impact of ride-hailing in the fifteen largest Canadian cities. Many people tend to think of this phenomenon from the consumption perspective: low wages, the losses of the taxi sector, etc. However, from the production perspective, these companies are making huge investments in specific places.”

[Scholar/researcher on mobility; regulation and policy, University of Toronto]

The interviewees’ narratives also mentioned the appropriation of electric vehicles, which might happen in parallel with the rise of ride-hailing/sharing and the adoption of automated vehicles. The expert participants pointed out that this phenomenon should be regulated and managed with care in order to benefit the society:

“Should we rely on this new technology and maintain our same urban planning? Putting thousands of EVs on our highways would not be ideal. Electric vehicles might solve the air pollution problem, but other critical issues would remain unsolved: There would be traffic congestion, healthy active modes would not be prioritised, etc.”

[Scholar/researcher on mobility; emissions and air quality, University of Toronto]

The measures that were being implemented (or assessed) could have an impact not only on how the city is designed and the mobility options offered but also on the environment and on health-related issues. For example, an example on the possibility of setting road tolls was provided: *“It is hard to predict whether road tolls would cut emissions. It would depend on how they were managed. Less congestion means fewer emissions, as stop-and-go traffic pollutes a lot. However, an increase in road capacity can also mean a higher volume of miles travelled”* [Scholar/researcher on mobility; policy and economics, University of Toronto].

A local expert on transport-related emissions and air quality summarised the importance of heading towards a less car-centred mobility. Air pollution exposure was seen as a matter that should be addressed with great care:

“First, we have the impacts on health through air pollution exposure and its associated illnesses. But there are others such as noise. For example, traffic-related noise has been linked to cardiovascular illnesses and stress. Congestion is a problem too. Being stuck in traffic has been associated with increased levels of stress and less productivity.”
[Scholar/researcher on mobility; emissions and air quality, University of Toronto]

But mobility does not only have an impact on health through air pollution or congestion. It can also derive in other inter-related factors that were mentioned by these local experts:

“The commuting experience can be a source of stress. There is no much research on it yet, but some emerging studies suggest that needing to plan your journey and transport mode chain can lead to stress. Another aspect is physical activity: active modes.”
[Scholar/researcher on mobility; emissions and air quality, University of Toronto]

“Cycling and walking have cross-cutting benefits. Active modes might imply economic, environmental and social gains. They can improve health and social cohesion, as they enhance community life and local businesses. They can help in reducing inequality, as groups like women, children, the elderly, the poor and immigrants have a better access to education, employment and so on.”
[Scholar/researcher on mobility; active modes, University of Toronto]

The importance of physical activity has also been emphasised in local reports on mobility. In fact, the *“Downtown Mobility Strategy”* report concludes that opting for public transport *“not only reduces vehicle emissions that contribute to a range of adverse health outcomes, people using public transit also tend to walk more in order to get to and from the public transit network, and to transfer between routes”* (City Planning et al., 2018: 21).

The expert participants concluded that the consequences of the measures taken must be thoroughly assessed, including the increasingly popular trend of densifying cities:

“We are trying to densify our cities, create mixed-use spaces and invest in walking and bike infrastructure. The concept of dense cities is a good one, but we are not reducing air pollution, not yet at least. So far, the total amount of cars has not been reduced, so we might be putting people closer to the main sources of pollution...”
[Scholar/researcher on mobility; emissions and air quality, University of Toronto]

7.2.3-Inequality, ideologies and the local politics

Both in Toronto and in any other city, the way in which people move around might reflect their social background and status. The participant stakeholders explained some of the links between urban mobility and inequality (Toronto ranked among the most expensive cities in the world concerning the cost of moving around)¹³⁵. Those inequality-related matters that are linked to mobility are usually difficult to measure and manage. In fact, academic experts who carried out a study about eighteen of the most important North American metropolitan areas' urban mobility plans (including Toronto) argue that

we observe that social equity goals and objectives are in many cases not translated into clearly specified objectives and appropriate measures for assessing their achievement in a meaningful, disaggregated manner are often lacking (...) In general, there is a stronger focus on the local environment (and congestion reduction) than on social equity in the plans. (Manaugh, Badami & El-Geneidy, 2015: 167)

The expert interviewees had their views on these issues. For example, the University of Toronto professor who advocated for the implementation of road tolls talked on the social implications of this hypothetical situation: *“What is our policies' main goal? Is it to have less inequality or a better life for everyone? What our research suggests is that tolls would benefit everyone, but the rich would benefit the most”* [Scholar/researcher on mobility; policy and economics, University of Toronto].

The experts from Metrolinx (the regional transport authority) explained that inequality was one of the aspects that were usually taken into account, but it was more viable for them to focus on improving the network as a whole than on addressing people's specific needs:

“We are working on new LRT (Light Rail Transit) and BRT (Bus Rapid Transit) corridors to make our service faster and more convenient. Fare categories are being reassessed, but no decision has been taken yet. It is not a simple matter.”
[Advisor on mobility management, Metrolinx]

“The problems of affordability are hard to manage. For example, not all young citizens need discounts, not all elderly citizens need them either. However, it is much easier for us to check their IDs and verify their age than implement other kinds of more complex criteria.” [Service planning director, Metrolinx]

This service planning director also emphasised that inequality-related issues do not only have a link with the cost of mobility but also with the spatial distribution of mobility services:

“Apart from managing fare costs, there are other ways of making a public transit system more equitable. For example, we could bring services to the most isolated parts of the city. We need to make calculations of user-base ratios so that a route is optimized. Only once this is done, we can think of the specific needs of a local community.”
[Service planning director, Metrolinx]

According to the experts, this should be assessed in combination with managing another important interdependent issue: housing. For example, if the services of a certain area were

¹³⁵ Based on:

“Toronto's monthly transit pass the 5th most expensive in the world, study finds” (CBC News, 2/2/2017).

upgraded, the cost of living there may rise and the poor might be expelled. A local consultant who had assessed this issue explained that *“mobility and housing are two parts of the same problem. For example, when we interviewed citizens for a study, some of them said that they had looked for poorly-served areas because they would be affordable. This idea is perverse. We must promote mixed-income housing”* [Independent urban planning consultant].

Figure 45. Proximity to metro stations or tramway stops is an asset that raises housing prices in Toronto



Source: Own picture

Toronto offers a good sample of how ideologies and politics shape urban mobility. The stakeholders interviewed agreed that the regional and local politicians did not always come to the same conclusions on what should be done. Furthermore, citizens also have different attitudes towards mobility, depending on their area of residence (downtown or suburbs, for example). Moreover, the conflicts of interests between Ontario’s regional government and the local politicians were blamed for making things worse:

“We have a problem of governance. The province can override a decision that is taken at the municipal level. When the political landscape changes, the way in which mobility is managed changes as well. This has happened several times.”
[Independent urban planning consultant]

“Many decisions are taken at the regional level. The Premier of Ontario has unveiled his plans for the city of Toronto. He might build some public transit, and maybe see it as his legacy, but this is not based on the Torontonians’ (and their planners’) will. In my view, it is not very democratic.”
[Scholar/researcher on mobility; politics of automobility, University of Toronto]

The former mayor, the conservative politician Rob Ford, was well-known for his critics on cyclists and his pro-car approach to urban mobility: *“Rob Ford rejected important regional funding for extending our public transit network. Now, we have Mayor John Tory, who is a conservative politician too. However, he is more inclusive”* [Scholar/researcher on mobility;

politics of automobility, University of Toronto]. According to the experts interviewed, all this was linked (at least to a certain extent, as not all conservative politicians would adopt pro-car approaches) to ideologies:

“We can see in North America a certain overlap between pro-libertarian conservative political views and a lifestyle that is based on private cars. For many, the car is a symbol of individual freedom, even though you can get stuck in traffic while driving in cities like Toronto. For these people, anything that gets in the way of their cars (like bicycles and streetcars) may be seen as an obstacle to their freedom.”

[Scholar/researcher on mobility; politics of automobility, University of Toronto]

This would not only apply to local politicians (who aim to reflect their voters’ views) but also to regular citizens who live in different environments (downtown, suburbs, etc.):

“We have neighbourhood councillors, and they might be split. Suburban residents are very car-oriented. Some of them fear restrictions on car usage. They would argue that downtown residents do not understand their circumstances, and they would rightfully ask how to go anywhere without driving their cars.”

[Executive director, University of Toronto Transportation Research Institute]

“The city is being gentrified. With more ‘lefties’ and students living in downtown, and with the deindustrialization of the suburbs, certain people think that an elite is socially engineering the city and investing most of the money in downtown. At the same time, these left-leaning professionals might blame suburban citizens for driving so much (...) But many immigrants are moving to the suburbs, which are becoming heterogeneous.”

[Scholar/researcher on mobility; politics of automobility, University of Toronto]

“Suburban communities are more heterogeneous than what the news reflect. There is more support for density, public transit and walkability than what we see in the media. Some suburban residents have several jobs and no time for meetings, so no strong voice represents them.” [Independent urban planning consultant]

As an example of the influence of political decisions and the local politicians’ willingness to implement change, Walks et al. argue that

given that the structure of the city has significant influence on travel decisions and choices, it is important to consider how the auto-city might be reformed to make it more sustainable and resilient (...) The bicycle is both a political symbol of opposition to automobility, and a pragmatic mode of transport for a less auto-dependent urban world (...) However, it is not the economic but the political costs that have limited their implementation. Indeed, implementing even the most minor and inexpensive changes has often proven very difficult politically. (Walks et al., 2014: 238)

As we can see, varying contexts and political views shape Toronto’s mobility. In addition to this, other features such as the great number of transport agencies make managing urban mobility a hard task: *“A change of paradigm will be very difficult to implement in Toronto. There is a huge difference between the old city and the rest of the areas. Apart from different politicians, we have several entities that manage mobility, so it is a complex task”* [Executive director, University of Toronto Transportation Research Institute].

7.2.4-Expectations for the future

The participants summarised their views on the future of urban mobility, both globally and specifically in Toronto. They also shared their thoughts on what should be done in order to evolve towards a more sustainable mobility. The stakeholders agreed to emphasise the importance of implementing the right policies. Both policies and infrastructure were seen as vital for change and, for some, policies were the most decisive factor:

“We need some sticks, like pricing, fees or tolls. Then, for example, people would look for carpooling options that help them share their expenses. MaaS solutions would also become valued (...) We must go step by step.” [Independent urban planning consultant]

“Policies are cheaper than building infrastructure, so more efforts should be put on implementing policies that encourage sustainable mobility. Road traffic must be slowed down, roads must be narrowed, we should invest more money in active mobility, etc.” [Scholar/researcher on mobility; active modes, University of Toronto]

“We must have policies that make bad mobility habits unlikely to be embraced. Mobility services should be promoted. Those who harm the society more should pay more.” [Scholar/researcher on mobility; policy and economics, University of Toronto]

“Densification must be combined with restrictions on the number of cars on the roads. Nowadays, densification is usually made compatible with unrestricted traffic, which has negative impacts on the society. This is a mismatch.” [Scholar/researcher on mobility; emissions and air quality, University of Toronto]

According to the interviewees, modern societies should work on making walking, cycling, taking public transport and using mobility services that replace the use of private cars more appealing:

“Public transit and active modes should ideally be the cornerstones of urban mobility. Improvements in public transit usually are more expensive than promoting walking and setting bike lanes. We must boost all the existing alternatives to private cars if we want to dissuade people from driving their cars.” [Scholar/researcher on mobility; emissions and air quality, University of Toronto]

“Cars will always be important here, as the city has been designed in such a way that it is unviable to run high-occupancy buses in certain areas. Ridesharing and micro-transit could work in those parts of the city that have exclusively been made for cars.” [Service planning director, Metrolinx]

“In an ideal future, we would have smoothly-flowing traffic. Sharing rides would be a very common thing to do. We would need less space for parking, so cities could become more compact. Active modes would also become popular in such a context.” [Scholar/researcher on mobility; policy and economics, University of Toronto]

Convincing frequent drivers about the benefits of “greener” mobility habits was seen as the biggest challenge, as some experts feared that the measures and services implemented could attract people who use other options instead of drivers: *“The mobility services industry doesn’t exactly know how to get frequent drivers out of their cars. It could be happening that new services are being adopted by those who didn’t drive before. Drivers are usually reticent to switch to other modes”* [Marketing director, Pantonium]. This worrying situation could be

explained by the fact that *“most car drivers are suburban dwellers, but many initiatives focus on improving the conditions of inner-city residents. This is not a bad thing, but we must take into account that the main generators of traffic and its negative impacts tend to be suburban residents”* [Scholar/researcher on mobility; emissions and air quality, University of Toronto].

This last comment reflected a point that was shared by several participants. More efforts should be made to upgrade the mobility of those who need it the most: *“Many people live in poorly-served areas to which we are trying to bring last-mile solutions. Our train services perform well, but too many users drive to our stations. We want to promote walking, cycling and carpooling”* [Advisor on mobility management, Metrolinx]. Another expert regretted that *“big and shiny projects are usually prioritized, but smaller projects can also make a huge impact. We should not deregulate this field and let the private companies set the rules. Public intervention is needed to foster social equity”* [Independent urban planning consultant].

Finally, the stakeholders highlighted the key importance of reshaping people’s mindsets. This was seen as a complex challenge in the car-centred North American context. Moreover, any restriction on car use could be problematic, as many people could see it as a threat to their freedom. In this respect, University of Toronto professor Alan Walks argues that

because any restriction on the car is seen as an attack on individual preferences and liberties, political movements that oppose automobility, regardless of origin (even if from low-income households that cannot afford a car), are typically accused of being elitist and against the interests of the majority. (Walks, 2015: 407)

The importance of these tensions between individual freedom and seeking the common good was underlined by several expert interviewees:

“On the surface, banning or heavily taxing car ownership might appear to be an attack on freedom. However, in my opinion, the true attack on freedom is pushing somebody to live in a poorly-served area. Not needing a private car could mean freedom.”
[Independent urban planning consultant]

“We shouldn’t fight people’s attachment to cars. In North America, car ownership will always be important, at least in the near future. But cities are getting congested and, because of car traffic, many citizens will find alternative modes increasingly appealing.”
[Service planning director, Metrolinx]

“We live in a society that is based on personal choice. There are citizens who feel good while driving their cars. Should we limit their freedom? Must we do this for the common good? I don’t know if, as a society, we would feel okay with it (...) Will the new mobility paradigm become everyone’s ideology? I don’t really see that happening here.”
[Scholar/researcher on mobility; regulation and policy, University of Toronto]

7.3-IN-DEPTH INTERVIEWS WITH SPANISH CITIZENS

7.3.1-Daily mobility patterns: a normal week

Even though Toronto is considered a poorly-performing city, most of the participants did not own automobiles. Most of those who could afford it had opted to live in downtown. The interviewees' profiles reflected a less car-oriented mobility than the average.

As over half of the participants did not own cars, only a few car owners could talk on their use of private automobiles. Like what was found in other cases, being a family with children was one of the reasons cited for owning a car in Toronto. The contrast between downtown and suburban lifestyles was emphasised. Driving was attributed to life outside of downtown and to embracing the prototypical "American way of life":

"When we were a young couple without children, we lived in downtown, close to our workplaces. We walked nearly everywhere. But, with children, our priorities changed. We decided to move elsewhere and to buy a car. We preferred to live in a calmer and peaceful neighbourhood. Outside of downtown, you can find schools and areas that are more suitable for families. It was also a matter of having a garden and a big house. This lifestyle is, perhaps, every family's aspiration."

[Woman, 37, company manager, couple with two children and a car]

This "clash" of lifestyles was also illustrated by the case of a couple who had decided to revert their car-based mobility habits and sell their cars, although they had a young child:

"Before coming here, we lived in Denver and had two cars. We drove everywhere. We got fed up with driving that much. When we moved to Toronto, we sold our cars and opted to pay extra for our rent and live in a well-served area in between downtown and midtown. We have two subway stations nearby, and a streetcar stop just in front of our home. We prefer this, as we saw our cars as a source of stress and an economic burden (maintenance costs, etc.)." [Woman, 39, student, couple with a child]

However, the most mentioned reason for having a private a car was engaging in weekend activities and trips. As several interviewees lived in downtown Toronto, the car was usually not perceived as a necessity for daily mobility. The private car was associated with weekend leisure trips (and, consequently, with freedom, as other modes were seen as less convenient for this purpose):

"We have an SUV. We mostly use it at the weekends, as commuting to downtown by car would be very inconvenient. There is too much traffic, and parking spaces are scarce and very expensive. We only drive for leisure purposes, going shopping and taking our children to their weekend activities."

[Woman, 37, company manager, couple with two children and a car]

"I have never driven in Toronto, as my Spanish license is not valid here and my husband has a car. We only take the car at weekends to visit his relatives and to run errands. We don't nearly use it during weekdays." [Woman, 33, business analyst, couple with a car]

"We had a company car when my husband worked far away in the periphery and was offered a car as a bonus incentive. Now that we don't have a car anymore, I sometimes miss it. I feel more limited: We can't freely go anywhere on weekend trips or shopping."

[Woman, 33, admin. assistant, couple with two children]

This last comment reflected the links between owning a car and freely moving around, mostly referring to the weekends and to destinations located outside of the city. A couple living outside of downtown had felt the need for driving one car each in order to deal with their daily routine activities, as low densities and urban dispersion are a common feature in certain inner-city areas outside of downtown and in the suburbs: *“We have two family cars, one for me and the other one for my wife. I use my car daily. I drive for going shopping and to other places like the gym. The area where I live has been designed for driving cars”* [Man, 41, engineer, couple with two children and two cars]. So, all in all, it could be concluded that those participants who could afford them and had decided to buy automobiles had done so mainly as a way of embracing a car-centred lifestyle or as a means for feeling free to do trip-based weekend activities outside of the city.

Cycling was not common among these people. Only half of the interviewees had bicycles. Only three participants used their bikes daily, and only in summertime. Weather conditions are an important factor in the Canadian context: *“I have a bike and use it every day, except for the tough winter period. I find it dangerous to cycle in wintertime. People ‘tune up’ their bikes for the snow, but I wouldn’t feel safe anyway”* [Woman, 28, student, shared flat]. Other factors (such as bike infrastructure, perceived level of safety, security and fear of thefts, the physical effort needed, etc.) were reported to be important as well: *“In summertime, I switch to the bike instead of taking public transit. However, in some occasions, I feel lazy and I prefer to avoid cycling”* [Woman, 28, office manager, couple with a car].

Another two interviewees claimed that they took their bikes from time to time, but they regretted the challenges that they had to face:

“I don’t use my bicycle as often as I would like due to safety reasons. Unless I can make sure, using the Internet, that there are bike lanes along my route, I won’t take it. In the absence of bike lanes, streets without heavy traffic might be okay too. However, mixing with car traffic is extremely dangerous here.”

[Woman, 33, business analyst, couple with a car]

“I have a bike, but I take it nearly never. I find it too insecure to leave my bicycle in the streets, as many bikes are stolen. This is one of the problems that discourage cycling.”

[Man, 41, engineer, couple with two children and two cars]

Approximately half of the interviewees commuted by train, metro, bus and/or tramway. This is a higher proportion than the average as, as explained, these Spanish citizens usually had no cars and most of them lived in areas located in downtown Toronto or close by: *“I live in a midtown area and commute using public transit. I take the bus and then the subway. At the weekends, I also take the streetcar”* [Woman, 31, marketing worker, couple]. In the same vein, another participant explained that *“my husband and I commute using public transit. I take the streetcar or the subway, depending on which one of our two children I take to school before going to work”* [Woman, 37, company manager, couple with two children and a car].

Using public transport was sometimes combined with or replaced by walking. This second option was generally the case of those living and working in close-to-each-other downtown locations. Several young couples and single people strategically chose to pay extra in order

to live close to their workplaces and have the possibility to walk to many points of interest, as many shops, facilities and services are located in the city core: *“When I lived in an area outside of downtown, I took the subway and the streetcar on a daily basis. I have moved to the core of downtown and now live a short ten-minute walk away from my workplace. I go everywhere on foot”* [Woman, 26, waitress, shared flat]. Similarly, another person explained that *“as I live right in the core of downtown, I can find everything I need around here. Besides, I have my workplace at walking distance, and I love walking”* [Man, 23, works in a restaurant, shared flat].

In the context of their daily mobility, certain mobility services were used as a supplement to public transport. Services such as bikesharing, carsharing, ride-hailing or ridesharing, had become popular among the participants for reasons such as covering specific needs:

“We have used shared cars a few times, for specific tasks, like reaching a place in which there is no public transit. We are lucky to have a carsharing station near our home. We didn’t find the service comparatively too expensive as we are a family with children and public transit is very expensive for us.”

[Woman, 33, admin. assistant, couple with two children]

“For me, services like UberPool are useful when there are no public transit options late at night. They can also be an alternative when I don’t want to use the subway at night, as it doesn’t feel secure enough.” [Woman, 29, post-doc researcher, shared flat]

“If the weather is extremely bad, I take an Uber for commuting. The buses might be so crowded at rush hour that I might miss two or three buses, so I sometimes take an Uber instead.” [Man, 34, post-doc researcher, shared flat]

“If a destination is far away or very inconvenient to be reached, like going to the town of Mississauga, we sometimes use alternative modes. We may take an Uber or a shared car. If we need a car for the whole day, we might take a rental car instead.”

[Woman, 39, student, couple with a child]

“We have used the bikesharing system several times, but only for leisure, not for daily mobility needs. When our friends come to pay us a visit, we may use some shared bikes to show them around.” [Woman, 42, NGO worker, couple with a child and a car]

Apart from convenience, which was the most cited reason for using these services, other factors were also mentioned. Certain new services, such as UberPool and Uber Express Pool, imply sharing rides with unknown people. For some interviewees, this was as an appealing feature instead of only a way of sharing costs and saving money: *“I like Uber Express Pool. I like it because the route is more efficient, so the journey is cheap and more environmentally-friendly. Besides, it is also a way of socialising. You share rides with people with whom you might start to chat, if they are not too shy”* [Woman, 28, office manager, couple with a car].

The way in which these new services are distributed can have a significant impact in their potential users. Offering convenient options and service coverage were seen as key factors. For example, some participants regretted living in areas in which using shared cars or shared bikes would not be viable:

“We had Car2Go shared cars in Toronto. They had no fixed stations, so they were more useful in my case and I used them from time to time. However, since they stopped their business here (...) they all have fixed parking lots, and none of them is close to my home. Besides, the bikesharing network doesn’t reach my area.”

[Woman, 31, works in marketing, couple]

7.3.2-Stages of advancement, inequality and the role of the private car

Most of the participants agreed that Toronto is less developed in terms of mobility than their Spanish home cities (half of them were Madrilians, and Madrid could be considered a comparable city in terms of population size, but it was said to have a better public transport network). As argued in other sections, Toronto was perceived as a city that could be divided into two parts (downtown Toronto and the rest of Toronto):

“It is difficult to say whether Toronto performs well or badly, because I would say that there are two Torontos. If you live in downtown Toronto, you have access to many more mobility options. However, outside of downtown, only those people who live just next to subway or light rail stations can opt to live without cars.”

[Woman, 37, company manager, couple with two children and a car]

“Unless you live close to a transit hub, or right in downtown, you are offered very poor alternatives to the car. The difference between some big European cities like Barcelona and Toronto is huge. Toronto might be doing better than average North American cities, but it is a poorly-performing city in comparison with European standards.”

[Man, 34, post-doc researcher, shared flat]

The interviewees found several inter-related reasons that explain why Toronto (if taken as a whole) does not perform well enough:

“Madrid has a huge subway network that was built back in the nineties. Toronto only has two subway lines. Canada has historically been influenced by the U.S. and the pro-car lobbies.” [Woman, 39, student, couple with a child]

“Toronto is a big city that has a limited and unreliable public transit network. It seems that many parts of the city have been left behind. While the city is growing very rapidly, its transit network is not.” [Woman, 33, admin. assistant, couple with two children]

“Many projects are put on hold. The political structure is very complex, and reaching agreements is tough. The Torontonians neighbourhoods have their elected councillors. Everything goes slowly here.” [Woman, 33, business analyst, couple with a car]

“Public transit is claimed to be of great importance to the city and to have a key role. However, in practice, their budget is too limited and the service that they provide is not good enough.” [Woman, 42, NGO worker, couple with a child and a car]

Not only public transport but also cycling infrastructure was perceived as poor. It was not only seen as a matter of expanding the network of cycling lanes (which is very concentrated in the downtown, while other parts lack bike infrastructure) but also as a matter of trying to change the drivers’ negative attitudes towards cyclists: *“Even though there are some cycling lanes, Toronto is not a safe place for cyclists. I have witnessed how cyclists were killed on the roads. You always need to plan a safe route and look for bike lanes and slow and bike-friendly roads”* [Woman, 28, student, shared flat].

Apart from having a high-performing downtown, a few more positive aspects of moving around in Toronto were emphasised: *“Even though public transit is not good here, there are certain details that are positive. For instance, buses can carry bicycles attached to their front part. Another good thing is that women who are alone at night can ask the bus driver to stop in between two stops”* [Man, 41, engineer, couple with two children and two cars]. Another participant pointed out that *“another positive thing is that it feels safe to walk in downtown Toronto nearly at any time of the day”* [Man, 23, restaurant worker, shared flat].

Moreover, weather conditions were blamed for having an influence on daily lives, even though the case of Helsinki shows that sustainable mobility could be compatible with tough winters. Some of the Spanish citizens who lived in Toronto claimed that they changed their mobility patterns during wintertime, and that both public transport and mobility services should be adapted to the changing circumstances (through building more sheltered bus and tramway stops, for example), as explained by an interviewee: *“In wintertime, you are lucky if you live close to a subway station. Waiting for a streetcar or the bus in the streets is tough”* [Woman, 28, student, shared flat]. In the same vein, another person argued that *“one of our great problems is that the subway network is too small. Would you wait for a bus or streetcar in the streets when it’s freezing cold out there?”* [Man, 23, restaurant worker, shared flat].

Like in other expensive cities, such as Munich and Helsinki, the interviewees agreed that the prices of moving around were high but proportional to the local average income. Again, adjusting the prices of basic services such as public transport to average salaries meant that those who came from the lowest social classes struggled to afford them. Car ownership may not be a viable option for the poor, as buying and maintaining a car is expensive in Canada: *“I have friends who don’t have stable jobs and can’t afford a car. They might sometimes use carsharing and rental cars instead. If you own a car, it probably means that you have both a stable job and a decent salary”* [Man, 41, engineer, couple with two children and two cars].

Public transport fares were blamed for having been adjusted to the purchasing power of average Torontonians, leaving the poor behind. Over three dollars for a single ticket, and around a hundred and fifty dollars for a monthly pass, was generally seen as affordable only for those who are not poor. Those who have low salaries (as it was the case for some of these Spanish citizens) might avoid using public transport: *“Here, transit is expensive for precarious workers, like bartenders and low-skilled workers. It is affordable for all those who have decently-paid and well-paid jobs”* [Woman, 34, customer service worker, living with a host family]. Another interviewee offered a comparison: *“Transit fares are very expensive if compared to Spain, but reasonable for Canadian standards of living. For me, transit is very expensive here, as I don’t earn as much as an average Torontonian”* [Woman, 31, marketing worker, couple].

With the implementation of the new Presto Card, for the price of a single ticket, public transport users can transfer as many times as they want for a period of two hours. According to the interviewees, even though public transport remains expensive for many people, it is a step ahead towards making it appealing. Moreover, in spite of this positive initiative, fares were perceived as too high in relation to the quality of the service:

“I find the new Presto Card very useful for running some errands, for example. It makes sense, if you need to take public transit more than once. It will probably attract more potential users.” [Woman, 29, post-doc researcher, shared flat]

“If the poor quality of the service is taken into account, public transit is very expensive. For these high prices, I would expect to be offered a much better service: more bus and streetcar frequencies, less interruptions in the subway due to maintenance works, etc.” [Woman, 28, office manager, couple with a car]

Despite the good news about this initiative offering two-hour transfers, the cost of public transport makes certain citizens avoid using it. In some cases, it is replaced by active modes, but in other cases less sustainable alternatives might be chosen instead: *“I prefer to walk as, apart from saving money, it helps me to reduce my stress levels. For long distances, Uber or UberPool can make sense. Transit is so costly that `uberling´ can cost a little more. If travelling with other people, Uber could even be cheap”* [Woman, 29, post-doc researcher, shared flat].

The cost of mobility combined with the cost of housing give shape to inequalities and can lead to an unbalanced distribution of the local population. The participants argued that they observed an unequal distribution that could be linked to people’s mobility choices and areas of residence:

“You see certain inequalities in the way people move around. For instance, those who commute to downtown by car are mostly rich people. It means that they can afford to have very pricey private spots right in downtown (...) In transit, you see the middle and the lower classes.” [Woman, 37, company manager, couple with two children and a car]

“The lower classes tend to use public transit, mainly the bus. Subway users can be more varied in their backgrounds. In the yellow subway line, you might even find people from the upper classes, as it covers richer areas.” [Man, 34, post-doc researcher, shared flat]

“The poor are expelled to peripheral areas that can only be reached by bus. As a result, you see poorer people in the buses, if compared to other modes.” [Woman, 30, account manager, couple]

“Inequality can be observed when comparing the two subway lines, for instance. The yellow line covers the core of downtown and the financial district, so it is used by people who usually have better positions than those who use the green line.” [Woman, 29, post-doc researcher, shared flat]

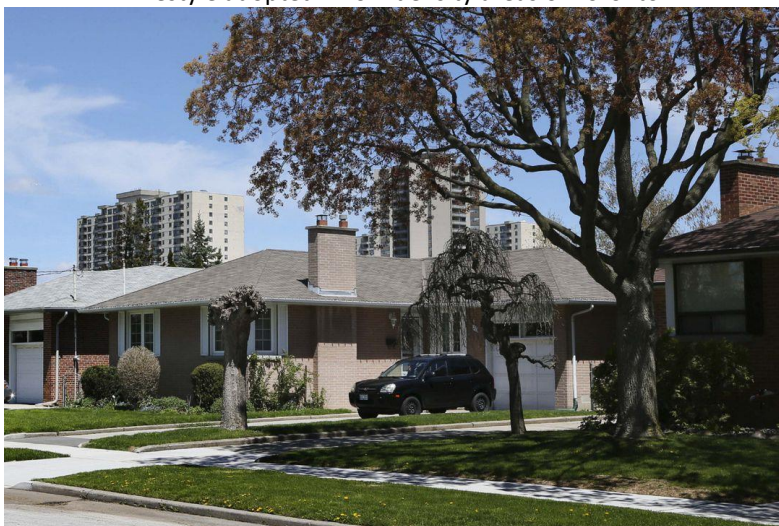
“Not only the trains are older, but also the subway stations are worse in the green line. Apparently, the high standards of living along the yellow line have an impact on this.” [Woman, 39, student, couple with a child]

So, all in all, the impact of the cost of mobility and housing appear to have a strong impact on lifestyles. Apart from the option of intervening through social housing, the public entities should manage the cost of mobility in such a way that those who struggle to afford it do not miss job opportunities or opt for less sustainable modes.

The views of the interviewees helped to better understand what kind of people tend to own cars and why. Driving was mainly attributed to those who live outside of downtown. However, certain downtown residents drive for commuting to peripheral areas or have cars

for other reasons. The participants perceived that the status component of cars is present (but not as strongly as in the case of Munich). Those who have automobiles were generally described as follows: *“Many of those who live outside of downtown need their cars. I lived in a suburban town where I needed to walk for 40 minutes to the nearest shop when I wasn’t driving. Many dormitory towns were made for cars. However, the car is a luxury item for the downtown residents”* [Woman, 31, marketing worker, couple].

Figure 46. SUVs, as well as detached/semi-detached houses, are part of the archetypal North American lifestyle adopted in low-density areas of Toronto



Source: Toronto Star (Andrew Francis Wallace)

An important feature is the frequent presence of big cars and SUVs. The Spanish citizens interviewed found that this is a prototypical trait of the American lifestyle. Both the United States and Canada have a long tradition of idealisation of big cars and big houses:

“North Americans have a different approach to the car. For instance, my husband is a prototypical Canadian who loves big cars. He bought for the family a big SUV that has three rows of seats, even though we only have a child. It probably makes him feel very self-sufficient, as we can take with us a lot of stuff when we make a trip or go shopping.”
[Woman, 42, NGO worker, couple with a child and a car]

“North American people love big things. For them, the best car is a big car and the best house is a big house with a garden. When we arrived to Denver, we tried to adapt to all this. We bought two SUVs and a big house. When we came to Toronto, we did not make the same mistake, as we asked ourselves: Do we really need so much of everything?”
[Woman, 39, student, couple with a child]

7.3.3-The adoption of new trends and interviewees’ conclusions

Several interviewees were frequent users of carsharing services and rental cars. Those who did not own cars sometimes complemented public transport and cycling with mobility services. Using ride-hailing/sharing services such as Uber (X, Pool and Express Pool) has also become common in Toronto. Even though shared bikes are a growing trend too, none of the participants was a frequent user of this mobility service. The participants offered their views on who and why tend to find these new services appealing:

“For me, the private car is a burden. I’d rather rely on mobility services. The problem is that most of these services are not available in our neighbourhood, as we moved away from downtown.” [Woman, 37, company manager, couple with two children and a car]

“There are many new mobile-app-based services. Young people are more likely to use them than older people, as the elderly are generally not so much into technology. It is not a matter of income.” [Woman, 33, admin. assistant, couple with two children]

“The new mobility services have mostly been designed for the young. Old people, like for example my mother, may not be willing to give their credit card information on the Internet.” [Man, 23, restaurant worker, shared flat]

The first comment explained that, even though the main trait of “early adopters” is that they are generally relatively young and tech-friendly, their area of residence is an important factor too.

Living without a car, except for specific cases, such as families with children and workers who need to drive to isolated peripheral areas, was seen as viable for downtown residents. However, unless they live next to a transport hub, driving was considered a need for those who live in many of the newly-incorporated areas of the city (after the 1998 amalgamation) and the suburban towns of the GTHA (Greater Toronto and Hamilton Area).

In contrast with previous cases such as Helsinki, very few of the citizens interviewed said that living without a car would be ideal in Toronto. According to them, there needed to be major changes in public transport, bike infrastructure and the new mobility services in order to make living without a private car the most attractive choice for the Torontonians: “*Ideally, I would love to have an inter-connected network of bike lanes, infrastructures that prioritise pedestrians, etc. I would opt for carpooling and using transit as well*” [Woman, 33, business analyst, couple with a car]. In a similar vein, another person claimed that “*I would like to feel safe when cycling. Drivers should be better educated on cohabiting with cyclists. I would also like the subway network to be improved*” [Woman, 28, student, shared flat].

Some of the interviewees also mentioned that they preferred not to drive in a foreign country that has its own driving culture. But this does not mean that this was seen as ideal, as several interviewees agreed that they would prefer to own a car, as cars are flexible and convenient in certain occasions:

“Having an extensive and reliable public transit network would be ideal, both in terms of convenience and sustainability. However, even if we had that network, I would prefer to own a car for weekend trips and so on.” [Woman, 26, logistics manager, shared flat]

“If we stayed here, in the long term, we would try to move outside of downtown and have a house with a garden in a peaceful area. If a subway line covered the area, that would be ideal, but I would prefer to have a car anyway.”
[Woman, 30, account manager, couple]

“Private cars are not for the city, but they are very convenient for getting outside of the city: for going to campsites, etc. I would ideally own a car but use transit in my daily life, if we had a good network.” [Woman, 28, office manager, couple with a car]

Other participants conceived life without owning a car as the ideal situation. They asked not to have to make too many sacrifices. If mobility services and the alternatives to private cars were reliable and convenient, they would be happy not to own cars and embrace a new mobility paradigm that is not based on car ownership:

“Mainly when you have kids, you prefer to have a car in the reserve, so that you can take it at any time in case of need. I’d rather rely on services and public transit if they were reliable and convenient alternatives that did not imply too many extra efforts.”

[Woman, 37, company manager, couple with two children and a car]

“It all depends on convenience. I prefer public mobility to private mobility modes. Not having to search for parking spots, avoiding the stress of driving, polluting less... It is all good things, but I would like to have mobility services available just next to my home.”

[Woman, 29, post-doc researcher, shared flat]

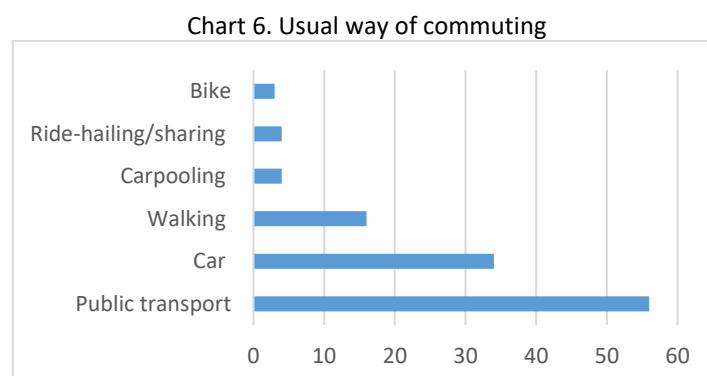
7.4-SUPPLEMENTARY FIELDWORK

Like in the case of Helsinki, I was able to carry out some supplementary fieldwork items in Toronto. This extra work consisted of the image-based exercise, an online survey and two trials (Uber Express Pool and Bike Share Toronto).

7.4.1-“Image-based rating exercise”

The image-based exercise was carried out in university lectures held in two campuses: Saint George (downtown) and Scarborough (amalgamated suburban area). Having access to university students from both a downtown campus and a suburban campus of the University of Toronto was meant to allow to see whether there were nuances between the two groups of students.

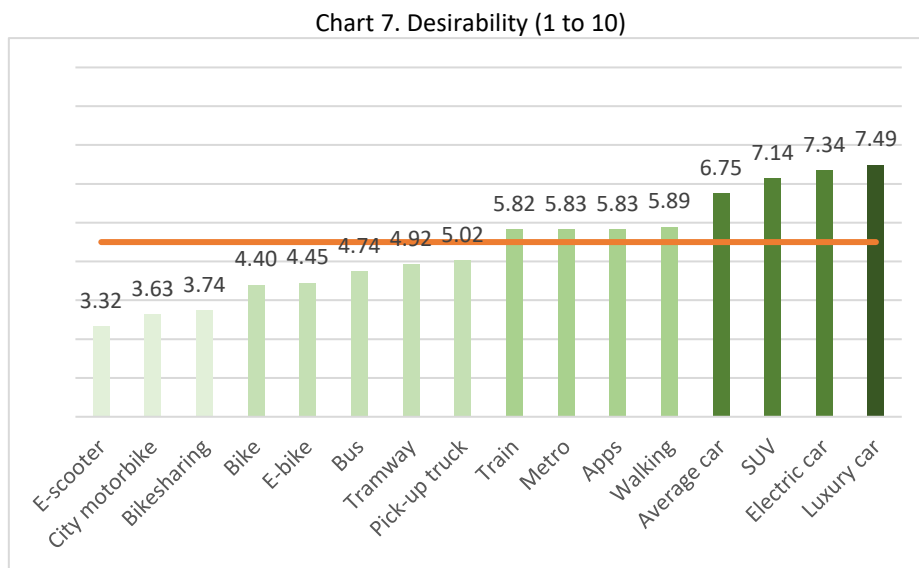
The majority of the students had a driving license (69 students) but did not own cars (68). Most of the students reported commuting to university using public transport. Driving was their second choice, and going to campus on foot was a common habit as well. Carpooling, ride-hailing/sharing and cycling were much less frequent. This refers to both campuses (see chart 6). There were clear differences between the two groups as, for example, driving alone was much more frequent among the suburban-campus participant students (nearly half of them drove alone to university).



Source: Own elaboration (absolute numbers; answers containing more than a mode counted separately)

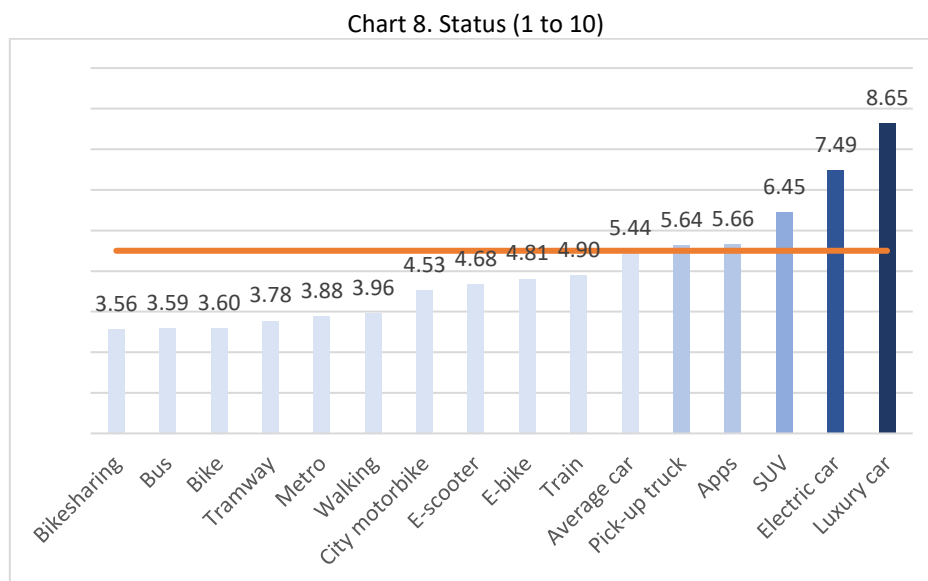
In contrast with the students from Helsinki, these Torontonians generally ranked the images linked to active modes and sustainable options as not very desirable. The scores attributed to them were notably lower than those attributed to car-related options, such as luxury cars, electric cars, SUVs or average cars. This trend makes sense, as Toronto is a much more car-oriented city. Cycling was not usually ranked as a desirable option (see chart 7).

Average cars obtained an average of 7.3 in the suburban campus and an average of 5.9 in the downtown campus. Walking obtained an average of 5.4 in the suburban campus and an average of 6.7 in the downtown campus (see the methodological annex). Thus, we can see that the context seemed to influence these students' perceptions on mobility.



Source: Own elaboration (averages)

In Toronto (in contrast with Helsinki), those mobility options that were seen as the most desirable ones were associated with a high status (luxury cars, electric cars and SUVs). The participant students did not consider them to be accessible for anyone (see chart 8).



Source: Own elaboration (averages; answer "any status" excluded)

Overall, we can see that the results show a close relationship with the students' context. In this North American case study, car-related mobility options were (in general) ranked as the most desirable ones. The nuances between downtown and suburban campus students seem to be logical, as they reflected a car-centred mindset in the case of suburban students, leading to the conclusion that their context may have a strong influence on their values.

7.4.2-Online survey

University of Toronto students were asked to fill in an online questionnaire on mobility issues. Around 70% of the participant students reported having a license, but only 14% were car owners. Another 42% had access to other household members' (such as their parents) cars. Both the percentages of car owners and of those having access to household cars were higher in the case of the suburban-campus students.

As Canada has a very extreme climate, weather conditions were a factor. Public transport was the most frequent option for commuting during the whole year. The second and third options varied, as walking was the second most common option in summer but dropped to the third position in wintertime (driving a car becoming the second option). Driving alone to the university campus was more frequent among the suburban-campus students, whereas walking was more common among the downtown-campus students.

Only a few students (10) said that they had used the city bikesharing system. Many more students (56) had used Uber-like ride-hailing/sharing services, but not many (17) claimed to be frequent users. Both public transport and cycling in the GTHA were ranked as "average". In both campuses, this was the most repeated answer. This makes sense, as Toronto is not a high-performing environment but it has a high-performing core. When it came to choosing mobility options, price, time and convenience were seen as the most decisive factors.

The majority of the students said that they had the intention to buy a car in the future. Not surprisingly, this percentage (74%) was higher among suburban-campus students (47% for downtown-campus students). In fact, cars were much more aspirational for those based in the suburban campus (if offered convenient alternatives, 71% of the downtown-campus students would not own cars, while 56% of the suburban-campus students would own cars). This was consistent with their opinion that living without cars was only viable in downtown (46 respondents) or in downtown and the rest of the inner city (47). Showing a certain status while moving around was not seen as an important factor. Health-related issues were valued by most students as slightly or considerably important.

Improvements in public transport were the main demand. Building more walkable urban settings was the second priority (this being mentioned by downtown-campus students more often). Overall, the results led to logical conclusions. Downtown-campus students had more sustainable mobility habits and valued sustainable mobility more highly. Buying a car in the future was less important for them (less than half of these students had the intention to buy a car at some point in the future).

7.4.3-Testing Bike Share Toronto and Uber Express Pool

As another part of the additional fieldwork, two mobility services were tested in Toronto. On the one hand, with Bike Share Toronto I could commute and move around using shared bikes. On the other hand, with Uber's express pool service (which offers cheaper fares and optimised shared routes in exchange for walking to a pick-up point) I could experience one of the latest trends in ridesharing.

I subscribed to Toronto Bike Share so that I had access to the bike stations. Their network is relatively big in downtown Toronto, while other parts of the city have a worse coverage. My conclusions on this service in particular, and on shared bikes as an alternative for daily mobility, could be summarised as follows:

- Bikesharing services can help to reduce car use by offering a mobility alternative that can be complemented with public transport when covering long distances.
- Whether a dockless or station-based system is chosen must be assessed.
- If only used in downtown Toronto, I could find plenty of stations and bikes. Outside of downtown, the service was quite limited.
- Even though the thirty-minute period of time offered before starting to be charged extra for the service was enough for covering most bike-friendly distances, in some cases you would find empty stations where you could not take a bike or fully-packed stations where you could not return the bike.
- Bike Share Toronto has bicycles that have additional elements that are helpful, such as safety night lights and front baskets.

I also tried Uber's new express pool service. The idea behind it is that, by asking a user to walk to a nearby pick-up destination, a shared route can be optimised. This could potentially contribute to make people walk more and share more rides, as it is cheaper than rest of the options offered by Uber. I came to some conclusions, which could be summarised as follows:

- If they do not replace active modes or public transport, these services could help to push the transition towards sustainable mobility further.
- Apart from being very dependent on mobile phones (Internet and battery needed), this type of service might lead to a stressful experience if the directions to the pick-up point are not clear enough.
- For many, sharing rides is an opportunity for starting conversations with strangers. However, other people may find the interaction with strangers an annoyance.

7.5-CONCLUSIONS: THE "TWO TORONTOS"

Even though it is claimed to be doing better than average North American cities, Toronto can be taken as a sample of a prototypical North American urban environment where many areas have been designed for the private car. This logic mainly applies to its suburban areas and certain inner-city areas, as the city core is an exception in which the modal split is much more balanced, sustainable and active modes are important and cars are not the hegemonic

mode. Despite having a high-performing city core, approximately 70% of the journeys in the metropolitan area are estimated to be made by car. This is probably the result of a tradition of building car-oriented residential areas, as well as a consequence of the dominant role of car-centred suburban lifestyles and mindsets.

With the exception of downtown Toronto, the alternatives to the hegemonic role of the private car are not sufficiently reliable and convenient and do not have extensive networks. Apart from making investments in its public transport network, Toronto promotes mobility services, such as bikesharing and ride-hailing/sharing. While the benefits of shared bicycles appear to be uncontested, there is debate on whether ride-hailing/sharing services such as Uber are beneficial for the local society in terms of their impact on the economy and on the use of public transport (see Brail, 2018).

In parallel, a process of gentrification seems to be taking place. Apparently, the poor are being expelled to areas that lie outside of downtown in which public transport services and other alternatives to the private car are scarce. This phenomenon represents a challenge, as the periphery is a predominantly car-oriented region and the poor may struggle to afford cars. Indeed, Walks (2018) suggests that certain poor people are being driven into debt, due to their need for automobile loans, and he concludes that there appears to be a relationship between auto dependency and debt burdens.

According to the experts and stakeholders interviewed, significant efforts have been made in order to evolve towards a more balanced mobility portfolio, but several challenges must be faced. In close relationship with the on-going process of gentrification, housing was seen as an important matter. Other important aspects concerning mobility in Toronto arose, such as the weight of the local politics, their car-oriented North American culture, the impact of mobility on health and the environment and the crucial role of pilot tests. Having the right policies on urban mobility was considered a key element of the transition towards a more sustainable mobility paradigm.

The in-depth interviews with Spanish citizens living there reflected the divide between the downtown and the rest of Toronto. The participants usually had less car-based mobility habits than average Torontonians have, as their priority generally was to live in the city core and avoid owning and driving cars in a foreign country. However, the few participants living outside of downtown were more car-dependent. All the participants agreed that Toronto is a poorly-performing urban environment in comparison with standard European cities.

The answers of the students from a downtown and a suburban campus of the University of Toronto who participated in the “image-based rating exercise” were analysed. In general, these Torontonian students had a car-oriented mindset and, although they valued walking and public transport, they did not find cycling attractive. Luxury cars, electric cars, SUVs and average cars were attributed the highest scores in terms of desirability and in terms of social status (except for average cars), meaning that mobility was perceived as connected with a person’s background.

Moreover, the online-survey results led to logical results. The participant students from the downtown campus had more sustainable mobility habits. Buying a car in the future was less relevant to them (less than half had the intention to buy a car at some point), while the participant students from the suburban campus had more car-oriented mindsets.

According to a project led by my codirector in Toronto and a fellow researcher (referring to Moniruzzaman and Farber, 2018) where a database corresponding to seven Torontonians university campuses was analysed, there are many factors that can influence the students' sustainable choices. These factors could be summarised as follows:

For instance, the number of young children at home increases the likelihood of active modes in case the student is in favor of sustainable modes whereas the effect is reversed for students in favor of telecommuting. Furthermore, living in a university residence makes students more likely to be an active commuter, albeit he/she is in favor of driving. Finally, as shown in this study, the findings pertaining to transit pass and bike ownership have important policy implications in providing sustainable transportation choices among university students in the region.

(Moniruzzaman & Farber, 2018: 377)

Achieving change outside of downtown Toronto will most likely be a hard task. However, significant efforts are already been made in this direction, even though some consider that too many efforts are being put into improving mobility in high-performing downtown areas instead of in other parts of the metropolitan area. In any case, Toronto can clearly be divided into two territories (the city core and the rest of Toronto) that imply two opposing lifestyles and approaches to mobility.

PART III

PRELIMINARY CONTEXTUALISATION OF PART III

The international cases studied so far made it possible to develop a comparative analysis and assess the different stages of the mobility transition. As explained in chapter 3 on the methodology, several Spanish citizens who were interviewed in the four international case studies had lived in the Pamplona Metropolitan Area (a total of seven interviewees: two in each of the first three cases and one interviewee in the case of Toronto). They were asked to establish a comparison between their foreign home cities and the city of Pamplona-Iruña in order to better understand the differences. This information provides with the possibility to give shape to a short preliminary contextualisation of the last case studies.

Pau, the dispersed and poorly-performing French city analysed in chapter 4, was claimed to be more car-oriented than Pamplona-Iruña. Pau was blamed for having less convenient alternatives to the private car. According to one of the interviewees, *“driving everywhere is more frequent in Pau. Nearly no one takes into consideration any other option. In Pamplona, people consider other options and then make their decision”* [Man, 38, mechanic, single with two children and a car]. Furthermore, those who had lived in the Pamplona MA found that it is not a poorly-performing territory.

Nevertheless, the case of Munich (a compact and high-performing city) evidenced that Pamplona-Iruña was not perceived as a high-performing city either. This German city was said to perform significantly better: *“Munich is clearly ahead of Pamplona. Proportionally, many more people have car-based habits in Pamplona, and the infrastructure promotes this, as it mainly consists of car lanes. Here, they have more types of public transport modes, and the most prioritised mode is the bike”* [Man, 25, PhD researcher, shared flat].

In a similar vein, the two participants from Helsinki (the dispersed but high-performing capital city of Finland) who had lived in the Pamplona MA argued that this Scandinavian city performs considerably better. A brief comparison was offered: *“In Pamplona, you only have the bus as an alternative to the car. In Helsinki, people are offered many more services, and they are provided with much more real-time information about these services”* [Woman, 24, PhD researcher, living alone]. The other participant shared these views: *“In Helsinki, public transport offers more modes and is more reliable. Besides, cycling lanes have been designed in a better way than in Pamplona, where there is no well-connected network”* [Woman, 34, cook, living alone].

Finally, a brief comparison between Toronto and Pamplona-Iruña was offered by another interviewee. In this specific case, we must take into account that, even though Toronto is a compact but poorly-performing North American city, downtown Toronto can be considered to be a high-performing area:

“Toronto is much bigger, so this probably explains why it has many more alternatives, like for example the subway. Pamplona’s transit only offers buses. Downtown Toronto is better fitted than Pamplona. It has more cycling lanes, transit options, etc. However, the suburbs of Toronto are isolated. Although its public transit network is not ideal and the links among its peripheral areas are scarce, Pamplona performs better than the rest of Toronto, and it has a great advantage: There are many walking-friendly distances.”

[Woman, 26, waitress, shared flat]

On the whole, considering the comparative contributions of these interviewees, we could conclude that Pamplona-Iruña and its surroundings were perceived to be neither poorly nor high-performing. On the one hand, they were said to perform reasonably well in comparison with poorly-performing settings such as Pau or Toronto (except for downtown Toronto). On the other hand, they were considered to perform worse than high-performing settings such as Munich or Helsinki. We will see throughout the next chapters that these perceptions were corroborated by the statistical data and the rest of the information gathered about the cases of the city of Pamplona-Iruña and its suburban areas. Pamplona-Iruña is more compact than any of the other four cities and, as explained in the following chapter, it may be in a turning point concerning the appropriation of a sustainable mobility model.

8 - A TURNING POINT FOR THE CITY OF PAMPLONA-IRUÑA? POLITICAL AND SOCIAL TENSIONS LINKED TO THE MOBILITY TRANSITION

8.1-CONTEXTUALISATION OF THE CASE STUDY

Pamplona-Iruña is a mid-sized city that has a population of around 200,000 inhabitants (its population was 199,066 in 2018, according to the National Statistics Institute: the INE). This city is considerably compact (its population density nearly reaches 8,000 residents per square kilometre)¹³⁶. It is surrounded by an important number of towns and villages and, if taken as a metropolitan area, the total population rises to approximately 350,000 (find more details in the next chapter).

This chapter analyses how the mobility transition is having an impact on the lives of the citizens of Pamplona-Iruña, as well as the social and political tensions linked to the attempts of implementing change. During the 2015-2019 political term, the city (mainly its core) has been partially redesigned with the intention of achieving a more sustainable mobility model. However, these transformations have not been welcome by everyone.

More than half of the total population of the Spanish region of Navarra concentrates in the Pamplona Metropolitan Area (MA). It is estimated that most European cities have similar characteristics to Pamplona-Iruña. According to the OECD (2018), around half (48%) of the population of these countries lived in predominantly urban territories in 2017. Furthermore, Eurostat (2019) underlines that the majority of urban areas continue to report population growth, whereas many rural areas are declining.

In addition to this, it must be taken into account that the automotive sector is important for the city and the region of Navarra, as the city hosts a Volkswagen Group car factory that employs thousands of people. Even though Volkswagen exports most of the production, they might not be happy with the image of private cars being damaged (as explained by an expert stakeholder in the next chapter). Moreover, Spain ranks as the second largest car producer in the European Union, only outranked by Germany (ACEA, 2018).

Figure 47. Thousands of jobs are dependent on the local automotive sector



Source: *naiz.eus* (Iñigo Úriz/foku.eus)

¹³⁶ According to (na)stat (2015), the surface of the city is 25.1 km². The resulting population density would be 7,931 inhabitants/km².

Map 9. Volkswagen Navarra is one of the main Spanish car factories



Source: ANFAC annual report 2013

A combination of qualitative and quantitative research works has been carried out for examining mobility in the city. A relevant sample of key local stakeholders (through in-depth interviews) has contributed to the debate on whether the management of mobility issues in Pamplona-Iruña is being successful and why political and social tensions have arisen. A discussion group with inner-city dwellers was organised in order to compare their views with suburban and rural residents. Other pieces of work, such as an analysis of statistical data and the image-based exercise, have also been included. By using a mixed methodology, I try to offer a holistic picture of the situation of this phenomenon in the city, a place where the implementation of change is being controversial and is causing social unrest as well as acute political tensions.

In order to develop the analysis, the city of Pamplona-Iruña has been divided into three “sub-cities” in accordance with their distance to the city core. As the statistical data shows, Pamplona-Iruña is a compact city where walking is the first choice for moving around, mainly in the city core. The more we move away from this core, the more the private car generally emerges as a substitute for walking.

With the intention of achieving a more balanced modal split, many Spanish cities have given shape to urban mobility plans. This is also the case of Pamplona-Iruña, even though it must be taken into account that its Sustainable Urban Mobility Plan (SUMP) goes beyond its competences and has been elaborated for the whole metropolitan area (the plan and its goals have been designed by the metropolitan transport agency). In their introduction to a comparative analysis of 38 Spanish city mobility plans, Mozos-Blanco et al. explain that there is uncertainty regarding the future outcomes of the adoption of SUMPs:

In 2011, the Spanish Law for a Sustainable Economy (Law 2/2011) was approved, which encouraged local administrations to create a SUMP. The approval of a SUMP was compulsory to local authorities to get any public funding for public transport projects. The main objectives of these plans were not only the reduction of the urban congestion and pollution, but also to encourage the citizens to change their habits so they are less car-dependent and more active in their daily trips. However, it is still necessary an evaluation to confirm that these SUMP have represented a substantial change in terms of logistics and management of the transports and vehicles, both private and public, as well as of behaviour and habits of the citizens. (Mozos-Blanco et al., 2018: 45)

Like other cities, Pamplona-Iruña is shifting towards a different model, but this paradigm shift is not expected to take place fast and smoothly. During the 2015-2019 political term, several initiatives were implemented. Certain measures aim to reduce pollution and boost fuel efficiency by replacing old combustion-engine vehicles. This type of measures generally is less controversial, even though there might be some criticism (for example, as already seen before, many experts believe that opting for a model based on private electric cars is not the ideal solution). In the city, a few EV charging points have been installed. The EU's Stardust Project aims to provide the city of Pamplona-Iruña with e-buses, e-taxis, e-bikes and a network of charging points. However, for the moment, some of these objectives have not been met (for example, the creation of an e-bike sharing system with 100 electric bikes has been postponed). Pamplona-Iruña is a quite hilly urban setting where a variety of social groups can benefit from the advantages of electric bicycles. Elderly people could potentially be the ones who would benefit the most, as the experiences in other countries have shown (see, e. g., Wolf and Seebauer, 2014).

Figure 48. The public bus fleet is starting to be electrified within the framework of an EU project



Source: Diario de Noticias (noticiasdenavarra.com; MCP)

The electrification of a whole bus line is probably the most visible change in this sphere. Navarra and Pamplona-Iruña could be an optimal place for the electrification of the public transport network, as 80% of the electricity supply is estimated to come from renewable energy sources¹³⁷.

How these initiatives will evolve in the future is not clear yet, and all *“these aspects will be conditioned to a large extent by regional economic characteristics, and can significantly differ worldwide”* (Zawieska & Pieriegud, 2018: 46). Furthermore, the mobility transition in urban areas cannot only rely on technological progress, as Banister underlines:

¹³⁷ Data from Stardust Pamplona: stardustproject.eu/cities/pamplona (Last retrieved: 31/1/2020).

The belief that high mobility and technology provides the solution is misplaced, as technological innovation can only get us part of the way to sustainable transport, and this may facilitate more travel (...) Potentially, the future is bright for low carbon transport in cities, but the real question is whether there is the commitment and leadership to follow such a path. (Banister, 2011: 1538)

Those changes that are not linked to new technologies and have an impact on people's habits tend to be more controversial. Probably the most important one of the changes made in the city has been the implementation of the so-called "Amabilización" Plan. "Amabilizar" could be translated as making a place gentler. For many local citizens and politicians, it has meant a "war on the car" and a "bunkerisation" of the old town (see chapter 2, section 2.2). Driving a car is the second choice at the metropolitan scale, and the first choice in several areas that are not part of the city core. The attempts to restrict car use have led to important social and political tensions. This type of controversy is a common phenomenon that is also present in other cities (as seen in chapter 2, section 2.2, on the case of Madrid) and in other contexts (see, e. g., Melia and Shergold, 2017, who analyse the case of Brighton, U. K., where the proposals to pedestrianise or close roads to traffic were controversial and contested).

The "Amabilización" was started in 2017 and consisted of a redesign of the city core/old town in such a way that the car was no longer prioritised over other modes. In fact, traffic flows in several parts of the city centre have been restricted and only its residents can drive on these roads. Moreover, some streets have been pedestrianised, and some parking spaces have been transformed into bike lanes and wider pavements. Even though underground parking spaces can still be found right in the centre and are accessible for anyone willing and able to pay for parking there, traffic flows have significantly been reduced¹³⁸. The redesign of the city core has been controversial, to such extent that, in an interview for a regional newspaper, the former mayor mentioned the "Amabilización" Plan and the reconversion of the Pío XII Avenue as two of the main "political battles" that he had faced¹³⁹.

Citizens, local traders and politicians were affected by the changes. The old town traders' association blamed these changes for a sharp drop in their sales figures, even though there was no consensus among all traders, and not all of them were against the reconversion. The local politicians were strongly divided (a division that the regional media reflected), whereas the population's perception seemed to depend on whether people felt benefitted or not¹⁴⁰.

¹³⁸ According to the city council, traffic flows in the old town had been cut by half a year after the start of the implementation of the "Amabilización" Plan. Based on: "The Amabilización works: traffic in the old town is reduced and the use of public transport increases" (Diario de Noticias, 5/9/2018).

¹³⁹ The full interview with the former mayor can be found here: "Iruña will be greener and more sustainable and egalitarian, we don't want change to be anecdotal, we came to stay" (Diario de Noticias, 21/1/2018).

¹⁴⁰ A survey carried out by the city council found that the "Amabilización" Plan was backed by a majority of the citizens (52%), but it was rejected by many others (35%). Specific social groups had opposing perspectives. For example, most city core residents (81%) backed the Plan, but only 40% of the residents backed it in the neighbouring area of Ensanche. Drivers tended to oppose the measures. These differing perceptions might have had an influence on the local elections.

The conclusions of this survey were published in the regional and the national media. For example, see: "52% of the citizens back the Amabilización, whereas 35% criticise it" (Diario de Noticias, 2/3/2018).

Map 10. Pedestrians, cyclists and public transport have been prioritised in the city core



Source: City Council (movilidadpamplona.es)

Another paradigmatic example of political tensions during the 2015-2019 term derived from the city council's decision of converting one of the city's main axes, the Pío XII Avenue, into what they called a "sustainable corridor". Several lanes were taken from the private car (eliminating both parking spaces and car lanes) for building bus-priority lanes and bike lanes. An important number of local traders and a protest platform opposed the measures. Similar to those traders who were against the "Amabilización", these traders feared a drop in their sales figures.

Figure 49. A protest platform was created as a reaction against the so-called "sustainable corridor"



Source: pamplonaactual.com

More measures have been taken in Pamplona-Iruña in recent times (for example, the city has officially become a "30 city": the speed on most roads has been limited to 30 km/h with the intention of benefiting pedestrians and cyclists) but the way in which urban mobility will be managed in the near future is still unclear. In fact, the former mayor lost the municipal elections in 2019 to a new mayor who claimed that he would not undo everything but would modify certain aspects. He may manage mobility in a different way: he has already reopened a few roads of the city core for cars and has announced transformations for regaining some

spaces for cars in the polemical Pío XII Avenue. He was reported to have said that economic activity and not only sustainable mobility must be enhanced¹⁴¹.

Figure 50. Car traffic has been slowed down to 30 kms/h on most of the roads



Source: City Concil (pamplona.es)

Like in other cities, budget constraints are another factor that is important. There have been proposals for building a very basic underground network linking the neighbourhoods, but this has never been seen as a viable option for a city that is not big in terms of size and would need to make large investments. A more down-to-earth project that was assessed in the past is the implementation of tramway lines. However, it was finally rejected due to its costs. A BRT (Bus Rapid Transit) system is being assessed for its future implementation, but it is still unclear whether it will be actually implemented¹⁴².

Whether these issues are influenced not only by local political battles but also by ideology has been discussed before. It must be taken into account that the political scenarios change and can have an influence on how mobility is managed (as explained in the contextualisation of the case of Toronto). At the municipal level, the newly-elected mayor is considered to be a more right-wing leaning politician than his predecessor. However, in contrast, the regional government is led by a rather left-leaning politician. It is not clear how these changes in the political arena will shape the way in which urban mobility is managed.

In any case, we have seen that managing urban mobility is a controversial matter that needs to be addressed with care. Political consensus is a key factor for success, but it does not seem easy to be reached. Political interests and differing perspectives on how mobility issues should be managed might collide, as well as some subgroups of the population who might feel either benefitted or harmed by the measures taken.

Political consensus and public acceptability can be critically important. Furthermore, the social perception of change and its consequences is key to managing mobility issues. In fact, according to Banister,

the process needs to build up trust and respect between the different actors over time, so communication and active involvement are essential. It also seems that legitimacy

¹⁴¹ See, for example, this piece of news on the newly-elected mayor's views:

"Maya applauds reopening Padre Moret street to car traffic" (Diario de Navarra, 19/9/2019).

¹⁴² Based on: "Three metro lines are demanded for Pamplona and its periphery through change.org" (Diario de Noticias, 30/1/2019); "Pamplona discards the tramway as an option" (Diario de Navarra, 4/3/2018); "The MCP relaunches the BRT project" (Diario de Noticias, 9/10/2017).

must be based on a participatory and inclusive approach that involves “selling” the message of sustainable mobility to individuals, groups and localities through explaining the need for changes in behaviour and convincing them of the importance of their contribution. (Banister, 2008: 78)

In this sense, the city is starting to “sell” the message, but they must face many challenges to convince a large majority of its residents and the local politicians on the need for a major transition towards a sustainable mobility paradigm. Pamplona-Iruña is estimated to be one of the Spanish cities with the highest living standards¹⁴³. However, its urban mobility does not seem to perform so well. We will see how mobility in Pamplona-Iruña is characterised by a duality that has been described by Greenpeace as a worrying increase in car use to the detriment of sustainable alternatives, even though pedestrians still dominate its mobility¹⁴⁴.

8.2-STATISTICAL CHARACTERISATION OF THE “THREE CITIES”

If we consider the different parts defined for analysing the Pamplona Metropolitan Area, the inner city has a lower motorisation index than the “inner suburban ring” and the “outer suburban ring”, but its proportion of passenger cars (out of the total number of vehicles) is higher (more details in the next chapter). On average, those citizens who live in the city have intermediate income levels if compared with the poorer (on average) “inner-suburban-ring” dwellers and the richer (on average as well) “outer-suburban-ring” residents (more details in the next chapter). In this context, car use progressively increases, as shown in table 14.

Table 14. The Pamplona Metropolitan Area (populations and modal share averages)

	Population	On foot	Public bus	Private car	Bike and others	Ratio (car/100 rest)
CITY PROPER	209,207	47%	13.3%	36.1%	3.7%	56.4
Inner suburban ring	87,713	36.5%	12.8%	46.9%	3.8%	88.3
Outer suburban ring	39,525	27.2%	13.7%	55.1%	3.9%	123
METROPOLITAN AREA	336,445	41.9%	13.2%	41.1%	3.7%	69.9

Source: Mancomunidad de la Comarca de Pamplona (2013, generated journeys). Own elaboration

Throughout this chapter, I will focus on the differences within the city. The metropolitan transport agency (the “Mancomunidad de la Comarca de Pamplona” or “MCP”) offers modal share data for what they have defined as the main metropolitan macro-areas. Those macro-areas that pertain to Pamplona-Iruña have been analysed with a comparative intention. The “city proper” has been divided into three sub-parts (see map 11) that have been labelled as “city centre” or city core, “midtown” (closer to the city core) and “uptown” (further away). The “city centre” has been designated as a macro-area by the MCP, whereas the other two categories have been added by me through gathering the data available for the macro-areas that are located inside the city limits but outside of the “city centre”.

¹⁴³ According to a comparative research study carried out by the University of Oviedo cited in Diario de Navarra, Pamplona-Iruña was the best Spanish city to live in in the year 2012. Based on: “Pamplona, the best city in Spain to live in” (Diario de Navarra, 14/1/2012).

¹⁴⁴ Based on: “Reopening Padre Moret is against heading towards sustainability, Greenpeace says” (Diario de Noticias, 6/11/2019).

Map 11. The “city proper” could be divided into three parts: city core, “midtown” and “uptown”



Source: Google Maps. Own elaboration

By using these three categories we can observe that those areas that lie closer to the city core tend to have a more balanced modal split (see table 15). We see a progressive increase in car-based mobility when we move away from the city core, at the same time that walking tends to decrease. The results are consistent with the trends found at the metropolitan scale (as explained in more detail in the next chapter). Reaching the goals set by the metropolitan mobility plan will usually be easier in “midtown” areas than in “uptown” areas (more details on the Sustainable Urban Mobility Plan in the next chapter), as all those areas that lie further away will generally face more difficulties.

Table 15. The city of Pamplona-Iruña (populations and modal share averages)

	Population	On foot	Public bus	Private car	Bike and others	Ratio (car/100 rest)
CITY CORE	31,798	55.7%	14.9%	24.7%	4.8%	32.8
MIDTOWN AREAS						
Ermitagaña-Mendebaldea	16,635	50.6%	11.2%	34.1%	4.2%	51.7
Iturrama	31,091	51.3%	14.6%	31.1%	3%	45.1
Milagrosa-Lezkairu	14,167	50.2%	11.3%	33.7%	4.8%	50.8
San Juan	19,955	57%	9.7%	29.5%	3.8%	41.8
MIDTOWN (total/averages)	81,848	52.4%	12.1%	31.8%	3.7%	46.6
UPTOWN AREAS						
Buztintxuri	10,766	24.6%	13%	57.3%	5.1%	134.2
Etxabakoitz	3,006	43.1%	23.1%	33.7%	0.1%	50.8
Mendillorri-Ripagaina*	12,951	27.9%	15.4%	51.6%	5.2%	106.4
San Jorge	11,969	41.1%	19.4%	36.4%	3.1%	57.2
Rochapea	26,407	43.8%	11.5%	41.8%	2.9%	71.8
Txantrea-Ansoáin*	30,462	44.6%	12.2%	40.4%	2.9%	67.7
UPTOWN (total/averages)	95,561	39.4%	13.8%	43.5%	3.4%	76.9

Source: Mancomunidad de la Comarca de Pamplona (2013, generated journeys). Own elaboration

* Ansoáin is an adjacent town. Certain parts of Ripagaina lie outside of the city.

The differences are more obvious among the “uptown” areas, as some of them perform significantly better than their average, whereas the “midtown” areas have relatively similar

modal splits. The two “uptown” areas that perform the worst (Buztintxuri and Mendillorri-Ripagaina) lie next to peripheral towns.

According to the Sustainable Urban Mobility Plan objectives, the macro-area of the city core could be considered to be high-performing. Even though the use of public transport is well below 20%, car use is below 30%. Walking is by far the most popular choice for moving around (it exceeds the 50% objective for active modes). The “midtown” would be very close to reaching the SUMP goals for limiting car use. In fact, a specific “midtown” area (San Juan) would already perform well enough in this sense. It is in several “uptown” areas where more efforts would need to be made in order to match the SUMP objectives. Their average use of cars (43.5%) is well above the objective (30%). This fact might put into question the strategy of making the heaviest investments in the city core (for example, the “Amabilización” was meant to bring change to this macro-area, although it is true that these changes were meant to have an impact on the other two territories). While the rest of Pamplona-Iruña performs reasonably well, most of the “uptown” areas are far from reaching the objectives set by the metropolitan mobility plan. Furthermore, except for the area of San Jorge, the use of public transport remains far from reaching a 20% share. Cycling is not a common choice in any part of the city (if compared to other cases such as Munich or Helsinki).

Table 16. The city of Pamplona-Iruña (modal share averages and income)

	On foot	Private car	Average income (p. p.)
CITY CORE AREAS			
Old town	-	-	15,700
Ensanche	-	-	19,111
CITY CORE (total/averages)	55.7%	24.7%	17,700
MIDTOWN AREAS			
Iturrama-Azpilagaña	51.3%	31.1%	17,410
San Juan	57%	29.5%	15,979
Ermitagaña-Mendebaldea	50.6%	34.1%	15,981
Milagrosa-Lezkairu	50.2%	33.7%	12,186
MIDTOWN (total/averages)	52.4%	31.8%	15,749
UPTOWN AREAS			
Txantrea-Orvina-Ansoáin*	44.6%	40.4%	11,613
Rochapea	43.8%	41.8%	10,937
Mendillorri-Ripagaina*	27.9%	51.6%	12,536
San Jorge	41.1%	36.4%	10,922
Buztintxuri	24.6%	57.3%	10,405
Etxabakoitz	43.1%	33.7%	10,556
UPTOWN (total/averages)	39.4%	43.5%	11,281
CITY PROPER			
CITY CORE	55.7%	24.7%	17,700
MIDTOWN	52.4%	31.8%	15,749
UPTOWN	39.4%	43.5%	11,281
CITY PROPER (total/averages)	47%	36.1%	14,654

Source: MCP (2013, generated journeys) and INE (2016, income per person). Own elaboration

* Ansoáin and Ripagaina not included in calculations on average income

We can see in table 16 that there seems to be a correlation between the citizens' income levels and the way in which they tend to move around, as income appears to be connected to the area of residence. Even though the categories set by the entities that provide the data are not always the same (as explained in chapter 3 on the methodology), they can be used to explore general trends and conclude that income levels seem to influence the residents' mobility. The richest locals tend to concentrate in the city core (in the Ensanche area, to be more precise). They probably seek to live in the least car-dependent part of the city, where many services can be accessed at a walking distance. Those with higher salaries than the average generally live in the city core and in neighbouring "midtown" areas. This means that most of them are less car-dependent than most of those who earn below the local average. The poorest local residents generally live in the "uptown", meaning that they live in the most car-centred parts of the city and need to cope with less walking-friendly distances.

There are a few exceptions to these overall trends. For example, the "midtown" area of Milagrosa-Lezkairu is estimated to be poorer than the overall average. Another exception is the fact that car use is estimated to be relatively similar in the "uptown" area of Etxabakoitz to car use in certain "midtown" areas.

If we put these estimations together with those obtained for the Pamplona Metropolitan Area (see next chapter), we could conclude that those residents who earn above the average usually opt for one of these two opposing lifestyles: Either living in the high-performing core of the city (or in an "uptown" area that performs reasonably well) or in a car-centred "outer-suburban-ring" town. On the other end of the spectrum, the poorest metropolitan residents usually live in "uptown" areas of the city (or in "inner-suburban-ring" towns), meaning that these people live in (and are in many cases expelled to) territories that are generally more car-dependent than the average.

8.3-IN-DEPTH INTERVIEWS WITH KEY STAKEHOLDERS

A wide variety of experts and politicians from different backgrounds (from both the local government and the opposition) participated in the in-depth semi-structured interviews and made it possible to further understand how the mobility transition is being managed in the city (find their profile summary in chapter 3). The narratives and discourses of some of the most relevant local stakeholders showed how acute social and mainly political tensions have arisen in recent times. The expert participants talked on their interpretations about why this happens and how it should be managed. The political positions mentioned here correspond to the 2015-2019 term (new elections were held in 2019).

This set of in-depth interviews illustrates the remarkable difficulty of trying to implement change in a city that relies too much on private cars as the hegemonic alternative to walking. Boosting other mobility options seems to be extremely challenging, as certain social groups such as car drivers may oppose any measure that means making concessions, whereas those who can take decisions do not count on a strong political consensus at the municipal level.

8.4.1-Walking and driving as the hegemonic options

The interviewees agreed that the city presents a duality: Pamplona-Iruña is a city in which walking is very popular, but, at the same time, driving cars is considerably popular too. This second fact worries the local authorities and those concerned with mobility issues, as people do not rely much on public transport, and other alternatives such as bikes are barely chosen as a daily mobility option. As we will see, everyone is for achieving a more balanced mobility portfolio, but there is no consensus on how exactly this should be accomplished.

The local politicians argued that the city has a long tradition of urban planning that has been managed in the wrong direction. It has taken the public authorities too much time to gain awareness of the key importance of having a city where more sustainable alternatives are prioritised over the car. The mayor blamed the previous governments for their mistakes: *“What we have inherited from the previous governments is a city (mainly a city core) that is too car-oriented”* [Mayor]. Nevertheless, the previous and newly-elected mayor of the city (a leader of the opposition at that time) considered that not only them but also the rest of the local politicians were responsible for the situation, as none of them had anticipated the need for shaping the city differently:

“During the last twenty years, we did not care much about matters such as walkability and priority for buses and bikes when designing new areas. Other parties used to back our initiatives, so they cannot say that it was only us who promoted this wrong model. Our technicians and politicians, including myself, did not anticipate the importance of sustainable mobility before this new wave arrived.”

[Councillor/opposition; previous and newly-elected mayor]

According to the urban planning councillor, the only advantage was that Pamplona-Iruña could learn from the experiences of those cities that had started earlier:

“Our city is far from being adapted to a sustainable mobility paradigm. This is because change towards a sustainable mobility was started late, as transformations such as the pedestrianisation of Carlos III were isolated projects that were not part of a global plan of modernisation. Nevertheless, this gives us a small advantage: We can learn from the experiences of those cities that started earlier.” [Urban planning councillor]

In this sense, a city of a similar size, Vitoria-Gasteiz, was frequently cited as a successful example that had counted on a strong political consensus and had achieved a more balanced modal split. One of the negative sides of having so many cars on the roads is that it can lead to high figures of accidents in which pedestrians are run over. Indeed, this has been a central topic in the regional media when the frequency of car accidents has been alarmingly high¹⁴⁵. Between 2008 and 2017, 31 people died in Pamplona-Iruña in traffic collisions, 25 of them being pedestrians¹⁴⁶. This is not something new in the city, as there have been other periods in which there has also been alarm. Back in 2001, 12 people lost their lives as a consequence

¹⁴⁵ By the end of 2018, Diario de Navarra organised a forum on how the number of accidents involving pedestrians could be tackled. Based on: “Diario de Navarra opens the debate: How to solve accidents in which pedestrians are run over in Pamplona?” (Diario de Navarra, 14/11/2018).

¹⁴⁶ Data released by the local police (Policía Municipal de Pamplona, 2018).

of traffic in the city¹⁴⁷. As mentioned in the contextualisation, the city has limited the speed on most of its roads to 30 km/h. Both experts and politicians made emphasis on the crucial importance of reducing car use for the benefit of pedestrians and alternative modes:

“We are far from achieving what we call the zero vision (zero deaths per year). We have worked on road safety before, but sustainable mobility is a new for us. We achieved a reduction in the number of deaths through road safety measures, but we are stagnated now. Our technicians say that casualties are inevitable unless we reduce the excessive use of cars.” [Citizen safety councillor (and San Jorge area councillor)]

“Limiting speeds to 30 km/h will not mean that no pedestrians are run over as, in many cases, speeding is not the main cause of accidents. But with lower speeds we can expect less severe injuries and a better cohabitation between cars and alternative modes such as the bike, as traffic flows will be slowed down.” [Citizen safety area director]

“Our intention is to slow down the traffic and convert all our one-lane roads into ‘ciclo-calles’ where cyclists can occupy the whole lane. Our main objective is that citizens only drive their cars when it is strictly necessary. We don’t mean to ban cars but we want to make life easier for all those who choose other options.” [Mobility councillor]

So, how must car use be tackled? As said before, there was no consensus on what specific measures would work better. For example, the city council was progressively opting for an urban design that would expel cars from the city core and redirect them to the peripheral motorway. Those citizens willing to access the city centre would ideally cycle or take public transport, and dissuasive parking lots were being built. However, when he was in the local opposition, the newly-elected mayor did not share these views:

“Too much traffic has traditionally crossed the city centre. The ideal solution is to expel the car to the periphery. Only its residents should drive in the city core. We can provide with public transport corridors for those who cross the city core.” [Citizen safety councillor (and San Jorge area councillor)]

“The idea of building dissuasive parking spaces in the periphery for getting people into the city core is not an ideal solution. In my view, many citizens would stay in the suburbs instead, as they could easily access certain services and avoid going to the old town.” [Councillor/opposition; previous and newly-elected mayor]

This last comment reflected one of the fears of some local traders: Due to the restrictions to the car in the old town, their sales could decrease. The discourses reflected differing views on how the citizens would adapt to the changes made: Some argued that many would switch to using public transport to reach the city core, whereas others feared that citizens would prefer to shop and engage in leisure activities in other areas that offer easier access by car. This might be a risk, as a social research technician from the MCP argued that the locals tend to drive their cars when it is convenient to do so:

“According to our surveys, many locals take their cars whenever they can to cover those distances that are not walking-friendly if there are no restrictions to car use. This means that, if we want to reduce car use, we need to remake the city and the infrastructure in

¹⁴⁷ Data from: Printed version of Diario de Noticias (13/3/2002. Department’s archive on mobility).

such a way that driving cars becomes less appealing. People need to be pushed towards embracing the mobility transition.” [MCP, Social research technician]

The city is high-performing in terms of its share of citizens who walk to their destinations, but it does not perform well enough in what refers to the use of private cars. It seems that reducing its excessive car use for those distances that are not walking-friendly will be a great challenge.

8.4.2-The controversial redesign of the city core and a main avenue

As explained before, the so-called “Amabilización” has probably been the most polemical transformation made so far. The idea behind the redesign was shared by everyone but there was a very clear division between those who backed the measures implemented by the city council and those who blamed them for having been too radical. Those who were members of the local government argued that the implementation of this reconversion of the city core was needed and beneficial:

“Redesigning the city core has been a delicate task. There are residents there, not only banks and commercial premises. This is why we have not banned all the traffic but have prioritised the residents instead. Public transport too will have access to the city core (...) We must eradicate the bad habit of searching for parking spots. Non-residents must use underground parking spaces. Besides, we do not want drivers to use the city core to cross the city.” [Citizen safety area director]

“Wherever a semi or full pedestrianisation of a street has been implemented, the local traders have flourished, at least in the long term. Not only here (think of the case of the Carlos III Avenue) but anywhere else as well.” [Urban planning councillor]

Certain members of the opposition shared their views and backed the “Amabilización”. They also considered that change would be beneficial, at least in the long term, for everyone (including not only citizens but also the old town traders): *“We back the measures, although we are in the opposition. We are trying to be patient and see how it works. Many cities have implemented similar measures and have been successful”* [Councillor/opposition].

But other members of the opposition, and the old town traders’ association, blamed the local government for having been too radical:

“We are not against the ideas behind the ‘Amabilización’ Plan, but against their radical implementation. We strongly criticise certain specific measures: CCTV cameras are not needed, doing everything at once has been a mistake, etc. The old town is stigmatised. Car drivers are frightened of coming here, as it has been ‘bunkered’.” [Councillor/opposition; previous and newly-elected mayor]

This main leader of the local opposition said to be on the side of those who felt harmed (drivers and old town traders mainly). Even though they backed the redesign, another group of the opposition also backed the protesting traders: *“Certain old town traders have been damaged. There are citizens who might be vulnerable to this paradigm shift. They should be compensated. Without its traders, any city could become deserted”* [Councillor/opposition].

This same idea of being the ones who were paying the toll of the mobility transition was the main reason that the old town traders gave for criticising the city council: “*Why are they concentrating their measures here? Why should be us the ones who pay the toll? We see no similar attempts of change at the metropolitan scale. We think that suburban leisure centres will take advantage of it. Many citizens will drive elsewhere*” [Old town traders’ association, manager].

It was not so much the long term but the short term impacts the ones that they feared the most. In fact, the local media reflected how the council and the old town traders offered differing data on these consequences¹⁴⁸. The old town traders asked for a less radical model in which the private car would not be expelled from the city core. The newly-elected mayor (in the opposition at that time) shared this view, which they claimed would make sustainable mobility and economic growth compatible:

“It is estimated that 29% of our customers were coming by car. These people are being pushed away from the city centre. Around half of all traders in Navarra are based in the old town and the area of Ensanche, here in Pamplona. Our weight is huge. Sustainability must be compatible with economic growth.” [Old town traders’ association, manager]

“I understand those traders who are afraid of the redesign. Imagine how tough it is for all those small shops that are being negatively affected. Even though I would not undo the whole ‘Amabilización’, I would certainly ‘de-bunker’ the old town.” [Councillor/opposition; previous and newly-elected mayor]

Figure 51. The redesign was meant to prioritise pedestrians, cyclists and public transport



Source: *Diario de Noticias* (noticiasdenavarra.com)

¹⁴⁸ The traders argued that the smallest businesses were suffering the most from a reduction in the number of customers, meaning that some traders feared closing their shops. The council reported an increase in the economic activity of this area and a decrease in the number of cars. Each side tried to gain support for their views. See, for example, a piece of news on the losses reported by the old town traders and another one on the positive effects reported by the city council: “The traders estimate that they have lost 10 million because of the Amabilización Plan” (*Diario de Noticias*, 20/12/2017); “After a year of the Amabilización, half of the cars, no congestion and a higher use of public transport and bikes” (*Diario de Noticias*, 6/9/2018).

Finally, the government was also given the chance to contradict these pessimistic views. As argued before, they were certain about the city centre becoming a more appealing area, and about citizens switching to sustainable modes for reaching this area. In addition to this, they asked the old town traders to focus on making it a more “active” place:

“The positive outcomes will be evident in the future. Some people blame us for the fact that drivers take their cars to peripheral shopping malls, but they must remember that it was not us who promoted this kind of leisure centres but the previous governments” [Councillor (and Ensanche area councillor)].

“It is true that the old town traders have big competitors, as there are peripheral leisure complexes that citizens can easily access by car. However, they can offer different forms of entertainment to promote the old town and enhance its vitality by organising events, concerts, etc.” [Urban planning councillor]

A few streets have been reopened to car traffic by the newly-elected mayor. Even though he claimed that he would not undo the “Amabilización” Plan, it is logical to expect that social and political tensions will keep arising as a consequence of the implementation of measures that are meant to partially regain space for the private car, whereas certain agents and many citizens (such as many car drivers) might probably be happy with these new measures: “We are increasingly feeling isolated. When accessibility to the core is so restricted and car drivers have other places to drive to, many may stop coming, mainly for shopping. We hope that the ‘Amabilización’ is partially rolled back so that we have a more balanced setting” [Manager, Old town traders’ association].

Another example of controversy linked to mobility is the reconversion of one of the city’s main avenues (the Pío XII Avenue). After the city council took the decision of reconverting this avenue into what they called a “sustainable corridor”, groups of local residents, traders and politicians of the opposition strongly opposed the initiative. The decision-makers talked about their positions with respect to this polemical debate:

“We are taking two out of four car lanes for other purposes, such as cycling lanes, bus-priority lanes and other services. There won’t be parking spaces along this avenue. It is normal that there is some social contestation, but we must be patient and adopt a long-term perspective.” [Councillor (and Iturrama area councillor)]

“We had a different idea for this avenue that also meant the implementation of cycling lanes. However, we think that the loss of parking spots should be compensated in some way in order to help both the residents of this area and those who go to the city centre.” [Councillor/opposition; previous and newly-elected mayor]

A last matter that was commented was the reversibility of all these measures. According to the city council, most of the measures were reversible, so they could be modified in case they did not work. However, one of the main leaders of the opposition (who would later be the mayor) considered that too many irreversible measures had been radically implemented (instead of opting for a progressive path):

“Reversibility is the latest trend in modern urban planning. We can test some low-cost transformations and see how they work. Back in the past, Carlos III was pedestrianised

all of a sudden. That is not our way of doing things. Our experts recommend us that the measures are flexible and progressive.” [Urban planning councillor]

“I reckon that not everything should be reversible, as we cannot keep readjusting things forever, but the ‘Amabilización’ should have been more reversible. It is not as reversible as they claim it to be.” [Councillor/opposition; previous and newly-elected mayor]

8.4.3-Mobility as a political weapon, ideologies and attitudes towards change

As we have seen, the local politicians blamed each other for the mistakes of the past. In fact, mobility is very frequently used as a political weapon, and consensus appears not to be reachable at the municipal level. The stakeholders agreed to emphasise the key importance of consensus, but the local political battles make it unlikely to be reached.

The urban transport area director of the MCP saw a clear political battle behind mobility in Pamplona-Iruña. He argued that *“it is evident that many citizens are happy with what is being done and many others are not. The local political parties back the former or the latter. There is also the regional media that back one side or the other. A fact might be interpreted in very different ways by our media”* [Urban transport area director, MCP].

As seen in chapter 2 (section 2.2), the two main regional newspapers are biased in this sense: Diario de Navarra usually shares the views of the right-leaning party, whereas Diario de Noticias usually backs the opposite political pole. Both those politicians who were in the local government and those who were in the opposition agreed to detect this partiality and asked the media to be more moderate:

“Press partiality is present in every debate, so it is present in mobility issues. Obviously, Diario de Noticias is crazily enthusiastic about this ‘so much needed change’, whereas Diario de Navarra is not (...) They love radical perspectives and know what their readers want. They should be more moderate.”

[Councillor/opposition; previous and newly-elected mayor]

“Diario de Navarra has published many articles in favour of the use of alternatives like the bike. Their information on mobility is worthy and abundant. However, at the same time, they always back the opposition and criticise our measures.”

[Councillor (and Ensanche area councillor)]

The local politicians said that the ideal solution would be to reach a long-term consensus, so that mobility could be separated from the everyday-life political battles: *“Consensus is key to successfully managing mobility. Political terms are short, so every important decision should be based on consensus. We should not only act for the coming four years, but for the next twenty years”* [Citizen safety councillor (and San Jorge area councillor)]. However, this looks unlikely to happen, as using mobility as a political weapon was said to be a temptation: *“The ideal thing to do would be to take mobility issues out from daily political debates. But, as it has an important influence on people’s lives, it is a big temptation for politicians to use mobility as a political weapon and for demagoguery”* [Urban planning councillor].

It seems difficult to achieve political consensus on mobility issues in Pamplona-Iruña, and the local politicians tend to use them as a political weapon. When they were questioned on

the reasons for having different views about how urban mobility must be managed, another component was identified: ideologies. Even though the entire political spectrum claimed to be for the implementation of a sustainable mobility, there were nuances in their discourses on mobility that could be attributed to their ideological backgrounds. Several interviewees considered that right-leaning politicians tend to be less restrictive on the use of private cars, as the idea of individual freedom as their most central concept could potentially collide with heavy limitations on the use of private cars (this perception was shared by the experts from Toronto, as seen in chapter 7).

In this context, left-leaning politicians claimed to be the advocates of alternatives modes: *“I believe that the management of mobility is closely linked to ideology. The right wing tends to be more ‘pro car’, whereas the left wing opts for the alternatives to private cars with more determination”* [Mobility councillor]. The right-leaning leader of the opposition claimed that citizens should have the right to use their cars without heavy restrictions, but they should be encouraged not to take them on a regular basis:

“There is a fundamental difference between the right and the left wing that influences spheres such as mobility. We believe that individuals have the right to move around in an independent way. We all must have the right to have a home and a car. Why should I not have a car for my weekend and holiday trips? (...) Why should I not drive an electric car into the city centre?” [Councillor/opposition; previous and newly-elected mayor]

Nevertheless, according to several interviewees, it is not that much ideologies that make the difference but people’s attitudes towards change. They argued that left-leaning citizens tend to be more open to change, whereas right-leaning people tend to be more conservative and to prefer to avoid change: *“When you grow older, you have certain habits that you don’t want to modify. This is just normal. Many people are conservative in this sense. This is usually the case of right-leaning citizens, but their ideology is not the cause of their reaction against change”* [Citizen safety area director].

In fact, the right-leaning leader of the opposition was criticised for being an “immobilist”:

“There are ideological components behind public policies. Margaret Thatcher said that anyone in their forties who commuted using public transport was a ‘loser’. They asked [Councillor/opposition; previous and newly-elected mayor] on how he thought the city will be in fifty years’ time. He answered that it will remain more or less the same. I don’t share his opinion.” [Citizen safety councillor (and San Jorge area councillor)]

However, this political leader said that he was more open to change than what the local government wanted people to think about him: *“Calling me an ‘immobilist’ is an electoral strategy. They love to remark that I said that Pamplona won’t change much in the next fifty years, but the truth is that when I said that the media were asking me on augmented reality, not on mobility issues”* [Councillor/opposition; previous and newly-elected mayor].

In any case, a certain correlation between ideologies and attitudes towards change could be observed. This can have an impact on how mobility is managed, even though all the local politicians interviewed agreed that implementing a more balanced modal split is needed.

8.4.4-Reaching a more sustainable and egalitarian mobility and expectations for the future

Some of the ways in which alternatives such as cycling or using public transport could be enhanced have been explored while analysing other inter-related matters. The interviewees explained that both alternatives have probably fallen into vicious circles. While using private cars kept growing, other modes were neglected, because it was interpreted that there was no much potential demand. Now, it has become difficult to retrofit Pamplona-Iruña in such a way that cycling becomes an appealing option for daily mobility and that public transport performs better and attracts a larger proportion of the local population.

Apart from other downsides, such as traffic congestion and the occupation of space, cars were blamed for being a source of inequality. Not everyone can drive a car, as driving does not only require to be able to afford a car but also to meet certain criteria such as being an adult person who is physically fit enough. Thus, some of the local politicians did not conceive the electric car as an ideal solution, at least not as a private vehicle that would just replace combustion-engine private cars. Furthermore, electric cars were seen as expensive cars that are not affordable for regular citizens (not yet at least)¹⁴⁹.

As seen before, this negative perception of private electric cars was not shared by all the local politicians. In any case, there was an overall consensus on the need for fostering the use of the alternatives to private cars. PLEVs (Personal Light Electric Vehicles), for example e-scooters, are becoming increasingly popular in Pamplona-Iruña. E-bikes are also growing in terms of popularity, but the interviewees agreed that boosting public transport should be the first priority, while supporting cycling should be the second priority.

It seems that Spain and Navarra are not suitable for the massive generalisation of electric cars yet. According to a local expert on electrical engineering, electrifying bus fleets is more viable in the short term (a local public-bus line has already been electrified, as mentioned in the contextualisation):

“There are two factors that are crucial for the adoption of electric cars: tax incentives and infrastructures. We lack infrastructures, as very few people have plugs attached to their parking spots. Besides, we have to wait until their batteries are charged in a more reasonable lapse of time and they become cheaper.”

[Scholar/researcher on mobility; ITS and electrical engineering, UPNA]

Another service that is starting to replace their traditional combustion-engine cars is the local taxis. An expert on the taxi sector (which is a public service in the city and its periphery) from the MCP explained that

“in recent times, we have clearly opted for buying eco-friendlier vehicles. This trend will probably continue in the future. We still have many diesel-engine taxis, but the number

¹⁴⁹ For example, an expert on car sales estimated that only less than 20% of the national population could afford to have an electric car (those who earn over 2,500 euros a month). Based on: “Less than 20% of the Spanish households can afford an electric car” (Diario de Noticias, 7/10/2019). In his Twitter account, the mobility councillor posted messages in which he regretted that public money was spent in promoting electric car sales, as he blamed them for being luxury items that only the rich can afford.

of hybrid-engine taxis is growing fast. EVs are likely to become popular in the future but very few taxi drivers are opting for them now.” [Planning technician; taxi service, MCP]

The main reason for establishing a new mobility hierarchy in which public transport is in a better position is that anyone is supposed to be able to use it. The participants argued that the city should redefine its mobility in such a way that mainly public transport but also bikes are prioritised over the private car (pedestrians being always the ones at the very top of this hierarchy). This is in line with the priorities that many other cities have established, although certain cities might have prioritised the bicycle over public transport, as it is an active mode. There has been some debate on this matter at the local level¹⁵⁰. In any case, the two options should be prioritised over the private car, according to the principles attributed to the new paradigm. The need for adopting a new hierarchy was mentioned by several key informants:

“In an ideal situation, there would be a clear hierarchical order: First pedestrians (who use their own feet), then public transport (because it is collective), and then the bicycle (as it is a sustainable private vehicle). The least prioritised should be the motorbike and, finally, the private car.” [Citizen safety councillor (and San Jorge area councillor)]

“Public transport is our main priority. Once it has been boosted, there will be less cars on the roads, so cycling will be safer. Besides, anyone can take the bus. Our problem is that we have a slow bus system in terms of ‘commercial speed’. This must be fixed.” [Councillor (and Ensanche area councillor)]

The idea of public transport being the most egalitarian option together with walking was a common element in several participants’ discourses. The mobility councillor claimed that investing in improving the public transport network would help to democratise its use, as it is generally used by vulnerable groups who have no access to private cars:

“We should have a better public transport that attracts regular citizens. For such a small price, people would think about it twice before taking their cars. But, now, it seems that many people save a lot of time if they use their cars instead. The surveys carried out by the MCP show that public transport is mostly used by specific groups, such as women, immigrants and low-educated people.” [Mobility councillor]

“The most recurrent demand that we have received from the citizens is to improve the public transport network through different initiatives, such as upgrading the main axes, building bus-priority lanes, etc. A circular bus line for the periphery was demanded, but it seems unlikely to be created, due to efficiency reasons, as it is much more difficult to offer an alternative to the car in suburban areas.” [Coordinator of the participatory process of the SUMP, UPNA]

Providing people with good alternatives to the private car was not only seen as a way of making mobility more sustainable but also as a way of tackling inequality: *“Mobility policies and measures should cover all the social spectrum. We must offer good alternatives to the private car. Otherwise, we would be promoting that those who can afford expensive parking spots in the city core drive, whereas the rest avoid going there”* [Citizen safety area director].

¹⁵⁰ See, for example, this opinion article on urban mobility hierarchies written by a local pro-bike activist: “The power of the MCP and moving around by bike” (Diario de Navarra, 14/3/2017).

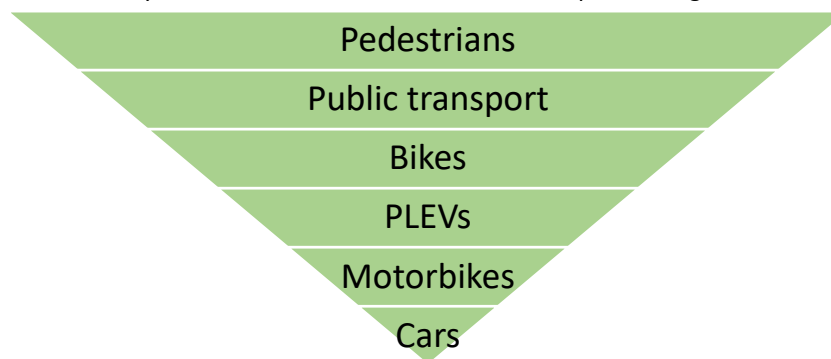
A better role for cyclists was also demanded. The city still lacks a coordinated network of bike lanes (or bike-priority roads), even though certain areas have cycling infrastructure. The stakeholders agreed that bikes should have well-defined spaces where cyclists feel safe and do not mix with cars or pedestrians in a chaotic way: *“Cyclists deserve a better image. They may have lost popular support because of having invaded those pavements that are meant to be used by pedestrians. Bike lanes should cover all areas and be connected. Many drivers dislike cyclists, as they slow their speed down”* [Councillor (and Ensanche area councillor)].

In fact, as already mentioned, the bicycle was said to have fallen into a vicious circle that needs to be reverted in order to achieve a more balanced mobility portfolio:

“The bike has been a victim of a vicious circle. The local politicians said that there is no much demand, so the infrastructure was built very slowly. But, until people don’t have a proper infrastructure, you cannot know how popular cycling can potentially become.” [Founder and president, Local female cycling club]

“Bike use is growing but is still confined to a very little minority of the local population. However, according to a survey, we have a similar proportion of potential users to what they have achieved in the Netherlands. Cyclists have a right to have an inter-connected network of lanes.” [Pro-bike activist, Local association for sustainable mobility]

Chart 9. The key informants underlined the need for implementing a new hierarchy



Source: Own elaboration

Even though change was not expected to be fast or easily implemented, due to the many challenges that need to be faced, the expert interviewees agreed to conclude that once the city is transformed there will be no way back to the past. Even though there might be certain adjustments, they shared the opinion that it is inevitable that the city progressively becomes more sustainable concerning mobility. Although there was disagreement on what should be done, no one feared that the political instability and the lack of consensus at the municipal level leads to reverting the attempt of implementing a new paradigm: *“There is no way back. If they won the elections, the opposition won’t dare to roll back the whole ‘Amabilización’. No one would think of undoing other initiatives either, such as de-pedestrianising the Square of the Castillo or the Carlos III Avenue”* [Councillor (and Ensanche area councillor)].

It was also expected that local participatory processes will progressively gain importance, so that the residents have the possibility to talk on their needs and priorities. However, there was no consensus on whether their implementation would be advisable (or even viable) in

the case of binding participatory processes that would make it compulsory for the politicians to implement the citizens' demands:

"We warned the government about the need for a proper participatory process that is binding, as many people would be affected by the transformations made."
[Councillor/opposition]

"Those who ask these processes to be binding are wrong, at least from a legal point of view. Participatory democracy is subordinated to representative democracy (...) Apart from this technical matter, it is obvious that the politicians would not be happy to lose some of their competences and implement certain measures that they don't support."
[Coordinator of the participatory process of the SUMP, UPNA]

But, above all, a change of mentality was expected. Many residents are not familiar with the alternatives to private cars. Public transport is usually associated with those who cannot drive, whereas a very small minority of the population cycle or use other modes in their daily lives. This negative fact is supposed to progressively change, once they start to value the use of sustainable modes for those distances that are not walking-friendly. If it did not change, *"we could end up in an illogical situation: Private cars being the first choice in a very compact mid-sized urban setting with a high population density"* [Urban transport area director, MCP]. Achieving a more positive social perception of "greener" modes was interpreted as decisive:

"Measures that enhance sustainable modes must be promoted, but people's mindsets need to evolve accordingly. People must be pushed towards embracing these priorities: Walking for short distances, cycling for intermediate distances and using the bus for the longest distances." [Social research technician, MCP]

"The young generations tend to think in a different way. They are not so interested in ownership, whether it is flats or cars. People have many cars, and reducing the number of parking spots is generally the greatest point of friction. This might change with a new paradigm that brings a new mentality." [Councillor (and Ensanche area councillor)]

There was hope on the young generations becoming "early adopters". In fact, the expert participants mentioned certain trends that could lead to a decline in the use of private cars:

"Urban mobility has traditionally been based on very few options. Now, we have many more choices for our daily commutes. Our business is growing, as many people want to buy small and light personal vehicles. E-bikes are our bestsellers (...) We are at a turning point in which people are starting to conceive them as an alternative for daily mobility. Policies need to be readjusted so that they promote the use of these new vehicles."
[Manager, Local e-bike and PLEV shop]

"Societies are heading towards change. The private car is increasingly being attributed many burdens. New phenomena like the sharing economy will be important, as people will realise that the costs of mobility can be split and reduced. EVs could also contribute to reshaping our cities and habits."
[Scholar/researcher on mobility; statistics and transport, UPNA]

The role of the public administrations and their decisions were seen as decisive by those pertaining to the private sector. As the president of the local car dealers pointed out,

"we cannot exactly know how urban mobility will be in the future. I believe that it will greatly depend on our politicians. For example, as the public transport network is loss-

making, its performance will depend on how much they decide to invest in it. Politicians are the ones who can profoundly change mobility through restricting car use.”
[President, Association of car dealers and repair shops of Navarra]

Finally, all these transformations could be incorporated into people’s lives in a better and faster way if citizens were educated on mobility issues. The coordinator of the participatory process of the SUMP explained that *“another recurrent matter is the lack of respectful civic attitudes. Many citizens regret how badly drivers and cyclists sometimes behave. Drivers are blamed for not giving priority to pedestrians, cyclists and the bus. We are clearly talking of cultural elements”* [Coordinator of the participatory process of the SUMP, UPNA].

All in all, change is expected to be implemented and socially appropriated in a relatively slow but progressive and steady way. It will not be easy to reshape the locals’ mindsets, as many locals are too used to taking their cars nearly everywhere that is not near by, but the participant stakeholders were moderately optimistic about the city of Pamplona-Iruña being in a turning point that will lead to a more sustainable urban mobility.

8.4-DISCUSSION GROUP WITH INNER-CITY RESIDENTS

To explore the social perception of the mobility transition in the city, a discussion group made of inner-city residents was organised with the help of an entity called “TX bizi” that works on the implementation of a “greener” mobility in the area of Txantrea. They offered the opportunity to gather residents who would talk on how they perceived mobility-related issues after a presentation on the topic. Any adult person from this “city-proper” area was welcome to participate: ten residents volunteered¹⁵¹.

After the talk on the topic, the participants offered their views on the situation of mobility at the municipal scale (the city of Pamplona-Iruña) and in their neighbourhood. Two main issues arose: They asked for more measures to implement a balanced mobility portfolio in which the role of private cars is less central (even though they claimed that they lived in an area that is not extremely car-oriented) and underlined the key importance of giving priority to the interests of the citizens (instead of those of politicians, construction companies, the car industry, etc.).

The participants argued that they lived in a quite gentle (“amable”) part of the city that is located in a nice surrounding: It lies in between the city core and the mountains and it has low residential buildings and a riverside path. Even though they could take a bus to the old town and go there on foot, they asked for further improvements in their connections to this pole of attraction. For example, they asked for the construction of bike lanes and limitations

¹⁵¹ Even though Txantrea has been labelled as an “uptown” area, it must be taken into consideration that it lies closer to the city core than the neighbouring area of Ansoáin. In fact, Ansoáin is not officially part of the city, but an adjacent municipality. These two areas have been defined as a single macro-area by the MCP but, because of being closer to the city core, the area of Txantrea probably has a less car-oriented mobility than the average for this macro-area. The macro-area performs slightly better than the average for the “uptown”, as walking is a more frequent choice (44.6%, compared to 39.4%). Car use is slightly lower than the average (40.4%, compared to 43.5%), as the use of the bike and the bus is relatively similar.

to car use (further on, the local government announced a project that is expected to build a broad cycling lane linking Txantrea with the old town in replacement of one of the car lanes).

The other main aspect in which they made emphasis was the importance of shaping the city for the interests of citizens. They argued that mobility was inextricably linked to politics and business, and that people's interests should prevail. They offered a few examples: They blamed construction companies for having built certain parts of Pamplona-Iruña in line with their business logics and blamed the car industry for trying to persuade people on burning fossil fuels because they are more profitable than "green" sources of energy. They also put emphasis on the key role of politicians. While certain measures such as banning the oldest cars were criticised for being class-biased, other measures such as pedestrianising the cores of the cities were perceived as positive and desirable, now that sustainability and promoting active modes is a growing concern for the society.

8.5-SUPPLEMENTARY FIELDWORK

The image-based social experiment and an online survey on the mobility transition were conducted as supplementary fieldwork items. In both cases, the participants were students from the Public University of Navarra.

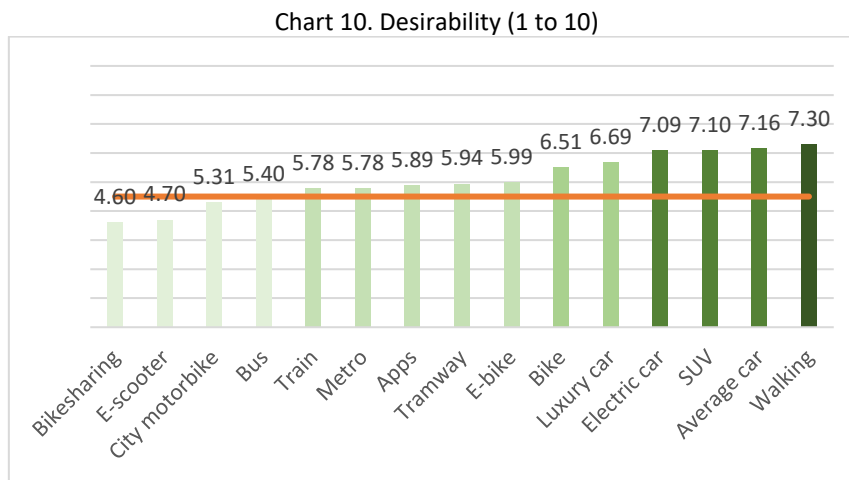
8.5.1-"Image-based rating exercise" (young generation and older generation)

The image-based exercise was carried out in several university lectures. These students were young, like the students from Helsinki and Toronto. This nuance is relevant here, as I will later mention the results obtained with older-generation students. Slightly less than half of the young-generation students had driving licenses (57 out of a total of 119 respondents), and only a minority owned a car (25).

With Pamplona-Iruña being a compact city, many students reported commuting to their campuses on foot. The second most common choice was using public transport (the buses). Cycling and driving were less common, but significantly represented as well. A few students carpooled, and only one student commuted by motorbike.

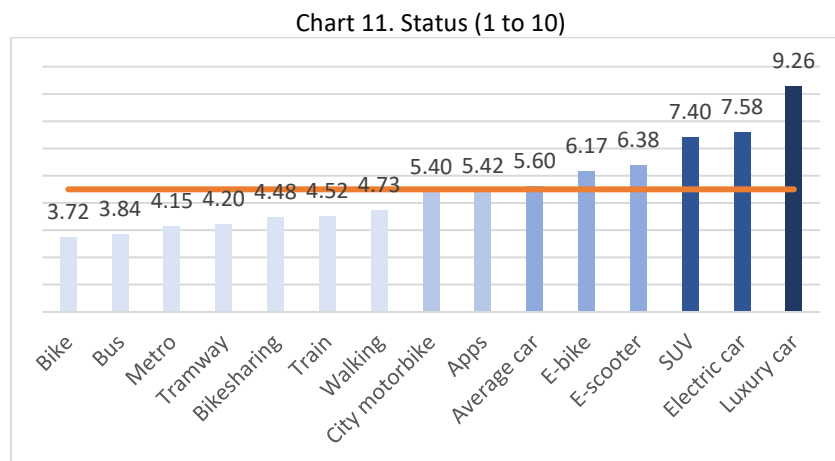
As reflected in chart 10, the scores attributed to the different mobility options shown in the images showed that, in terms of their approach to sustainable mobility, the participant students from Pamplona-Iruña were somewhere in between the participants from Helsinki and the suburban Torontonian campus.

The answers were relatively similar to those obtained in downtown Toronto. This means, again, that there probably is a certain correlation between the performance of a student's environment and their values and mentality. Even though the participants from Pamplona-Iruña and downtown Toronto (which is compact and walkable too) valued car-related modes highly, they put walking in the first position. Other alternatives, such as cycling and mainly the bus, were seen as less desirable than walking and driving.



Source: Own elaboration (averages)

Most of the car-related images were attributed a high social status (luxury cars, EVs and SUVs), but average cars were an exception. New alternatives, such as e-scooters and e-bikes, were also attributed a relatively high social status (see chart 11). Nearly all the participants (104) attributed any status to walking, meaning that the most valued option was seen as an accessible choice for any local resident.



Source: Own elaboration (averages; answer "any status" excluded)

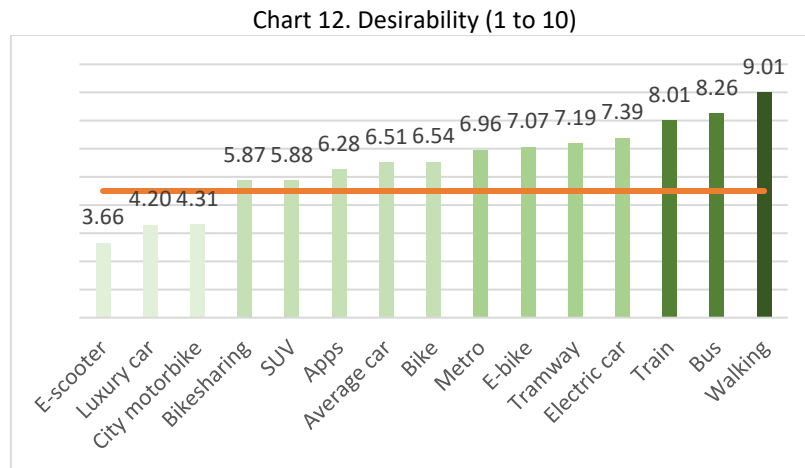
Overall, we see that the results seem to show a relationship with these students' context. The city's main mobility choices are walking and driving. Therefore, it is not surprising that both walking and car-related images were ranked the highest. This was consistent with the findings obtained in Helsinki and Toronto, where the local contexts seemed to be important.

In order to establish a comparison, we carried out the image-based experiment with old-generation students as well. They were much older, and most of them were pensioners who attended sociology-related courses in the program "Aula de la experiencia" ("Lecture room for experienced people") of the Public University of Navarra, which is a special project that is not equivalent to an official undergraduate degree.

Similar to the young students, their first choice for commuting to university was walking. However, driving a car was their second option, instead of public transport (third). Any other

alternative was very infrequent, meaning that cycling to university was not common among these elderly people (probably due to factors such as being less physically fit).

The scores attributed to the different mobility options shown in the images reflected that the elderly students valued walking (first position) and public transport highly (see chart 12). This may be linked to the elderly preferring less stressful lifestyles and avoiding driving at an old age, even though car-related options (except for luxury cars) did not obtain low average ratings. Nearly all of them (57) attributed any status to walking: The most valued option was seen as accessible for anyone.



Source: Own elaboration (averages)

As we have seen, both the elderly and the young students prioritised moving around on foot, which was in both cases the most frequent way of commuting and the most desirable option.

8.5.3-Online survey

Compared to the participants from Helsinki and Toronto, the participants from the Public University of Navarra had less driving licenses (slightly over 60% had a license), but they had more access to private cars than the respondents from Helsinki. Approximately 45% had no access to cars, as over 25% owned a car and nearly 30% had access to a household car.

Around 45% of the participants said that they changed their mobility habits in accordance with the weather conditions. Taking the bus was the most frequent choice in good and rough weather circumstances. When the weather was good, walking was their second choice, but driving was their second choice when the weather was bad.

As the city is compact, the most mentioned duration of a commute was under 20 minutes (one way). Most of these respondents ranked the metropolitan public transport network as good (around 60%) or average (around 30%). Nevertheless, cycling was seen as less viable. Bike infrastructure was blamed for being bad by over a third of the participants. More than half of the participant students considered the infrastructure for pedestrians to be good.

Saving time was said to be the main priority when deciding how to move around. Prices were less important as a factor than in the cases of Helsinki and Toronto. Convenience was the second main priority, and weather conditions were the third. Sustainability issues were also taken into account (fifth position, prices being in the fourth position).

The survey respondents were divided about their intention of buying cars in the future. Nearly half of them stated that they would buy a car, whereas the rest said that they would not. This probably reflected the city's performance, which could be labelled as neither bad nor good. Their main demands were an upgrade of public transport and bike infrastructure.

All in all, we can see that the perceptions of the participants seemed to have a correlation with the city's performance. The infrastructure for pedestrians was generally thought to be good. Public transport was perceived as a little worse, while cycling infrastructure was seen as considerably worse. In accordance with these perceptions, the participants were divided about buying cars in the future.

8.6-CONCLUSIONS: PAMPLONA-IRUÑA MAY BE EXPERIENCING A TURNING POINT

The 2015-2019 political term brought important changes in the city's mobility that led to social and mainly political controversy. This type of instability is a frequent feature linked to the transformations made for adopting a new paradigm not only in Pamplona-Iruña but also in other places. The city is starting to "sell" the message on the need for readjusting the city and the local people's mobility habits and mindsets to a more sustainable model. However, numerous challenges must be faced, as reaching political consensus and convincing a large majority of the population on the benefits of these changes seems to be extremely difficult.

The implementation of the so-called "Amabilización" Plan has probably been the greatest transformation made so far. Traffic flows have been restricted in the old town and some car lanes have been converted into cycling lanes, bus lanes and pavements, meaning that some streets have been pedestrianised. CCTV cameras monitor those who drive on certain roads, as only old-town residents are now allowed to do so.

The local society seems to be strongly divided. Some politicians and many residents back the measures, whereas others blame them for having been too radical and even for having "bunkered" the core of the city. The old town traders' association and certain members of the local opposition fear that the economic activity of the area will decrease and that many citizens will opt for driving to peripheral complexes. The city council and the traders offered opposing data and views on this controversial matter.

Another paradigmatic example of political and social tensions derived from the decision of converting a main avenue into a "sustainable corridor" in which parking spaces would be replaced by new elements such as cycling lanes. A protest platform strongly opposed the measures. Some people asked for a binding participatory process. Even though participatory processes are becoming increasingly popular, it is not clear whether they should be binding.

The analysis of statistical data suggests that the further away an area lies from the city core, the less its residents tend to walk and the more they tend to drive. Walking is the first choice for nearly half of the journeys, but driving is by far the second most popular choice at the municipal scale. The use of public transport and bicycles is alarmingly low. These two alternatives appear to have fallen into vicious circles that will be hard to be reverted in order to compete with the car for being an appealing option for non-walking-friendly distances.

The local affluent classes tend to live in some of the most central parts of Pamplona-Iruña (mainly in the Ensanche area, located in the city core). The city core is the least car-oriented part of the city. Those whose incomes are below the average usually live in “uptown” areas. This means that the local poor tend to live in the most car-centred parts of the city and must cope with non-walking-friendly distances. The “midtown” is closer to reaching the goals set by the metropolitan SUMP than the “uptown”. The “midtown” has an above-average level of income, although it is not as high as the average income of those who live in the city core. This might put into question the strategy of making the heaviest investments in the city core instead of in other areas that may need them more, although change in the core of the city is meant to affect the rest of the areas too.

Mobility is frequently used as a political weapon. Consensus appears not to be reachable at the municipal level. The key informants agreed to emphasise the need for consensus, but the local political battles seem to make it unlikely to be viable. Many local citizens are happy with the changes made (for example, the majority of the old-town residents), whereas many others (such as drivers) are not. The political parties back the former or the latter. Similarly, the regional media have adopted polarised attitudes towards mobility issues.

Both the local politicians and the experts on mobility who participated in the interviews argued that the city should ideally achieve a long-term political consensus to avoid that the everyday political battles negatively affect mobility. Nevertheless, there was no much hope on this happening, as using mobility as a political weapon was interpreted as a temptation. The local stakeholders said that the city should redefine its mobility in such a way that public transport (mainly) and the bike are prioritised over private automobiles (being pedestrians the ones at the top of this new hierarchy).

Political ideologies seem to be important as well. They may have an impact on how urban mobility is managed. Although all the local political spectrum claimed to back the adoption of a more sustainable paradigm, there were nuances in their discourses on mobility issues and they did not agree on how exactly the mobility transition should be managed.

The “image-based rating exercise” found that the participant students’ attitudes towards mobility were coherent with their environment, as walking was the most valued option, and cars obtained relatively high scores. This is consistent with the city’s dual model: Walking is the most common choice, but driving is by far the second most popular choice. All in all, there was moderate optimism about the city being in a turning point. However, change will not take place fast and smoothly, as social and political frictions make nearly any measure hard to be implemented and alternatives such as public transport and cycling seem to have fallen into vicious circles.

9 - THE MOBILITY TRANSITION IN PERI-URBAN AREAS. THE SUBURBS OF THE PAMPLONA METROPOLITAN AREA AS A CASE STUDY

9.1-CONTEXTUALISATION OF THE CASE STUDY

Mobility has a considerable impact on both cities and the peri-urban areas that surround them and that tend to progressively lose their rural essence and become “sub-urban” (due to different kinds of transformations). The increase in the use of cars and the inter-relations established between urban and rural areas have led to a growing hybridisation. According to Camarero and Oliva, *“today we do not see pure forms of either rural or urban life. What we observe instead are increasingly hybrid processes made up of different degrees of urban and rural logics”* (2016: 108). Within urban agglomerations, medium and small-sized towns usually flourish in the surroundings of the city. The melting between the city and rural areas in metropolitan areas tends to resemble a continuum. Eurostat claims that

the increase in populations and the limited space available for urban developments has resulted in the divide between urban and rural areas becoming increasingly blurred. In many cities, people have tended to move out of inner cities to suburban and peri-urban areas (hybrid areas of fragmented urban and rural characteristics) on the outskirts of existing metropolitan regions. This shift has been encouraged, among others, by: increased motorisation rates; improvements to road networks... (Eurostat, 2016: 56)

The concept of suburbanism has long been analysed in the academic literature. In certain occasions, suburbanism is considered to be opposed to urbanism, and the suburban way of life is generally attributed to be different from city life by the mainstream academic opinion (Charmes, 2007). For example, Walks emphasises that *“‘suburb’ literally means less than, or only partially, urban. Suburbanism, definitionally, might then be understood as constituting limited or subordinate urbanism”* (2013: 1476). Tzaninis and Boterman argue, in a study on the boundaries of the traditional urban-suburban dichotomy, that

suburbanisation has been a prevalent process of post-war, capitalist urban growth, leading to the majority of citizens in many advanced capitalist economies currently living in the suburbs. We are also witnessing, however, the reverse movement of the increasing return to the inner-city. (Tzaninis & Boterman, 2018: 39)

While many are returning to the city, perhaps in search of shorter commutes and a better access to general services, the idealisation of living in a suburban house with a garden seems to remain performing. Suburban life has long been idealised as a source of peacefulness and safety. Researchers have attempted to evaluate this positive perception of the suburban way of life and the aspiration to live in single-family houses with a private garden (see, e. g. Pisman, Allaert and Lombaerde, 2011). In fact, according to Camarero and Oliva (2008), the city of Pamplona-Iruña and its metropolitan area can be taken as a paradigmatic example of a Southern European midsized city that has evolved to a metropolitan form, although it had initially been structured into a functional city core and a series of surrounding districts. Many other Spanish cities have also evolved into a metropolitan form (for example, see González and Montero, 2018, on the case of Sevilla).

Lifestyle choices have been attributed to have an important impact on mobility, as well as in other spheres of daily life. Weiss (1988) quoted Jonathan Robbin, creator of the PRIZM cluster system, for having said that he could predict what somebody ate, drank, drove and even thought if he knew their ZIP code. Richard Florida describes similar patterns in US cities and towns in an article on urban sociology that analyses the ZIP codes of the “super rich”, as they “*show the class divides within cities and metros as well, providing another indicator of the juxtaposition of concentrated disadvantage alongside concentrated advantage in many of the country’s most affluent cities and metros*”¹⁵². Many European cities (as shown in European Environment Agency, 2006) also embraced this model based on urban sprawl, which Urry describes as follows:

The development of American cities has been dominated by commercial interests which have found it profitable to locate housing (especially gated communities), (gated) workplaces, retailing (gated shopping centres), leisure (gated theme parks) and so on in separate zones; such zoning being characteristic of much urban planning.
(Urry, 2002: 264)

Against this background, Graham and Marvin (2001) talk on a “splintering urbanism” and argue that urban areas are becoming privatised rather than open and inter-connected, and profit-oriented highways and gated communities that resemble fortresses are being built with the intention of fleeing from the rest of the society.

The mobility transition is having an impact on the lives of suburban dwellers. The suburbs of a midsized city like Pamplona-Iruña illustrate this matter. Suburban residents rely on daily routine mobility strategies for making a living and engaging in leisure activities. Challenging the central role of the private car in these peripheral territories seems to be very difficult.

It is not clear how the suburbs of a city might contribute to change, as they appear to be more dependent on car use than the inner city because of factors such as their typically low population density. This can have an important impact on the (low) compactness of an area. Serrano-López, Linares-Unamunzaga and Muñoz-San Emeterio (2019) point out that the Mediterranean urbanism has traditionally been characterised by high and moderately high densities and that, in coherence with previous studies, they find that there is a correlation between low densities and a higher use of private cars.

In addition to this, there are doubts on how to achieve a socially inclusive and sustainable mobility in peri-urban areas. For example, implementing public-bus routes and cycling lanes that are more connected to the city core could lead to negative side effects (if car lanes were reduced), as people may drive their cars to park-for-free leisure centres located in suburban areas as an alternative option to going to the city centre (as seen in the previous chapter).

A combination of qualitative and quantitative research works has been used to explore mobility issues in the suburbs of the Pamplona Metropolitan Area (MA). Suburban residents (through a discussion group) and a selection of key informants and stakeholders (through

¹⁵² Cited from: “ZIP codes of the super rich” (City Lab, 3/7/2014).

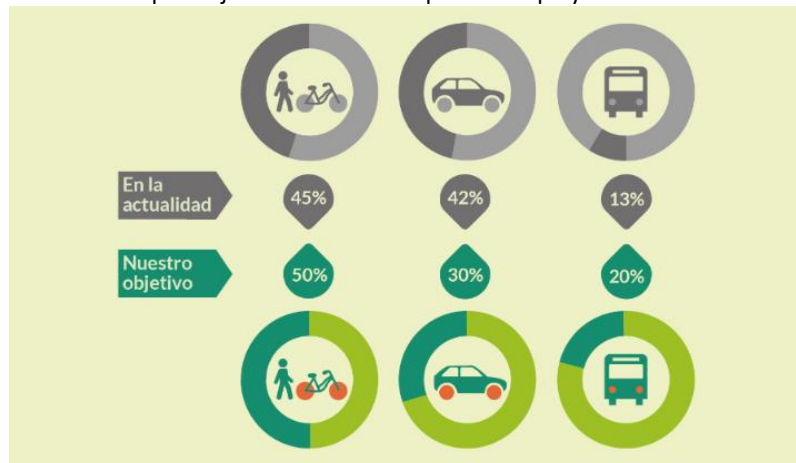
in-depth interviews) have contributed to a debate that has taken into account the varying socio-economic circumstances of the different suburban areas that have been studied.

The Pamplona MA has been divided into three zones by taking into consideration each town’s location with respect to the peripheral motorway connecting the suburbs. The result is a summary of how and why car-based mobility gradually increases (on average) when we evaluate the modal splits of those towns that are more distant from the city. Town mayors and experts argue that political consensus is more easily achieved in these towns than in the city and that mobility measures usually cause just a slight social unrest, if any. Nevertheless, low population densities and a challenging dispersion of political entities make sustainable mobility hard to be technically implemented and socially appropriated in the suburbs.

The metropolitan area, which includes the city of Pamplona-Iruña and numerous towns and villages, is home to over half of the population of the region of Navarra. The population of Navarra is around 650,000 (647,554, according to the National Statistics Institute’s 2018 census data), from whom it is estimated that approximately 350,000 live in the Pamplona MA. There is not a unique and an official definition of the Pamplona MA: In most cases, it is considered to be nearly equivalent to the geographical basin (the “Cuenca de Pamplona”) that contains the city and its surroundings. There is a challenging administrative dispersion (city and town councils) but there is widespread consensus on conceptualising Pamplona as a metropolitan area in terms of mobility, as the city and its surrounding towns and villages are interdependent and (in many cases) hard to discern from each other.

The lack of administrative unity makes the MCP (the “Mancomunidad de la Comarca de Pamplona”) play a crucial role. The MCP is a local entity that has among its competences the competence of managing public transport in Pamplona-Iruña and in most of the towns that surround the city. This makes it a very suitable entity for coordinating the implementation of mobility measures. In fact, the MCP had been chosen as the entity leading the elaboration of the Sustainable Urban Mobility Plan (“Plan de Movilidad Urbana Sostenible” or “PMUS”). This mobility plan is aimed to provide the local councils with a joint strategic plan towards a more sustainable mobility.

Chart 13. The modal split objective for the Pamplona MA plays a central role in the “PMUS”



Source: PMUS/MCP (current modal split above, modal split objective below)

Cycling is estimated not to be very significant (around 4%), whereas walking and driving cars can clearly be considered as the hegemonic options. The new SUMP is aimed to reduce the share of driving to 30%, and to increase the share of active modes to 50% and the share of public transport to 20%. Whether these objectives will be achieved is to be seen. A drastic change of tendency would be needed. If we tracked the evolution of these modal split data, we would see that the situation has become worse during the nineties and with the turn of the century.

A 1996 survey made by the regional government (Gobierno de Navarra, 1997) found that the estimated modal split at the time was the following: 43.7% for walking, 36.8% for private cars and 14.4% for public transport. Their report argued that both car use and motorisation indexes were higher than in other Spanish urban environments that had also been analysed. Ten years later, in 2006, the estimations were the following: 42.1% for active modes, 39.3% for the car and 18.6% for the public buses¹⁵³. Alternative options have fluctuated, whereas car use appears to have constantly been growing.

The case study has been divided into three parts: the inner city, the suburbs lying inside the peripheral motorway, and the suburbs lying outside of it (see map 12). The peripheral motorway stands as the main axis that connects Pamplona-Iruña and its surrounding towns. It is an axis of strategic importance that has allowed urban sprawl based on automobility.

Map 12. The suburbs have been categorised according to their position with respect to the motorway



Source: Google Maps. Own elaboration

¹⁵³ Based on: Printed version of Diario de Noticias (10/5/2007. Department´s archive on mobility).

A balanced sample of participants for the in-depth interviews was achieved: four “inside-ring” town councils (Burlada, Villava, Huarte and Valle de Aranguren), as well as four “outer-ring” town councils (Valle de Egüés, Noáin, Beriáin and Ezcabarte)¹⁵⁴. Members of the MCP and the president of the regional car dealers and repair shops supplemented this qualitative analysis with their insights.

9.2-STATISTICAL CHARACTERISATION OF THE “THREE METROPOLITAN AREAS”

The analysis of data concerning the three areas that have been defined makes it possible to detect certain trends that can be measured. For example, distance to the city and income are factors that should be taken into consideration, as they appear to have an influence on mobility. We can see a progressive increase in car-based mobility when we move away from the city, at the same time that walking decreases as an alternative. In table 17, we can find the towns’ populations, motorisation indexes (vehicles per 1,000 residents), proportions of passenger cars (out of total vehicles) and average annual incomes. The city has been added as a reference for making comparisons.

Table 17. Motorisation-related indexes and income (suburban areas)

	Population	Motor. index	Prop. of cars	Average income (p. t. p.)
CITY PROPER	195,853	632	75%	21,844
INNER RING TOWNS				
Burlada	18,336	602	76%	17,982
Huarte	6,776	584	68%	22,043
Valle de Aranguren	9,398	780	61%	25,862
Villava	10,265	646	72%	19,305
Rest: total/averages	44,700	638	73%	19,470
INNER RING (total/averages)	89,475	642	72%	20,012
OUTER RING TOWNS				
Beriáin	3,889	642	66%	18,964
Ezcabarte	1,834	1,029*	63%	20,227
Noáin	7,892	819	63%	20,142
Valle de Egüés	19,603	452*	74%	25,930
Rest: total/averages	21,020	606	69%	24,045
OUTER RING (total/averages)	54,238	662	69%	23,665
METRO. AREA (total/averages)	339,445	640	73%	21,660

Source: DGT (2015) and Hacienda de Navarra (2016; income per tax payer). Own elaboration

Even though it is relatively high too, the city has the lowest average motorisation index. The average motorisation index progressively increases (from 632 in the inner city to 642 in

¹⁵⁴ A selection of the most populated towns of the suburbs was made for contacting their town councils for voluntarily participating in the research. From the “inside-ring” region, the selected councils were the following: Burlada, Villava, Berriozar, Huarte, Barañáin, Ansoáin, Orcoyen and Valle de Aranguren. From the “outer-ring” region, the selected councils were Valle de Egüés, Zizur Mayor, Noáin, Beriáin, Berrioplano and Ezcabarte. The selected towns that did not finally participate in the interviews were added to the category “rest”. In certain cases, a town might have been attributed a specific area, even though it might have blurred boundaries and/or lie at both sides of the peripheral motorway, so it must be taken into account that what has been defined here as inner and outer crowns resembles (but may not exactly match) the territorial divisions created by the peripheral motorway.

the “inner ring”, and from 642 to 662 in the “outer ring”)¹⁵⁵. Nevertheless, there are certain exceptions to this general trend. For example, the towns of Burlada and Huarte have lower motorisation indexes than Pamplona-Iruña. In contrast, other suburban towns such as Valle de Aranguren or Noáin have very high motorisation indexes: Both cases have been discussed in the interviews and respond to different factors such as their low population density. The average proportion of passenger cars steadily decreases (from 75% in the city to 72% in the “inner ring” and 69% in the “outer ring”).

The most important outcome of adding income as a variable is to be able to observe the following trend: With the clear exception of Valle de Aranguren, those who live in the “inner-ring” suburbs tend to be poorer than the “outer-ring” residents. We can see that, in general, those who are poorer than the average for the inner city live in adjacent towns or villages, whereas those who earn above this average tend to live in towns or villages that lie further away. Therefore, those residents who earn above the city’s average concentrate in and next to the high-performing city core (as seen in the previous chapter), as well as in car-oriented “outer-ring” suburbs. The idealisation of life in a house in a relatively isolated suburban town appears to be still performing in the Pamplona MA. The local (comparatively) poor residents tend to live in the “uptown” areas of the city (as seen in the previous chapter) and in “inner-ring” suburbs.

A similar division into three sub-areas has been proposed for the city of Pamplona-Iruña. Using this type of divisions is not uncommon, as seen in the chapter on the case of Toronto: the idea of the “three cities within Toronto” (Hulchanski, 2010). Researchers such as Murphy (2010) have observed similar trends in US metropolitan areas, where such a classification is based on the proximity to the city. The so-called “first-tier” suburbs have traditionally been found to be the most deteriorated, while richer suburbs are usually located in more distant areas. This trend is confirmed by Cooke and Denton (referring to North America too): *“While poverty is increasing in the low-density suburbs of a handful of the largest metropolitan areas, the more general trend is of an increase in poverty in medium-density neighborhoods at the boundaries of the traditional urban core”* (2014: 300).

This idea is backed by Short et al. (2017), as they conclude that “first-tier” suburbs are experiencing the deepest decline due to several processes that are taking place at the edge of the city. In this respect, in a work on gated communities (which can be found in the “outer suburban ring” of the Pamplona MA in very specific and small places such as a village called Alzuza), Le Goix and Webster point to the fact that *“resident filtering occurs when restrictive covenants and property values limit potential candidates for homeownership. The result is neighborhood homogenization by wealth, age, race and status”* (2008: 1205).

¹⁵⁵ * Two towns have been excluded from the average, as their official motorisation indexes cannot be taken as valid. Valle de Egüés is a recently-built territory where many citizens have not registered their vehicles yet. Ezcabarte hosts car dealers who register many of their vehicles there, so its motorisation index is inflated.

The MCP defines macro-areas from which the modal split data has been calculated. Thus, certain regions might not exactly match with the councils selected for the case-study sample (for example, they count the neighbouring towns of Burlada and Villava as a macro-area).

There seems to be a correlation between the modal split of a territory of the Pamplona MA and its distance to the city core. In fact, the city core is the least car-dependent part of the metropolitan area. As seen in the previous chapter, the averages of the “city proper” do not differ too much from the metropolitan mobility plan’s objectives. Reaching the goals set in the “PMUS” will apparently be easier in the city than in its periphery.

Modal share averages vary in a logical way when we move away from the city: Walking progressively declines, while car use increases in a progressive way too (around 10% in each step, for both measures). This makes it hard to achieve the 30% SUMP objective for car use in the metropolitan area, as the “inner ring’s” average exceeds 45% and the “outer ring’s” average exceeds 55%. At the same time, we can observe a lack of use of public transport in comparison with the metropolitan mobility plan’s objective of achieving a percentage of at least 20%. No sub-part of the metropolitan area is close to reaching it.

Again, there are certain exceptions to these trends (see table 18), such as a relatively low use of cars in the comparatively poor compact towns of Burlada and Villava and an extreme dependency on the car in the comparatively rich and dispersed town of Valle de Aranguren, even though the three of them could be labelled as inner-crown suburban towns.

Table 18. The Pamplona Metropolitan Area (populations and modal share averages)

	Population	On foot	Public bus	Private car	Bike and others	Ratio (car/rest)
CITY PROPER						
CITY CORE (total/averages)	31,798	55.7%	14.9%	24.7%	4.8%	32.8
MIDTOWN (total/averages)	81,848	52.4%	12.1%	31.8%	3.7%	46.6
UPTOWN (total/averages)	95,561	39.4%	13.8%	43.5%	3.4%	76.9
CITY PROPER (total/averages)	209,207	47%	13.3%	36.1%	3.7%	56.4
INNER RING						
Barañáin	23,283	38.2%	12.8%	45.6%	3.5%	83.7
Berriozar	11,489	28.4%	12.1%	53.5%	6.1%	114.8
Burlada-Villava*	29,394	51.3%	14.6%	31.1%	3%	45.1
Huarte/Valle de Egüés	11,902	21.8%	12.8%	61.2%	4.3%	157.3
Orkoien/Landaben	3,708	16.2%	14.2%	66.3%	3.3%	196.7
Valle de Aranguren/Mutilva (main town)	7,937	19.9%	7.1%	69%	3.9%	223.3
INNER RING (total/averages)	87,713	36.5%	12.8%	46.9%	3.8%	88.3
OUTER RING						
Noáin/Beriáin/Galar	11,008	28.9%	13.8%	53.4%	4%	114.4
Valle de Egüés/Sarriguren (main town)	12,053	23.2%	15.9%	55.7%	5.2%	125.7
Zizur	16,464	29%	12.1%	55.9%	3%	126.8
OUTER RING (total/averages)	39,525	27.2%	13.7%	55.1%	3.9%	123
METRO. AREA (total/averages)	336,445	41.9%	13.2%	41.1%	3.7%	69.9

Source: Mancomunidad de la Comarca de Pamplona (2013, generated journeys). Own elaboration

* Ezcabarte (participant council) is a small town that lies outside of the peripheral motorway but has been added by the MCP to the inner-crown macro-area of Burlada-Villava

9.3-IN-DEPTH INTERVIEWS WITH KEY STAKEHOLDERS

During the first semester of 2018, the selected town councils were offered to participate in the set of interviews to shed light on how the mobility transition is being managed (both politically and technically) in suburban areas. The interviews with politicians and technicians were supplemented by interviews with other key local informants. Their discourses made it possible to further understand the challenges faced by those who are trying to implement sustainable mobility in the periphery, as well as know more about how the transition is being socially appropriated there.

9.3.1-Urban sprawl as an obstacle to implement a more sustainable mobility

Sprawl led to the separation of urban spaces, as new transport modes allowed to cover larger distances and, according to Cresswell, *“the metropolis was (...) allowed to expand into the new suburbs as it became possible to travel farther between work and home. Indeed work and home became functionally separate spaces because of the new modes of mobility”* (2006: 5). Moreover, as Bauman argues, *“there is a bottom line to what one needs in order to stay alive and be capable of doing whatever the producer’s role may require, but also an upper limit to what one may dream of, desire and pursue while counting on social approval for one’s ambitions”* (2000: 76).

For many, suburban areas became the ideal space for the construction of the archetypal “Fordist utopia”. This socially-approved ambition has been linked with becoming a suburban family by virtue of the new opportunities offered by extensive mobility (Cresswell described the irruption of trains) and, mainly, automobility. All this has led to a more dispersed urban-suburban continuum. The interviewees made reference to the challenges posed by sprawl. In fact, the urban transport area director of the MCP even foretold that *“if they keep building low-density urban archipelagos, managing mobility will be tough. Once they are built, there is no solution. Low densities and isolation mean dependency on cars”* [Urban transport area director, MCP].

This same conclusion has been mentioned by different scholars, such as Camagni, Gibelli and Rigamonti, who argue on the close links between dispersion and the provision of public transport that

public transport seems to be strongly influenced, both in terms of efficiency and competitiveness, by the structural organisation of an urban area: the more dispersed and less structured the development, the lower its level of efficiency and competitiveness and consequently its share of the mobility market.
(Camagni, Gibelli & Rigamonti, 2002: 199)

The interviewees agreed that urban sprawl is one of the main causes of car dependency. The emergence of dispersed housing and motorways that link the suburbs with the city has led to a widespread use of cars. Boosting any alternative to the car has become a tough task for the town councils: *“It is difficult to build proper infrastructure such as bike lanes when a territory is so dispersed. We have a bike lane that connects the main town of Mutilva to the*

village of [name of the village], but linking other villages is, technically, extremely complex” [Coordinator of the local police, Valle de Aranguren (“inner ring”)].

In fact, according to this coordinator of police officers, public transport infrastructure is also being affected by dispersion: *“Our town is dispersed, as many of our households consist of houses and semi-detached houses. There are no large concentrations of people. The MCP won’t offer any bus service until there is a minimum of potential clients, so bus stops are only built once an area is big enough”* [Coordinator of the local police, Valle de Aranguren (“inner ring”)].

Moreover, many citizens who assess the option of moving to the suburbs are not willing to live in a flat. Moving to a hybrid urban-rural setting is seen as an opportunity to live in a house or a detached house. The local affluent classes tend to live in the “outer ring” (as well as in the city core or in its adjacent areas). For example, the reaction against living in flats in the periphery was a problem in one of the towns that lie further away from the city: *“In an effort to start change, the council supported the construction of subsidised blocks of flats. It was a complete failure, and not every flat was sold. Few people are willing to come here to live in a flat”* [Town planner, Beriáin (“outer ring”)].

Certain inside-ring towns such as Burlada are more compact and less dependent on cars. Apart from being well served by public transport, this town is relatively close to the city. In these cases, more people would accept to live in flats instead of in houses. But, are dispersed areas expected to become more compact?: *“The idea of building compact towns is new for us. We are still growing by building dispersed residential areas. One project with more than a thousand new detached houses has just been approved, so there is no evidence of a change of paradigm, not yet at least”* [Town planner, Beriáin (“outer ring”)].

Changing towards more compactness in order to promote sustainable mobility would be a hard decision to take for some councils. They would fear dissuading citizens from living in their towns. Apparently, the further away from the city a town lies, the more difficult it is to to implement change. However, dispersion and a lack of proper alternatives are not the only problems faced by this type of towns. In many cases, the absence of services makes people more dependent on cars. This is the case when dispersed housing means having no services or commercial premises: *“We wrongly promoted the construction of a residential area made of duplexes that has no services, no ground-floor spaces for shops and bars, etc. Its residents have ended up being too dependent on their cars. The only thing that they can reach without driving is the local school”* [Environmental issues technician, Noáin (“outer ring”)].

One of the main factors that was attributed to make living in suburban towns appealing is their connection to the peripheral motorway linking them with the city: *“We have several accesses to the peripheral motorway that connects us to Pamplona and other destinations. Many people choose to live here because of our good connections”* [Coordinator of the local police, Valle de Aranguren (“inner ring”)]. In a similar vein, the mayor of another peri-urban town explained that *“the peripheral motorway (‘la ronda’) has made it attractive to live here and has facilitated those journeys for which cars are needed”* [Mayor, Huarte (“inner ring”)].

In addition to the peripheral motorway, certain interviewees made emphasis on another appealing element: the mix between city and rural lives. Indeed, one mayor highlighted this as their most valuable asset: *“I believe that our main attraction is being urban and rural at the same time. This means that you are only 10 minutes away from the city, but you can take a walk into the surrounding mountains at any time”* [Mayor, Valle de Egüés (“outer ring”).

Concerning mobility habits, age was another component that was frequently mentioned. Young people are usually thought to be more adaptable, while the elderly are considered to be the most “conservative” ones. This means that those areas that attract young couples or young people in general may be more likely to succeed in implementing a new mobility. The public works and services councillor of the town of Burlada (“inner ring”) pointed out that:

“Most of the people from Ripagaina are young. These people are more aware. They ask for sustainable alternatives for moving around. As a result, we have built the first cycling lane there. It is highly used. Another factor is being new to a certain place: These young people have just arrived and haven’t got the bad habit of taking their cars everywhere. [Public works and services councillor, Burlada (“inner ring”)]

The participants agreed to emphasise that the Pamplona MA is no longer growing in an excessive or abusive way. They considered the real-estate boom to be over. Councils have set sustainable growth as one of their main targets, and their growth is stabilising. This must help to reduce the negative effects of extreme urban sprawl, even though evolving towards more compact towns remains difficult, as many prefer to live in houses or detached houses:

“We are clearly opting for a sustainable growth. In the past, we have been encouraged by the regional government to grow heavily in terms of population and construction projects. Nowadays, there are few construction projects, and many of those who build new houses are the children of our own residents. However, in some cases, small towns are interested in growing significantly because certain services are only provided if you get above a regulatory minimum of inhabitants.” [Mayor, Ezcabarte (“outer ring”)]

Towns such as Valle de Egüés claimed having carried out participatory processes: *“We do not expect much further growth. We carried out a participatory process and decided to grow moderately and sustainably. We grew more rapidly back in the past”* [Mayor, Valle de Egüés (“outer ring”). Implementing a new growth paradigm would also mean an important effort to coordinate the minimal growth needed by the population: *“There is a demand for housing for young people. The councils should show solidarity and accept to receive small proportions of newcomers. Otherwise, the regional government could impose new constructions. A more sustainable growth is possible”* [Mayor, Valle de Egüés (“outer ring”).

The coordinator of the local police of Valle de Aranguren (“inner ring”) concluded that future mobility and dispersion in peripheral areas will greatly depend on the local politicians and their decisions: *“Our growth is being stabilised. We haven’t any new big project in mind. Our sprawl has reached its peak inside the peripheral motorway’s limits. We would need to occupy the other side of the motorway, but we have no intentions of doing so”* [Coordinator of the local police, Valle de Aranguren (“inner ring”).

Even though competing with extensive automobility facilitated by motorways appears to be extremely difficult, the mayors and experts had faith on boosting other alternatives. One

of them would clearly be efficient in terms of sustainability: not needing to drive elsewhere. Several councils argued that one of their goals is to become more active towns where nearly all the needs are met (schools, shops, leisure, etc. and, ideally, finding a job too). This would entail a profound change, as many more residents would not need their cars on a daily basis. Certain key informants said that, in this sense, their towns already represent an alternative:

“Certain people who have bought subsidised flats use the main town of Sarriguren as a dormitory town, but many people have fully integrated here and take their children to our schools. Associations and traders are flourishing, and our residents are making our town active (‘haciendo pueblo’). Staying here translates into being sustainable.”
[Mayor, Valle de Egüés (“outer ring”)]

9.4.2-A greater car dependency and the alternatives to the private car

As we have seen, dispersion usually brings a greater need for driving. In addition to what has been said in the previous part, we need to take into account that many of the suburban towns have villages surrounding them that are also managed by their town councils: *“Berriáin is far more dependent on the private car than Pamplona. Moreover, car use is not equally distributed inside our locality: It appears to be inversely proportional to the size of each part. In the smallest parts, people drive just everywhere”* [Town planner, Berriáin (“outer ring”)].

As seen through the analysis of statistical data, those municipalities that lie further away tend to present a greater dependency on cars. In contrast, a few suburbs that lie closer to the city are relatively compact and less car-dependent. For example, this is the case of the inner-crown towns of Burlada and Villava, which are served by the best-performing local bus line (the number 4). This type of areas was mainly built in the sixties as a consequence of rural migrations to the surroundings of the regional capital. The public works and services councillor of Burlada explained that

“Burlada is a clear exception. We have the two best public-bus lines (4 and 7) crossing our town. This helps a lot in reducing car use and makes Burlada a place in which there is not an excessive dependency on the private car. We have good bus frequencies and we are properly connected to Pamplona and to points of interest such as the hospitals.”
[Public works and services councillor, Burlada (“inner ring”)]

At the other extreme, the mayor of Ezcabarte (a small outer-crown town) explained that *“the majority of our residents move around by car, out of necessity. Most of our villages have no public transport. This is a rural area. Many villages are small and lie far away, so providing them with collective transport is unviable”* [Mayor, Ezcabarte (“outer ring”)].

The inexistence of proper bus services that link the different suburban towns was blamed for being one of the main causes of their heavy use of cars. In certain cases, driving was not so much associated with going to the city (although the smallest towns and villages are car-dependent in this sense as well, as they have limited bus services): *“Most of those who work in the main city commute by bus. The problem is that a majority of our people work in other suburban towns and drive there”* [Valle de Aranguren (“inner ring”), Coordinator of the local police]. The lack of good connections to other peripheral towns was also underlined by other participants. According to an expert from the MCP, even if a suburban area is provided with

reliable public transport, the connections that do not link it to the city core will remain poor: *“We cannot compete with the car in what refers to cross-peripheral mobility. It is not viable to set proper public transport links among those areas that lie far away. As a result of sprawl, this kind of mobility was conceived for cars and the use of the peripheral motorway”* [Urban transport planning technician, MCP].

So, in this respect, there might be little hope for the periphery. However, another factor was mentioned: people’s mindsets and attitudes towards mobility. There are cases in which taking the car might be reasonably justified, but in many other cases it seems to be a matter of “default” (solo) car driving:

“We have a greater use of private cars than Pamplona. There are two main factors that explain this: There are no proper links to other peripheral towns, and people’s mindsets are so car-centred that they drive to destinations that are located within our town. This second issue is a cultural problem, as there are no big distances here.”
[Mayor, Huarte (“inner ring”)]

“We have too much internal traffic because of our bad habits. We are used to parking in our town, not in the peripheral polygons, even if they are located five minutes away. We waste time searching for parking spots. It is a matter of scale: While in Pamplona it wouldn’t, a five-minute walk seems to us a lot.” [Town planner, Villava (“inner ring”)]

Furthermore, once a bad mobility habit has been acquired, citizens seem to be reluctant to change it: *“Our town is split into two parts: an old one and a newer one. They have recently been linked through the construction of a 500-metre corridor of detached houses, but people keep driving from one to the other. It is an acquired negative habit”* [Town planner, Beriáin (“outer ring”)]. According to an expert interviewee, most people are “conservative” in this sense: *“People do not usually like change, as it implies the need for readjusting their mobility patterns. They feel forced to think about how to adapt to a new situation. Many prefer to avoid this inconvenience”* [Urban transport planning technician, MCP].

Apparently, the more rural a town of the metropolitan area is, the less its residents tend to use any alternative to the private car. Moreover, there might be economic or other types of interests against the idea of a profound paradigm shift. Certain people may believe that, if there was to be a change, change should consist of implementing new types of cars, such as electric cars and automated cars: *“I cannot agree with those who nowadays believe that the car is worse than other any other option, in every sense. Many of them do not even know that our public transport network is loss-making”* [President, Association of car dealers and repair shops of Navarra].

The suburban towns were working on new projects and assessing what could be done in order to progressively become less car-dependent. It is not only a matter of being “greener”, but also a matter of covering the needs of those who cannot drive, as the lack of alternatives could lead to a risk of depopulation. Offering convenient alternatives is difficult and requires awareness and determination:

“The bus performs well, but the service should be improved. We would like frequencies to be increased in rush hour and special occasions. Car use must be restricted. We have alternatives such as the bike and the e-bike. Pamplona and its periphery are convenient

for their use. In fact, we have four bikes and four e-bikes for our employees. One e-bike is for me.” [Mayor, Valle de Egüés (“outer ring”)]

As we can see, some local politicians are trying to lead by example. They are bringing new alternatives to their town councils and to their own daily lives. However, changing people’s habits and mindsets requires more than this, as the politicians said that sustainable mobility can only be implemented if the range of alternatives to the car is successfully broadened. In most cases, the towns are trying to improve their public transport and cycling infrastructure. Both options present challenges, as public transport issues must be dealt with the MCP, and bike infrastructure may be very expensive due to residential dispersion or may cause conflict with drivers. In this context, politicians sometimes fear social unrest and avoid taking certain measures:

“An example of how difficult it is to take space from the car is our project of setting bike lanes along our valley. Certain stretches had to be redesigned due to the complaints on giving priority to cyclists in some intersections. We have a lot of traffic in the main town of Sarriguren. We may have not been brave enough, as we were afraid of our people’s reaction. We had an ambitious project for the bike and the bus, but not at the cost of collapsing the traffic.” [Mayor, Valle de Egüés (“outer ring”)]

“We assessed a project of incorporating a network of cycling lanes. It was set aside, as it was too ambitious. It needed a drastic reduction in the number of parking spots and a heavy economic investment. We could not offer compensatory dissuasive parking, as our territory is limited, so we decided not to provoke social unrest by removing all those parking spots for cars.” [Public works and services councillor, Burlada (“inner ring”)]

Other projects might be less controversial but need a considerable economic investment (Valle de Egüés is one of the richest towns) that cannot be afforded by all the councils: “*We are building an internal bike-lane circuit. This circuit will connect our main town (first phase) and villages (second phase), and we will also have a shared e-bike service in proportion to the population of each area*” [Mayor, Valle de Egüés (“outer ring”)]. Cheaper options were also being assessed: “*We are opting for 30 km/h bike-friendly roads (‘ciclocalles’). We are waiting for springtime for painting the roads, as it is a cheap and practical solution. The fact that most of our roads are narrow and one-way helps to implement this. It won’t be applied to the main roads*” [Public works and services councillor, Burlada (“inner ring”)].

Restructuring and upgrading the existing infrastructure may also be a viable option: “*For the smallest villages, our only alternative to driving cars is our network of walking and cycling pathways. We upgraded the network. We hired an expert company to assess us. The network is not only used in a recreational way. It can also be an alternative for daily mobility*” [Mayor, Ezcabarte (“outer ring”)]. In this context, collaborating with other councils would be of great value: “*We are assessing a collaboration with the city and other towns for creating a unified bikesharing system. The system has had no success, so far, because it doesn’t take Pamplona as a metropolitan area. It can work a lot better than having our own system, as our town is small*” [Public works and services councillor, Burlada (“inner ring”)].

This need for collaboration shows the difficulty of implementing the mobility transition in a metropolitan area that is politically divided in numerous councils (with their respective

budgets and political interests). And, even if there was enough political determination and budget, other obstacles could interfere: *“We connected a road with the main city and made it bike-friendly in both sides, but we have had no success in linking our cycling-lane networks. It sometimes requires the expropriation of lands, or a long and burdensome process”* [Public works and services councillor, Burlada (“inner ring”)].

Finally, the expert participants also made emphasis in their narratives on the difficulty of managing mobility in small villages. Efficiently linking them to their main towns (from where they have better connections to the city) is a great challenge. Most of the alternatives to the car are extremely expensive and may be inefficient: *“We have a bus service five times a day. It links Noáin with the small villages that lie around it. It had better frequencies in the past, but it didn’t have enough users”* [Environmental issues technician, Noáin (“outer ring”)]. For example, certain councils are opting for offering on-demand taxi services in their villages. Some councils already offer this service, and other councils are waiting for implementing it: *“This service would consist of on-demand taxis that would take people to the bus stops that connect our town with Pamplona, or to our own points of interest such as the local doctor’s. It would be a subsidised service that would help specific groups such as the elderly”* [Mayor, Ezcabarte (“outer ring”)].

9.4.3-The redesign of the city core and local politics

Suburban dwellers were expected to have been affected by the measures that had been taken in the city core. However, despite some exceptions, most of the interviewees argued that their towns had not nearly been affected by the “Amabilización” Plan. The few councils that reported having been affected were usually the ones that lie further away and are more car-dependent. Public transport links as an alternative to taking the car to the city core were seen as a key factor: *“I believe that the changes haven’t nearly affected our people. Most of them drove to nearby areas like [‘inner-ring’ town] and [‘uptown’ area] and then took a bus to the city core”* [Mayor, Ezcabarte (“outer ring”)]. According to the key informants, many residents took the bus to go to the city core but drove to other peripheral towns. For them, the redesign of the core of Pamplona-Iruña had not meant an important change of habits. However, some exceptions were reported: *“Most of our citizens go to Pamplona using their private cars, so the measures make it harder for them to get to the city core”* [Town planner, Beriáin (“outer ring”)].

Even though certain drivers might have started to avoid going to the city core because of the new (higher) prices of parking there, they still have the option of paying extra for parking underground right in the city core: *“In my view, the changes haven’t been as radical as some people are saying (...) Car drivers can still access several underground parking lots in the city centre”* [Environmental issues technician, Noáin (“outer ring”)]. This tendency to exaggerate those changes that directly affect the drivers not living in the old town was also reported by the mayor of Huarte (“inner ring”): *“People tend to exaggerate the negative effects of those transformations that affect them. It happens here in our town as well: People come to angrily*

complain, but I can prove that things have not been done so wrongly and that they are under regulatory control” [Mayor, Huarte (“inner ring”).

Last but not least, certain interviewees regretted certain negative effects of the redesign due to what they considered to be an excessive complexity and a lack of clear messages for all the metropolitan residents, as the redesign does not only affect inner-city residents: *“Due to the ‘Amabilización’, certain drivers might avoid going to the city centre. There are so many changes that people get confused. It may be easy for the inner-city residents, but others can be overwhelmed. Anyway, we may get used to it and even like it in the long term”* [President, Association of car dealers and repair shops of Navarra].

Figure 52. The city council created a free-of-charge (bus included) dissuasive parking space



Source: *Diario de Navarra* (Front cover: 24/4/2018)

As we have seen, mobility issues are a very common source of social and political debate in the regional capital city. The key informants were asked on whether this was also the case in their suburban towns, even though it would certainly not have such a great impact on the regional media. When analysing what happened there from a certain distance, town mayors and experts on mobility considered the political atmosphere to be too tense in Pamplona-Iruña: *“There haven’t been radical changes, but the debate on the ‘Amabilización’ has been used as a political weapon. Accessing the city centre with a car was already quite restricted. It is a pity that mobility is politicised”* [Environmental issues technician, Noáin (“outer ring”). These views were shared by the mayor of Huarte: *“Most of the political groups want cities to become more walkable and bike-friendly. Whoever are in government chalk up a success as theirs, if a measure works. Chalking up makes the opposition angry. All these tensions and agitation can be seen in the media, not in the streets”* [Mayor, Huarte (“inner ring”).

All the participants believed that managing mobility issues in the suburban areas is much less controversial. Political consensus is more commonly achieved than in the city and social unrest is minimal, if there is any. Their challenges seem to be more difficult to face, but there is more political and social cohesion, and mobility is not constantly being used as a political weapon: *“In Noáin, concerning mobility, there is widespread consensus at the political level.*

The previous governments worked on mobility measures and sustainability” [Environmental issues technician, Noáin (“outer ring”)]. Less controversy appears to be linked to managing mobility in the suburbs: *“We haven’t had any social unrest due to the measures taken. Our measures have not the same impact as the ones taken in the city, so the atmosphere is much calmer here”* [Environmental issues technician, Valle de Aranguren (“inner ring”)].

Furthermore, the pressure put on politicians is not the same as in Pamplona-Iruña, and collaboration between the local governments and opposition parties is frequent. Similar to what happened in the city, certain measures were in an experimental phase, as explained by the town planner of Villava (“inner ring”): *“One of the most difficult tasks is to successfully calculate how to gradually implement a measure. Being brave does not mean being radical. Reversibility is very important, as spending too much public money on a measure that fails would be a mistake”* [Town planner, Villava (“inner ring”)].

According to the interviewees, one of the main obstacles is the gap between what people say and what they actually do. If asked, both politicians and many regular citizens would say that, theoretically, they are for the transition towards a sustainable mobility. Nevertheless, politicians are sometimes afraid of implementing measures that could cause popular unrest, as many people are not willing to reduce their use of private cars:

“Sustainable mobility is an idea against which no one can go but translating this concept into real actions and specific measures is not easy at all. Many citizens say that they are for sustainable mobility but, if they are drivers, they ask us not to be negatively affected by any of the measures taken.” [Mayor, Villava (“inner ring”)]

“Politicians have to be brave enough to remove privileges from the private car and cope with their critics. There is no other way towards change. Drivers are always reluctant to give ground to other alternatives, such as the bus and the bicycle.”
[Mayor, Valle de Egüés (“outer ring”)]

Although political consensus is more easily achieved in these peripheral towns, trying to coordinate them seems to be a great challenge. Furthermore, some councils are divided in even smaller political entities: *“Our town council has no absolute power over the whole area of Ezcabarte. There are village councils (‘concejos’) that also have competences and can take decisions. This makes everything very complex”* [Mayor, Ezcabarte (“outer ring”)]. Therefore, the urban transport area director of the MCP regretted that

“our metropolitan area has an added problem that makes everything harder: There are plenty of councils, and there is no unified government. Numerous councils might make decisions, and the measures they take can depend on their specific needs and economic interests. We have a problem of governance. Implementing measures in the periphery is really tough.” [Urban transport area director, MCP]

Coordinating these entities is extremely hard, so the role of the MCP is expected to be of key importance, as this entity transcends the territorial limits of the different town councils.

9.4.4-Coercing and/or trying to persuade people? Expectations for the future

Change is not only a matter of offering people alternatives to their private cars and better infrastructure for walking, cycling, etc. Change cannot be achieved without modifying habits and making a more sustainable paradigm socially accepted. The participants were asked on whether car use should be restricted or trying to convince people is a better solution. All the interviewees agreed on one thing: A “greener” model will probably be accepted once it has been imposed, but not before this happens. Like the ban on smoking in public places, which was controversial at first and then gladly incorporated as a healthier habit, making mobility more sustainable was expected to have a similar effect on people: *“Changing habits may be the hardest task. Deploying good infrastructure is relevant too, but of secondary importance. The public administrations must push people towards change”* [Town planner, Villava (“inner ring”)]. The interviewees claimed that citizens generally lack awareness on the importance of sustainability: *“There is usually a small minority of conscious individuals and a majority of people who need to be imposed restrictions and penalties”* [Environmental issues technician, Valle de Aranguren (“inner ring”)]. In the same vein, the town planner of Beriáin stated that *“many people would say that they back ‘green mobility’, but they would not like to leave the car at home in nearly any occasion. I agree with those who say that change must be imposed. Many people only react to dissuasive and coercive measures”* [Town planner, Beriáin (“outer ring”)].

According to the interviewees, change must be imposed by the administrations first, and after that people will probably accept it and even like it. A combination of restrictions on car use, offering reliable alternatives and campaigning for sustainable mobility would probably help to reduce car dependency in the periphery: *“Our mobility will change very slowly. I am of the opinion that change won’t come unless strict restrictions on car use are implemented”* [Environmental issues technician, Noáin (“outer ring”)].

However, the narratives of those pertaining to the car industry may collide with this “war on the car”. The president of the local car dealers was not happy with the idea of restricting the use of cars further, as it could have negative effects on spheres such as the economy:

“We should not forget that Volkswagen’s factory is key to our economy (...) Nowadays, the reputation of the car is constantly being attacked in our society. We generally focus on pollution, but, for me, automobiles mean freedom. A person who owns a car is free. Public transport is a good thing, but it demands too much public investment and limits our freedom.” [President, Association of car dealers and repair shops of Navarra]

Finally, the mayors and the rest of the key informants shared their views on how mobility will probably evolve in these suburban areas. Change was expected to be implemented very slowly, and the difficulty to coordinate the metropolitan area was remarked again:

“It is difficult to coordinate all these changes, since every council has its own challenges. For instance, Barañáin is too compact for setting bike lines and Burlada has a very steep hill linking it to Pamplona that discourages cycling. Noáin is quite far away. Reading the ‘PMUS’ agreements is nice, but putting them into practice is tougher. The entities have their own ideologies, budgets and urban planning projects.”
[Coordinator of the local police, Valle de Aranguren (“inner ring”)]

The coordinating role of the MCP and the new Sustainable Urban Mobility Plan were seen as very important for the future metropolitan mobility: *“We will work in coordination with the MCP and in close contact with the neighbouring town councils (...) Any drastic measure will be discussed with the MCP”* [Mayor, Huarte (“inner ring”)]. Apparently, it will all depend on several factors, such as the towns’ budgets, geographic contexts and preferences:

“Our intention is to keep pedestrianising the town core, which you can cross on foot in 5 minutes. There is a commercial road with too much traffic where we would also like to act, but we need to think of a plan and offer alternatives for parking cars (...) We are planning to reduce from two to one the number of lanes in certain avenues, so that the habit of using them to cross our town is discouraged.” [Mayor, Villava (“inner ring”)]

Regarding the possibility of adopting electric vehicles, there was no absolute consensus. On the one hand, there was consensus on progressively incorporating e-bikes. On the other hand, encouraging the use of private electric cars did not lead to a clear consensus:

“From my point of view, we don’t have to be too radical. Change must come little by little. Drastic measures would be counterproductive. Small steps work better. We are going to set two EV charging stations. We have bought a hybrid car for the local police and we are going to buy a fully-electric car.” [Mayor, Valle de Egüés (“outer ring”)]

“Our mayor opposes the proliferation of electric cars. He prefers to reduce the number of cars. We have no intention of setting any charging station. In my view, they have put too much emphasis on electric cars in the ‘PMUS’. Like any other car, they invade public spaces and cause accidents. Besides, not all our energy comes from ‘green’ sources. E-bikes are a better alternative.” [Environmental issues technician, Noáin (“outer ring”)]

The stakeholders highlighted that changing people’s habits will be the greatest challenge. Change was conceived more as a social change than as an upgrade in infrastructure. School education on mobility habits was also mentioned as a possibility that should be taken into account: *“One of the things that I have always missed is social education on mobility issues. Schools and public entities haven’t taken it seriously. Kids could assimilate the new concepts as a natural thing”* [Mayor, Huarte (“inner ring”)].

Furthermore, some cheap and easy-to-be-implemented measures were mentioned. For example, the mayor of Huarte (“inner ring”) explained that

“we have planned safe paths for those kids who go to school. We are also going to put boards in the streets showing how long it takes to walk somewhere. We believe that visual tips can promote change. Besides, we have many narrow streets in which building bike lanes wouldn’t be viable, but cars and bicycles could cohabit in the same lanes.” [Mayor, Huarte (“inner ring”)]

Other measures that were being assessed are those that would make it harder to cross these towns by car with the intention of reaching a neighbouring town. Mayors and experts talked on their efforts to divert this kind of traffic to the peripheral motorway, so that their internal traffic is reduced and slowed down: *“We are also planning to slow down the traffic inside Burlada. We don’t want to be crossed for getting from Pamplona to towns like Villava and Huarte”* [Public works and services councillor, Burlada (“inner ring”)].

Moreover, participatory processes were expected to play an important role in managing the transition towards a new mobility model. Many citizens are eager to have an influence on the decisions taken, so not only politicians were expected to shape the future: *“People want to be taken into account, more than ever before, and they want to be listened to. Their mindsets will adapt to a new paradigm (...) No one dares to predict how all this will exactly evolve. We are living a decisive time”* [Mayor, Ezcabarte (“outer ring”).]

Last but not least, the decisions on how to manage urban sprawl were considered as vital. These decisions will have an impact on mobility, as the more dispersed an area will be in the future, the less chances its residents will probably have of opting for a “green mobility”:

“Mobility will depend a lot on how the peripheral residential areas will grow. Between the years 2000 and 2008, there was a huge building boom in our metropolitan area. We will see whether the trend of growing slower will also mean growing more compact.” [Urban transport area director, MCP]

“We are a lot more rural than other towns that are a lot bigger, like Valle de Egüés. This difference in size means that our projects are less sophisticated and less ambitious than theirs. I guess that our on-demand taxi service will work, but not other alternatives like cycling (...) Our villages are very small and distant from each other, so the distances are too big for bikes and even for e-bikes.” [Mayor, Ezcabarte (“outer ring”)]

All in all, a stabilisation of the apparently ever-growing use of cars in the peripheral areas was expected. Some stakeholders expected a slight inversion, mainly in those areas that are not too rural and do not rely too much on commuting to other suburban towns. In any case, change will depend on multiple stakeholders, the residents and factors such as the adoption of new technologies. No actor appears to have absolute control over mobility issues, so their coordination (or lack of coordination) will shape the future of the metropolitan mobility:

“The ‘PMUS’ was born with the intention of bringing consensus in order to manage our mobility in a more efficient way, as many actors are involved in the mobility transition.” [Urban transport area director, MCP]

“It is very difficult to make predictions. Young ‘urbanites’ are becoming less interested in owning cars and getting driving licenses. In a few years’ time, we will have the first fully-automated vehicles in our streets. We will see whether they become widespread. Future cars will probably be electric, noise-free and autonomous. They could be shared. We should back their social appropriation.” [President, Association of car dealers and repair shops of Navarra]

9.4-DISCUSSION GROUP WITH SUBURBAN RESIDENTS

A discussion group with suburban residents was organised with the collaboration of the town council of Noáin (outer crown). They offered the opportunity to gather residents who would talk on how they perceived mobility issues. The local environmental issues technician hosted the meeting. Any adult resident who was interested in the topic was welcome. These participants tended to drive more regularly (on a daily basis) and have more cars (nearly two per household, on average) in comparison with the inner-city discussion group participants (who tended to drive occasionally and have one car per household). This seems to be logical,

as life in an “outer-ring” town was expected to be more car-oriented than in the inner city, as reflected by the data provided by the MCP.

The participants argued that there were several factors that pushed them to depend on cars and that reverting this situation would be difficult. For example, one participant claimed that *“it’s sometimes a matter of feeling safer. At night, you feel safer in your car than walking alone in the streets”* [Female, 47, admin. assistant]. Another participant regretted that the public bus was too expensive for big families: *“Taking the bus as an alternative to the private car is expensive for us. We have children. Paying tickets for all of us makes the bus not worth it”* [Female, 40, technician]. General matters such as the built environment and the weather were also found to have an important influence on their mobility habits:

“I live in an area where there are no shops. I take the car for going everywhere, even to buy bread. Cycling might be faster in certain cases, but some of us are lazy and take the car instead. Sometimes, it is more about laziness than about saving time.”
[Male, 41, operator]

“Taking the car means saving time, as you are not willing to walk to the doctor’s for 10 minutes if you have many other things to do. Besides, we don’t let our children walk by themselves, and we only like walking in summer. We prefer to avoid walking in winter.”
[Female, 43, hotel manager]

Their built environment (low-density constructions without shops/commercial premises in certain cases) is a key factor that was identified. Car dependency was attributed to several other factors too, such as the weather, a fear of walking alone at night, laziness and the high cost of public transport for big families. Linking this with the political sphere and to what the local administrations should do for reverting the situation was also part of their discourse:

“I believe that the economic circumstances have played a decisive role in making the “Amabilización” in Pamplona possible. A crisis is the perfect time for restricting car use. Families struggle to afford cars. In my view, managing mobility is the toughest task for a government. Everyone is concerned about mobility and some citizens might feel that their freedom is being limited by the restrictions to car use.” [Male, 46, politician]

9.5-CONCLUSIONS: THE DIFFICULTY OF IMPLEMENTING CHANGE IN SUBURBAN AREAS

The mobility transition is having a significant impact not only on the main city but also on the peri-urban areas that surround it, although the greatest transformations are taking place in the city core. The twentieth-century mobility model is being challenged in the Pamplona Metropolitan Area. The Pamplona MA is trying to progressively adopt a sustainable model, and its residents are being encouraged to modify their habits and lifestyles. Nevertheless, a lower population density and the need for coordinating numerous councils generally make the adoption of sustainable mobility in the suburbs technically and socially challenging.

Urban and rural resemble a continuum in the Pamplona MA, as the city and those hybrid peri-urban areas that surround it melt and have blurred boundaries. Three different regions have been defined in relation to their location with respect to the peripheral motorway. This categorisation helps to observe certain trends such as the higher dependency on cars in the

“outer ring”. Upper-class suburbs tend to concentrate further away, whereas poorer people tend to settle in towns that lie next to the city. The first might probably seek the opportunity to live in houses and semi-detached houses (and perhaps to “secede” from the rest), while the latter probably seek to live in relatively closeby locations (whether it is in flats or houses). However, there are no “pure” models and each specific case may be determined by several factors. Urban sprawl has a significant influence on mobility and tackling the excessive need for driving cars appears to be a difficult task. The interviewees argued that public transport is efficient enough for connecting the suburban towns to the city core, but inter-peripheral journeys appear to be extremely dependent on private automobiles.

Some of the most important stakeholders in play participated in the in-depth interviews, which were supplemented by a discussion group and a quantitative analysis with data available at the moment. The combination of qualitative and quantitative methods made it possible to better understand the challenges faced in the periphery. Both the town mayors and the experts on mobility argued that political consensus is more easily achieved in the peripheral towns than in the regional capital city and that the measures taken there usually cause just a slight social unrest, if any. This was said to be one of their main advantages.

The statistical characterisation of the “three metropolitan areas” led to concluding that, while the city of Pamplona-Iruña is (on average) relatively close to reaching the modal share objectives set by the new SUMP, the “inner ring” and the “outer ring” are (on average) quite far and very far (respectively) from reaching them. The modal share averages vary in a logical way: When the distances from the city increase, car use tends to grow, while walking tends to decrease. Car dependency in an “outer-ring” suburban town (called Noáin) was attributed to numerous factors by those who participated in the discussion group: laziness, low-density constructions without services and shops, the weather, etc.

The views and narratives of the key stakeholders highlighted urban sprawl as one of the main causes that lead to an excessive car dependency. Most of the councils were said to be now opting for a minimal and sustainable growth. Nevertheless, the idealisation of living in a suburban house with a garden is present in many people’s mindsets, so many reject to live in flats in the periphery. In this context, the urban transport area director of the MCP argued that the battle to adopt a sustainable mobility paradigm would be lost beforehand if they keep building low-density archipelagos in order to accommodate this desire.

Even though competing with private cars and motorways seems to be extremely difficult, the mayors and experts had faith on boosting other alternatives. One of them would be very efficient in terms of sustainable mobility: not needing to drive elsewhere. The participants said that several councils are trying to become more active towns where nearly all the needs are covered (schools, shops, leisure activities, or even finding a job). Upgrades in cycling and public transport infrastructure were being assessed or implemented. In small rural villages, the public bus seems to be an unviable option, so on-demand taxi services subsidised by the town councils were said to be a better option.

These efforts for changing the twentieth-century car-based mobility paradigm are being led by experts and politicians, but change needs to be incorporated into people’s mindsets.

Sustainable mobility cannot be appropriated without modifying habits and without change being socially accepted. The interviewees agreed on the need for imposing restrictions on car use and enhancing alternative options. Making mobility more sustainable was expected to be socially accepted once change has been imposed, but not before, just like the ban on smoking in public spaces was rejected at first and then gladly accepted as a healthier habit.

The metropolitan mobility is characterised by the interdependence of the city and town councils. The difficulty of coordinating the measures taken by the numerous councils (which have their respective budgets and priorities) is obvious. The role of the MCP is expected to be of great importance in this sense, as they are a metropolitan entity that has competences over mobility in the different territories. This is why the MCP was chosen for the elaboration of the new metropolitan mobility plan (the “PMUS”).

Change was conceived as a social transformation rather than an upgrade in infrastructure alone. Participatory processes were expected to play a key role in the transition towards a new mobility. All in all, a stabilisation of the apparently ever-growing use of the private car in peripheral areas was expected. Certain experts even expected a slight inversion in those areas that are not too rural and isolated. Success will depend on many stakeholders and the social appropriation of the new mobility paradigm.

10 - HOME-WORK MOBILITY AND SUSTAINABILITY. TRYING TO IMPLEMENT CHANGE IN A LOCAL SUBURBAN COMPANY

10.1-CONTEXTUALISATION OF THE CASE STUDY

In 2018, a collaboration with a local company located in an industrial park of the suburbs of the Pamplona Metropolitan Area was established in order to carry out a survey on home-work mobility. This initiative was backed by the workers' committee, which would be sent a final report in which they would find an overview of the results and a set of guidelines for trying to implement a more sustainable mobility. Other matters were also involved in the analysis: For example, the image of this industrial park, as it hosts several companies that are devoted to the development of renewable sources of energy. These circumstances made the initiative an applied case study. We could observe how the shift towards a sustainable mobility model creates tensions (certain people feeling left behind, fears of complaints, etc.) and gives rise to questions on how the transition should be managed.

It was not the first time that this company, which has approximately 350 employees, had conducted a study on mobility issues, but this was the most ambitious one, as it did not only assess the situation but also the likeliness of bringing change to their extremely car-oriented home-work mobility. This dependency on cars was leading to negative impacts, such as the saturation of parking spaces. I counted on the help and the advice of professor Vidal Díaz de Rada, from the Department of Sociology of the Public University of Navarra. The company's IT (Information Technology) workers launched the online version of the survey. Due to a lack of agreement with the company board on what questions would be posed and what other questions would be left out, it was the workers' committee who led this collaboration and offered their assistance. The committee also helped in finding volunteers for carrying out a set of supplementary in-depth interviews (which were conducted after the survey with the aim of better understanding the motivations behind the choices made).

As mentioned before, the online survey was conducted in a company that is located next to other companies in a suburban industrial park. These companies had already participated in previous studies on mobility. My research work was meant to monitor the progress made (if any) and, most importantly, propose a set of initiatives for helping to change the workers' mobility patterns. Furthermore, the context of that specific moment was ideal for such an analysis: The building where the company is based (shared with other entities) was going to host around 300 new workers. This would not directly affect the company's underground parking (as it would not be shared), but it meant a threat of collapsing the surrounding public parking spaces.

The direction board was supposed to be eager to participate in a research study aimed at shedding light on mobility issues and helping to reduce the impact of parking problems. However, the management board denied the option of posing questions on several matters that were considered to be relevant (such as telework, incentives for workers who commute

in alternative ways, wellbeing experienced when commuting in one way or the other, etc.). Several attempts to reach an agreement were made, but the board apparently kept sticking to the “status quo” and argued that they did not want to raise complaints and conflicts, or unrealistic expectations on what would be implemented afterwards.

Even though the board offered to take into consideration a pair of initiatives (reserving parking spaces for those sharing a car occupied by at least three employees and installing charging points for electric cars and e-bikes), the survey was finally conducted with the help of the workers’ committee. Together with the committee, we believed that “inaction” could also have its costs (not only complaints from those who desire a “greener” mobility, but also from those affected from the negative effects of the potential collapse of traffic flows and parking spaces). Furthermore, even if the measures could raise some popular unrest due to the change of habits that they might imply, we considered that the staff would accept and even like them if they proved successful.

Therefore, an online survey that was backed by the workers’ committee was launched. It was meant to shed light on how home-work mobility was evolving and on what was being demanded for making change possible. The final version of the survey had 32 questions on mobility patterns and solo driving and willingness to change, plus 6 profile questions and an open section for comments. The survey was sent to the workers and was available from the 24th of May to the 13th of June (both days included). After having sent a few reminders calling for participation, the workers’ committee decided that the online survey should be closed. The proportion of potential respondents who filled in the survey was 48% (find more details in chapter 3 on the methodology), so absolute numbers (when they are used instead of percentages) stand for approximately half of the total number of employees.

The initial hypothesis was that solo car driving (which refers here to those who usually or even always commute alone using their cars) is a very frequent habit among the company workers that must be tackled because of two main reasons: the problems with traffic and parking space, and its negative effects on health issues and the environment.

10.2- HOME-WORK MOBILITY PATTERNS

Gathering data on this issue was meant to lead to drawing conclusions on matters such as the time of the day when the traffic around the company building is dense or what type of commutes (taking into account the distances covered, for example) are compatible with sustainable and healthy alternatives such as the bike. The first four questions were devoted to entry and leaving times. Fridays have been separated from the rest of the working days, as Fridays have a specific timetable (early leave). The average time spent at the workplace was 7 hours and 43 minutes, from Mondays to Thursdays, and 6 hours and 11 minutes on Fridays.

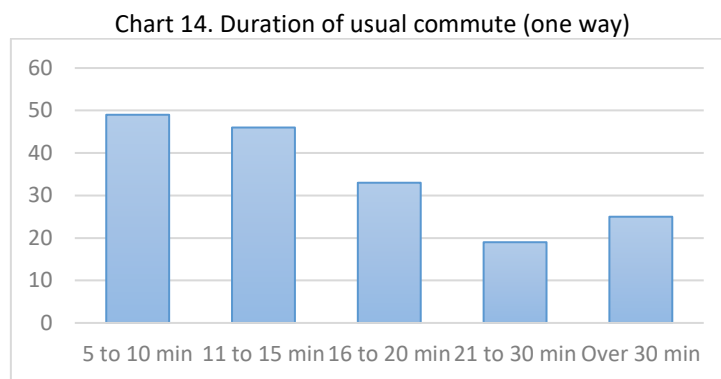
Entry times were found to be quite similar during the whole week. In this sense, Fridays resembled the rest of the days. Most of the workers started before 8:15 in the morning. The company staff had variable entry times, being the time frame 8:00 to 8:14 the most popular

one. A peak was observed at 8:00. It is probably a moment of dense traffic in the surrounding areas. This may be tackled if a more balanced distribution is achieved. Just before 8:00, there was another significant flow of workers, mainly from 7:40 to 7:59. Only a few people arrived before 7:40. The remaining time frames were distributed in a quite balanced way, so this probably results in a much calmer traffic. At the same time, it is likely that those who arrive after 8:15 find it difficult to find empty parking spots.

Concerning leaving times, as already explained, Fridays have been analysed separately. From Mondays to Thursdays, although many workers left before 16:30, there was a peak at 16:30. The other frames were much less common, so achieving a more balanced distribution of leaving times could be better for traffic flows. The greatest peak took place on Fridays: leaving time at 14:30. A total of 62 respondents claimed that they usually leave at this time, presumably causing traffic congestion. Later, between 15:00 and 15:29, there was another important flow of people, as many others left at 15:00.

Two aspects that were also examined are the duration and the distance covered when travelling from home to work. If these two variables are analysed together with the different options for commuting, we can see the links between mode of transport, distance and time (as we will later see, saving time was one of the top priorities for many employees).

Most of the participants devoted a reasonable amount of time to their daily commute (if the Pamplona MA is taken as a metropolitan area of intermediate size). However, compared to larger cities, the amount of time spent commuting can be interpreted as relatively small. Over half of the respondents commuted for 15 minutes (the most repeated answer) or less. In spite of that, the resulting average is 20 minutes, due to the circumstances of those who need to travel for longer than half an hour each way (see chart 14).

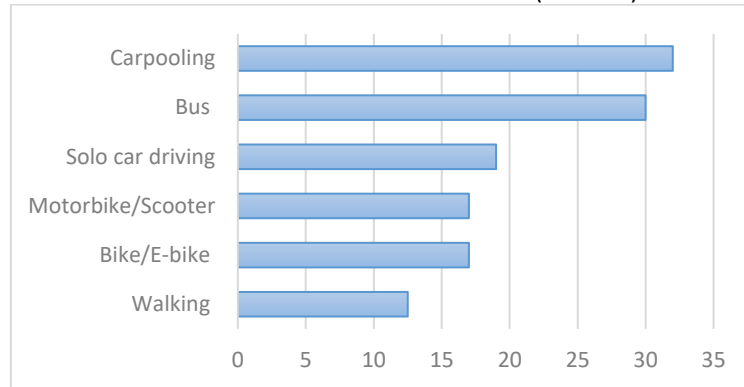


Source: Own elaboration (absolute numbers)

Concerning the distance covered, the most frequent frame reported by the participants was 5.1 to 10 kilometres. 0 to 3 kilometres was the second most frequent, followed by 3.1 to 5 kilometres. Distances of over 10 kilometres were less common. However, the resulting average is 14 kilometres (13.7).

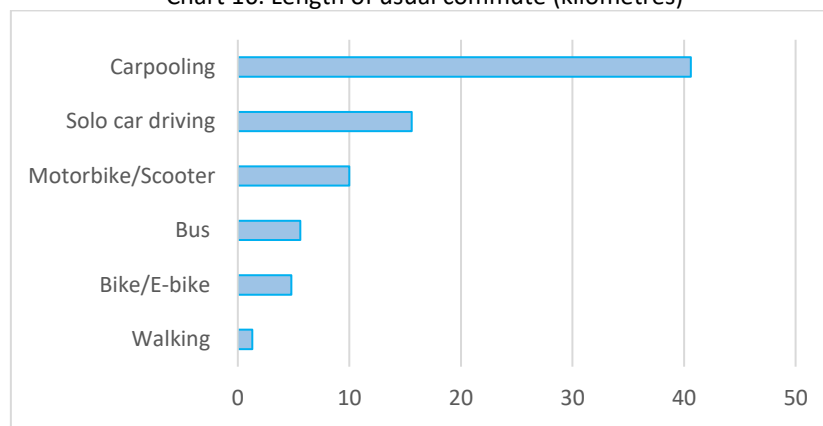
The average time and distance concerning each mobility option could be compared (see charts 15 and 16). This could help in understanding the type of use that each mode is usually chosen for.

Chart 15. Duration of usual commute (minutes)



Source: Own elaboration (absolute numbers)

Chart 16. Length of usual commute (kilometres)



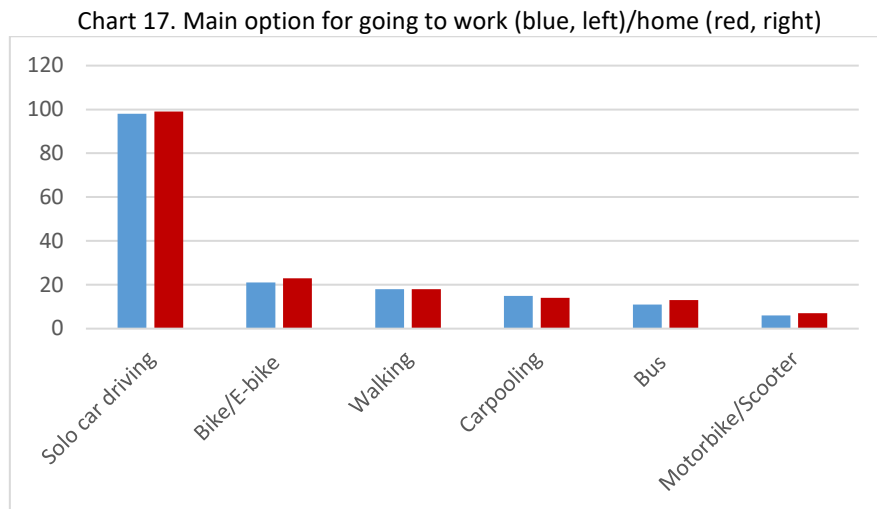
Source: Own elaboration (absolute numbers)

On basis of the information gathered, we can identify certain trends. First, sharing rides with colleagues worked better for long-distance commutes (and, therefore, long commutes in terms of time). Second, solo car driving (the most common option) presented averages of 19 minutes and 15.6 kms. Third, the bus is a very slow option that needed an average of 30 minutes for covering 5.6 kms. Fourth, bikes and motorbikes were used for similar commute times (17 minutes) but different distances (4.8 and 10 kms, respectively). Finally, walking was mainly chosen for the shortest distances (1.3 kms, covered in 12.5 minutes). All these averages have been calculated with the data provided by only those who opted for a specific option on a regular basis (at least three times a week in both categories: there and back).

As we can observe in chart 17, solo car driving was, by far, the most represented choice for commuting. It is clearly the king of home-work mobility. Driving alone to the workplace was the hegemonic option, while the rest of the options competed for roles of secondary importance. Over half of the survey respondents (57%) drove alone both ways on a regular basis (three days a week or more) and nearly half of the surveyed drove alone to work every day. They also went back home driving alone. This is a worrying fact, as it has a direct impact on the saturation of parking spaces and the overall sustainability of home-work mobility.

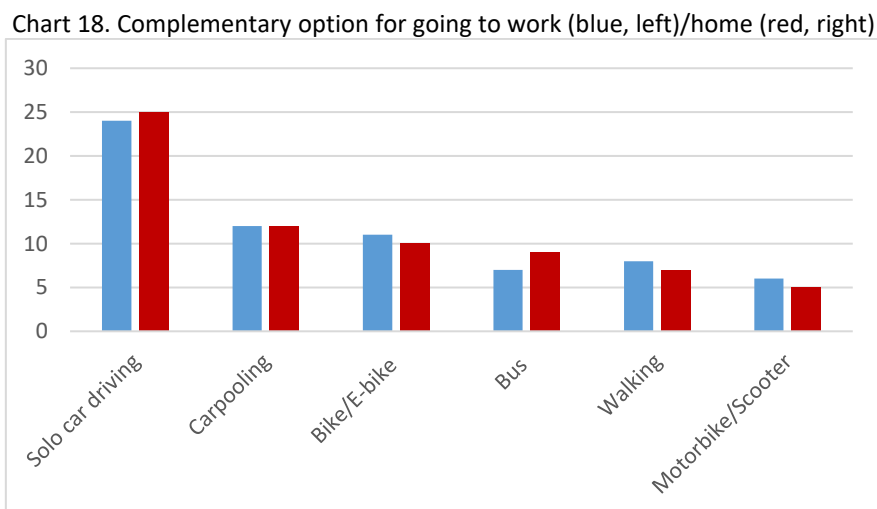
Concerning the alternatives, cycling was in the second position (e-bikes in a few cases), and motorbikes/scooters in the last position. Even though it could be seen as a flexible and

space-saving mode, the city motorbike was not popular. This might be influenced by the bad local weather and, perhaps, a perceived lack of safety in comparison with the car.



Source: Own elaboration (absolute numbers)

Solo car driving was not only the most common main mode but also the most frequent “complementary option” (used only once or twice a week). As a complement, sharing rides was in the second position (see chart 18).

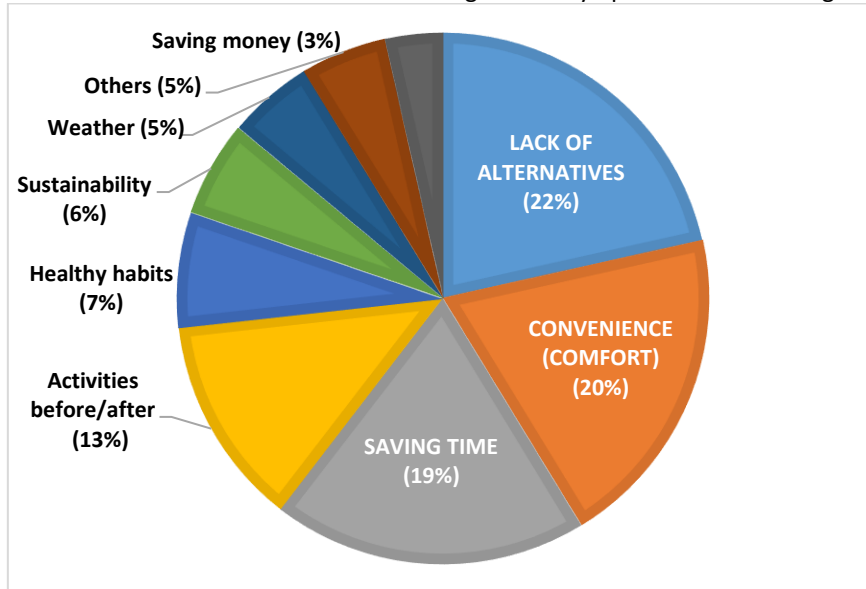


Source: Own elaboration (absolute numbers)

As shown in chart 19, three motivations were mentioned as the most important ones for choosing one option or the other: having no alternatives, comfort or convenience and saving time. While the first motivaton is easily justifiable, it is interesting to see that the answers convenience and saving time are much more represented than others such as saving money. This probably means that reducing the cost of poorly-valued alternatives would not mean a significant increase in their use. At the same time, it may be concluded that making solo car driving more expensive (by charging for parking, for example) would not be an ideal solution to the problem, as many workers would probably be willing to pay extra for the sake of their top priorities.

These highly-valued main priorities and the weight of doing activities before and/or after work are key to explaining the hegemonic role of solo driving. While awareness about health and sustainability issues were relegated to positions of secondary importance, it seems that commuting in a convenient way that saves time and makes it possible to engage in activities before and after work was mostly attributed to driving alone.

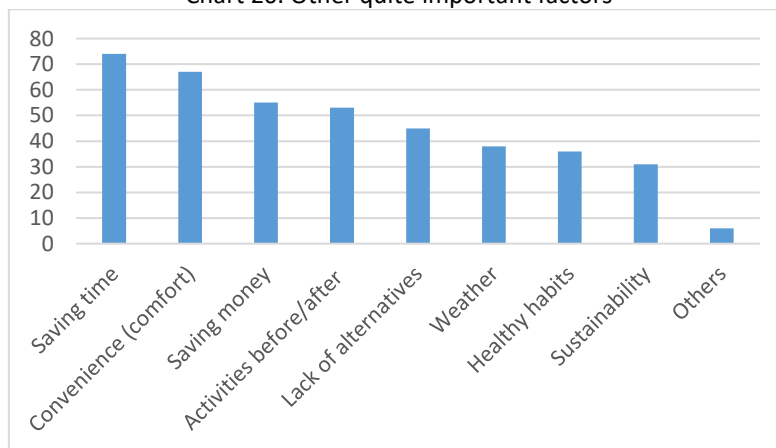
Chart 19. Main motivation for choosing a mobility option for commuting



Source: Own elaboration

When questioned on quite important factors that were also taken into consideration, the respondents made emphasis on comfort and saving time too, but not so much on the lack of alternatives (see chart 20). Saving money and weather conditions gained weight, whereas sustainability and healthy habits remained in positions of secondary importance.

Chart 20. Other quite important factors



Source: Own elaboration (absolute numbers)

It seems logical that many employees highly valued fast and comfortable options, but, at the same time, healthy habits and environmental concerns were nearly left aside. They were seen as secondary factors that did not have much influence on the decisions made.

Finally, the workers were questioned on whether they modified their mobility patterns in accordance with the weather conditions. One in every five claimed that they did so. This means that car use increases with bad weather conditions. Other options, such as walking and cycling, gain weight when the weather is fine. Switching to “greener” options with good weather can perhaps be encouraged further. Achieving a higher percentage than 20% would be more ideal, as 80% of the respondents stated that they did not modify their choices.

After having analysed this initial part of the online survey, we could better understand the choices made by the employees. We could conclude that popularising the use of buses for home-work commuting would be quite hard, as taking a bus means longer commutes, and saving time is one of the top priorities. Even if bus prices were lowered, it would not probably attract people. Cycling is another option that cannot compete with the private car for its hegemonic position. It might not be so fast, it makes it harder to carry things for extra activities and to travel longer distances, and it is not comfortable when the weather is rough. For those who live from five to ten kilometres away, the bike can be an alternative, but a demanding one in terms of the effort and the time needed. However, nearly half of the participant staff lived less than five kilometres away, so there clearly is some potential for an increase in bike use (which had commuting averages of 4.8 kilometres and 17 minutes). Diversifying and improving the alternative options probably is the key to achieving change, as (apparently) none of them can compete alone with the private car for its hegemonic role.

10.3-SOLO CAR DRIVING AND PREDISPOSITION TO CHANGE

Solo car driving as the hegemonic commuting option and the employees’ predisposition to change this situation and adopt a more balanced mobility were examined in the survey. This aspect was conceived as a key element of the research work, as a description of the circumstances alone would lack the intention of reverting the situation. It was one of the fundamental novelties in comparison with the previous studies made in this local company, as they did not assess the workers’ attitudes towards change. Thus, this part of the survey was probably the most important one.

The information obtained was especially relevant, as it could anticipate the success (or the failure) of some of the measures that could be implemented. Moreover, it could also determine what type of measures would raise debate or would be rejected by the workers.

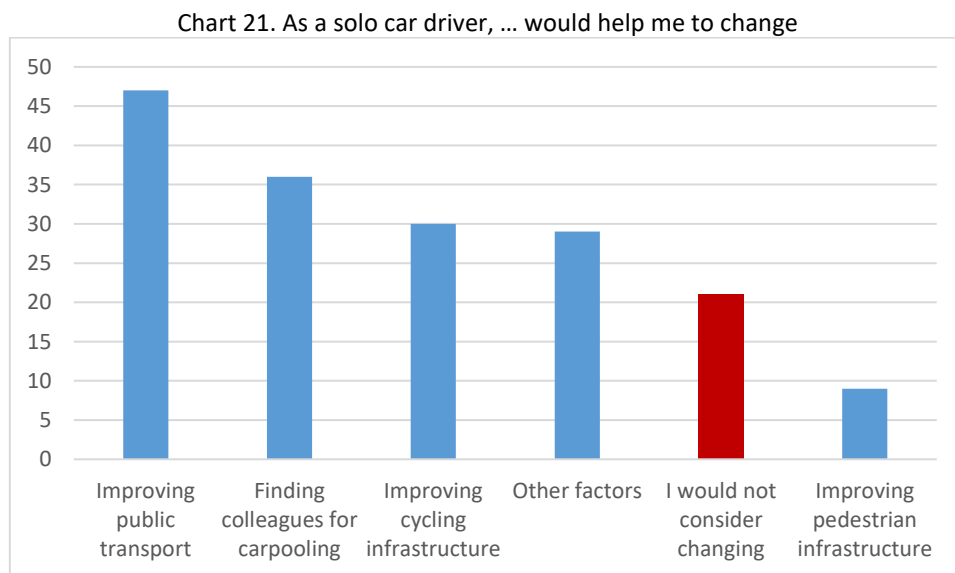
The participants were asked whether they thought that they had alternatives to driving alone if they were regular solo car drivers. More than half of them claimed that they had no alternatives, whereas a total of 43% admitted that they had other options. We could observe that there were two main groups of solo car drivers: One of them considered that they had no alternatives (most likely due to factors such as taking their children to school, living far away and not having compatible colleagues for sharing rides, going to extra activities before and/or after work, etc.), whereas the other group found the alternatives that they had less appealing than driving alone.

There are two interpretations that can be made about those who stated not having any alternative: In certain cases, this might strictly be true, but in other cases this perceived lack of alternatives may be a consequence of personal decisions that make them car-dependent (for example, if they drive their children to school but have other schools that are closer to their homes). In any case, it is hard to determine whether their choices were based on their needs or on lifestyle choices.

For those who said that they have alternatives, driving alone to work was more desirable. This means that there is a high potential for change. If the existing alternatives became more attractive to them, solo car driving could substantially be reduced.

Another question was posed with the aim of determining what factors would be of key importance for achieving change. None and several answers were admitted. The results (see chart 21) led to three main conclusions: Only a small minority claimed that they would not in any case consider changing as an option, several of the demanded aspects are not direct competences of the company (for example, improving the public bus service), and there was a demand that the company could match (creating a website, app or service aimed at finding colleagues with whom to share rides).

In light of the survey results, the company is advised to contact local public entities for asking for better bus frequencies and other improvements such as rush-hour extra services. Improving the cycling infrastructure would also help, but it should be done at a metropolitan scale rather than only in the surroundings. We will later see that the company was asked to build showers and changing rooms for cyclists.



Source: Own elaboration (absolute numbers)

The survey respondents were asked two questions on the inconveniences generated by the massive use of cars in the surroundings of their building: one on traffic congestion and the other one on the difficulty to find empty parking spots. In both cases, only the answers of those directly affected were taken into account (regular solo car drivers and workers who carpoled regularly). A large majority defined the traffic congestion that they suffered as a

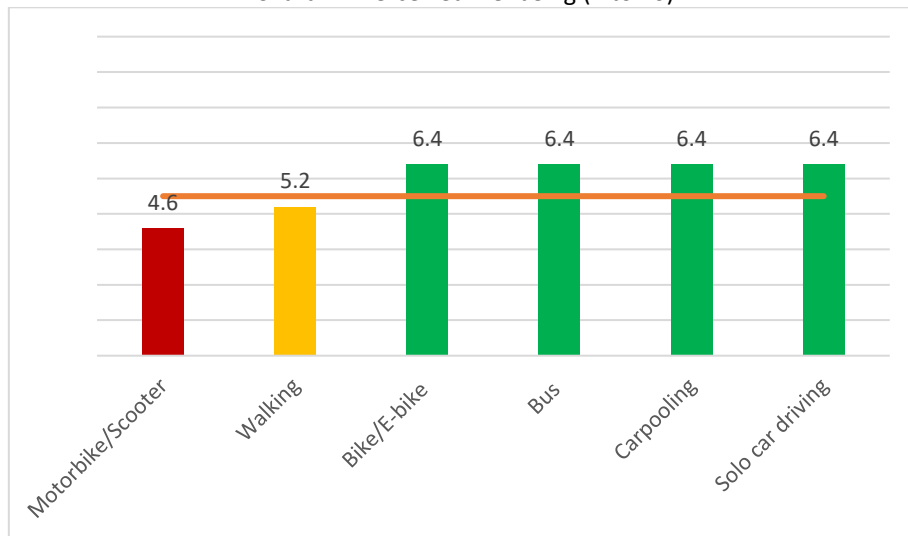
mild annoyance. Some of them did not find it an annoyance at all, while a few more workers found it a relatively severe annoyance.

The results obtained about parking were quite different. The opinions were much more divided. Even though the answer “no annoyance” gained some weight, “relatively severe” gained more weight. This could be explained by the different times at which they started working (perhaps, those who start the latest find it a much greater problem than those who start the earliest).

Thus, it could be concluded that the traffic congestion was not a worrying problem yet, even though achieving a more balanced distribution in the entry of workers could help to reduce this kind of stress. At the same time, finding a parking spot was perceived by many as a severe annoyance. Managing the company’s parking in a different way and reducing car dependency would help to tackle this problem. In any case, annoyances are a subjective perception.

The next question was aimed at identifying the degree of wellbeing felt when commuting in one way or another (see chart 22). It was intended to measure what options were seen as the most desirable ones in terms of the commuting experience (which is also a subjective perception).

Chart 22. Perceived wellbeing (1 to 10)



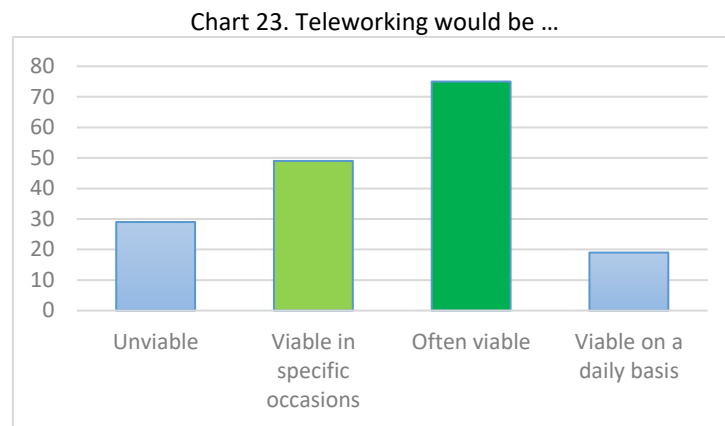
Source: Own elaboration (averages)

According to the results, there were four mobility options that were equally valued in terms of perceived wellbeing. Solo driving, sharing rides with colleagues, commuting by bus and cycling obtained relatively high scores. Walking was not seen as so desirable, whereas motorbikes were ranked as the worst option. There was an answer saying “it does not affect me” for those cases in which the respondent was not familiar with a certain option.

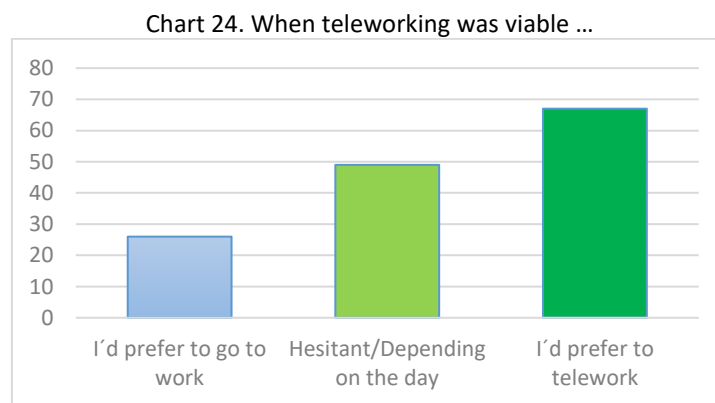
We could interpret that those modes in which the person is covered (the bus and the car) are experienced as more comfortable, as the local climate is sometimes rough and there are frequent rains. The low scores obtained by walking and commuting by motorbike might be

another consequence. However, there is an exception: the bicycle. This evidences that being sheltered would not be the only factor.

There is a sustainable alternative to solo car driving that is not a mobility mode in itself: telework. By teleworking, the employees could avoid commuting and, therefore, reduce the negative impact of driving their cars. The respondents were asked whether they considered that their job was compatible with teleworking and whether (if so) they would be willing to work from home (see charts 23 and 24).



Source: Own elaboration (absolute numbers)



Source: Own elaboration (absolute numbers)

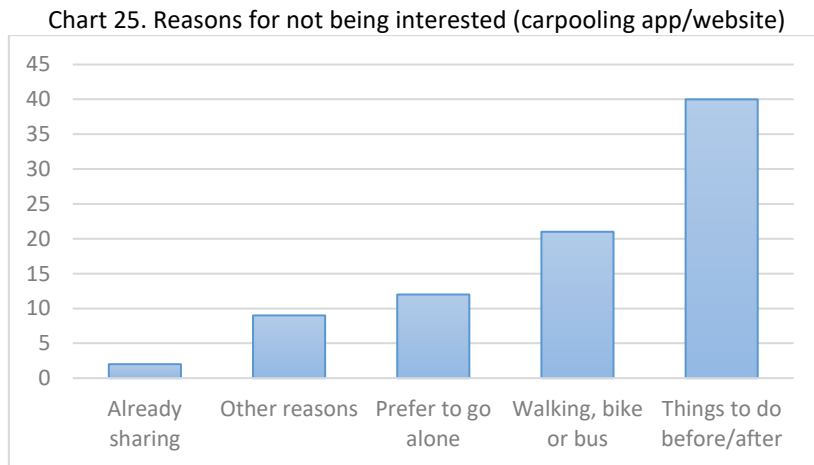
There were relatively few survey respondents who believed that teleworking is not viable for them. At the other extreme, fewer participants regarded it as viable daily. Nearly half of the respondents considered that staying at home would often be viable. Another significant number said that it would be viable in certain occasions. Therefore, we could conclude that telework could potentially be implemented with a certain regularity to help to reduce their excessive use of cars.

Excluding those who thought that their jobs were not compatible with teleworking, the participants were asked on their preferences if they were offered this option: working from home, going to their offices or taking different decisions depending on the day. Nearly half of them claimed that they would prefer to work from home. Another important group said that they would hesitate and make a decision depending on the day, while a smaller group preferred to go to the company building. By combining these two questions we can suppose

that many workers would be eager to be offered the chance to telework, at least from time to time. This would be beneficial not only for themselves but also for the rest of the workers, as the downsides of their excessive use of cars would be reduced.

As the bus and the bike cannot cover everyone’s needs, other options such as carpooling might also be helpful when teleworking is not viable. Thus, the participants were asked on their willingness to share rides with colleagues. Managing the existing resources of private cars in a more efficient way would be of great interest. This increased efficiency would mean fewer problems linked to traffic congestion and the lack of parking spots, as well as a cleaner mobility. A total of 42% of the respondents said that they would be interested in using an app or a website for finding compatible workers. Moreover, a total of 35% claimed that they would like to have reserved parking spots if the company created specific parking zones for those who shared rides. This was one of the few measures that the company board accepted to assess. It consisted in creating reserved parking spaces for those who share rides (at least three workers per car).

Registering would not guarantee to find compatible colleagues, but any “match” would help. Compatible journeys would depend on factors such as area of residence and timetable. Nearly half of those who would not register argued that sharing rides is not compatible with their activities before and/or after work, such as taking their children to or from school, etc. (see chart 25). Others commuted in a more sustainable way, such as walking, cycling and by bus. There is also a relatively small group who said that they just prefer to drive alone.



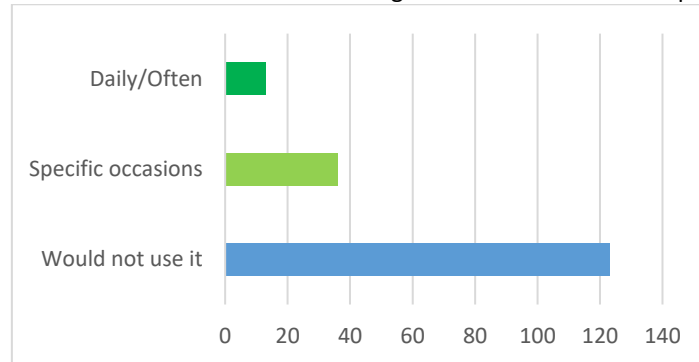
Source: Own elaboration (absolute numbers)

Another option that we wanted to assess was the creation of a bikesharing network. Even though this was not a real project yet, it might be viable in the future, if the company made an effort and/or the administrations decided to build bikesharing stations in this industrial park. The councils of Pamplona-Iruña and Valle de Egüés, together with other public entities such as the MCP, must understand that this type of areas is of vital importance for mobility.

Even though a majority of the respondents would not use the service, nearly fifty workers said that they would use the shared bikes regularly, often, or at least occasionally. As only a few respondents stated that they would use the bikes on a daily basis, the conclusion is that

bikesharing could work as a complementary alternative. It would not be a main mode, but it could make a contribution as an occasional substitute for the private car (see chart 26).

Chart 26. Potential use of bikesharing stations in the industrial park



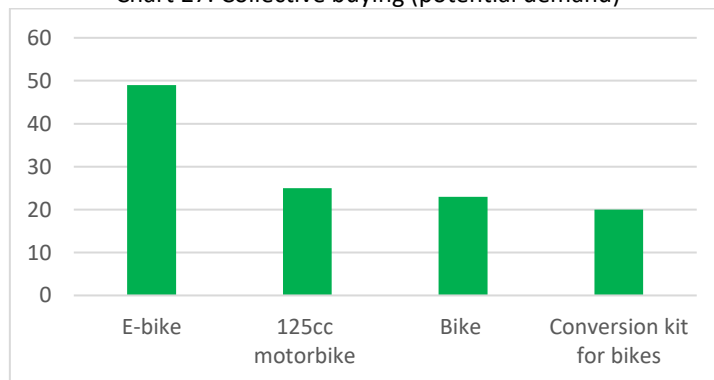
Source: Own elaboration (absolute numbers)

If e-bikes were added to this mobility service, an increase in its use would be expected. A total of 26% of the respondents said that they would use the service more often. Among them, it is those who would use it for specific occasions the ones who would increase their use more (58% of them would do so). Trying to include this industrial park in the projects of Pamplona-Iruña and Valle de Egüés would be important, as both councils were assessing the implementation of e-bikesharing networks.

Concerning private vehicles, the workers were questioned on how likely they were to buy e-bikes and electric cars, if charging points were installed (a measure that was been assessed by the company board at that moment). According to the survey results, nearly a quarter of the staff would consider the option of buying e-bikes, but this only reflects an intention. The same applies to electric cars (30% said that they would consider this option), even though it would be a less ideal option, as electric cars imply downsides such as needing more space.

We wanted to know whether the staff would be interested in buying “greener” vehicles collectively and taking these vehicles to work (at least occasionally). This cost-free idea was based on the assumption that dealers would lower their prices if they received an order of, for example, a dozen same-model e-bikes. According to the survey results, e-bikes would be the most demanded type of vehicle (see chart 27).

Chart 27. Collective buying (potential demand)



Source: Own elaboration (absolute numbers)

It could be suggested that this cost-free initiative must be taken, as it would probably be successful. Although it cannot be guaranteed that nearly half of the employees (49%) would actually buy at least one new vehicle (or conversion kit for bikes), the chances of purchasing “greener” and smaller vehicles than petrol and diesel-engine cars would be relatively high.

An issue that could spark debate would be rewarding those who avoid solo car driving. It could lead to negative reactions from those who felt left out, as there were employees who had no viable alternatives. This is probably why 35% of the respondents opposed this type of rewards. Having access to them depends on personal circumstances (place of residence, taking care of children, etc.). Nevertheless, over half of the participants (65%) said that they were for using rewards as a way of encouraging workers to avoid solo car driving.

There was no consensus among those who were in favour of rewarding “greener” habits. Half of them would opt for offering rewards on the days in which the worker does not drive alone. One incentive already exists, as the company offers paying part of the bus expenses for going to work. Other ways of rewarding those who avoid solo car driving could consist of benefits such as free meals at the company canteen or more flexible timetables, whereas other options such as draws (with the prizes being bicycles, free bus tickets for a year, etc.) obtained less support.

Some companies pay an extra amount of money to those employees who cycle to work. The payments are usually proportional to the length of the worker’s commute and consist of relatively small quantities of money. If implemented in this company, not only the bus but also the bike would be subsidised. According to the survey, the opinions were divided: 50% of the respondents were for this measure, but another 50% would not like it.

The lack of flexibility in what refers to timetables might be affecting several modes. For example, there might be employees who do not cycle to work because they need to take their children to school by car and then rush to work. Moreover, the bus is being affected. It is evident that more abundant frequencies and lines would help, but it is also a matter of timetables. Nearly one in every three participants said that they would use the bus more regularly if they were allowed to adapt their timetables. Consequently, it would be highly advisable that the company assessed this possibility. This does not mean that bus use would rise to a third (in terms of modal share), but it shows that the lack of flexible timetables has a negative impact on home-work mobility.

The survey also explored the degree of awareness on sustainability, as the industrial park is linked with environmental matters and the development of renewable sources of energy. Most of the participants considered that they were “sufficiently informed” in what refers to sustainable mobility. Those respondents who thought to be “poorly informed” were a few more than those who thought to be “very or quite informed”. Both groups were relatively small, while only one person said to be totally uninformed.

Nearly 60% of the workers surveyed considered that the company should make a greater effort to raise awareness on sustainable mobility. Even though a high percentage (42%) did

not find it necessary, a majority of the respondents would like the company to provide with more information on sustainable mobility.

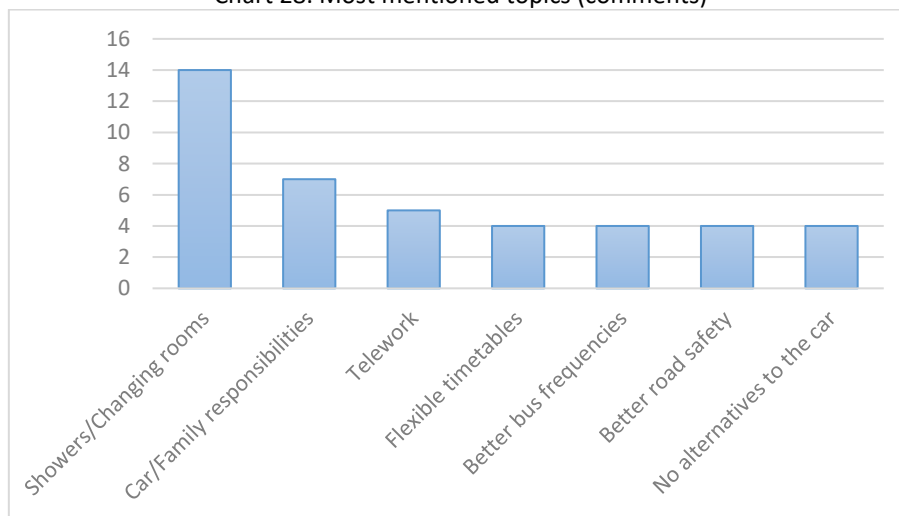
The last question addressed the image of the industrial park, as several companies are devoted to the development of renewable energy sources. It would be paradoxical that their home-work mobility remained extremely dependent on private cars and pollutant. Four in every five respondents agreed with the statement saying that their image would improve if they achieved a more balanced home-work mobility.

10.4-COMMENTS AND SUGGESTIONS

At the end of the online survey, the respondents were offered an extra section in which to add comments. A total of 56 participants made use of it, and they made observations on numerous matters. The chart below (chart 28) provides an overview of the topics that were mentioned the most. The most commented topic was, by far, the need for changing rooms and showers for cyclists in the company building. The participants believed that this would be decisive for encouraging a greater use of the bike. The lack of these facilities means that certain potential cyclists might be avoiding cycling to work because they find it annoying to start the day sweaty. It is recommended that the company takes this into consideration, as creating these facilities would contribute to the tendency by which the bike is growing as an alternative to the car. In any case, it must be noted that this one is not the only factor here, as increasing the use of the bike also depends on offering better infrastructure and cycling lanes, safe places where the bikes can be locked, charging points for e-bikes, etc.

The second most repeated topic linked solo car driving with family responsibilities. Some solo car drivers argued that they need to drive their cars alone because they must take care of their families (in many cases, they take their children to school). This could be added as a reason for choosing solo car driving in future surveys on mobility (in this survey, it would be included in activities or things to do before and/or after work).

Chart 28. Most mentioned topics (comments)



Source: Own elaboration (absolute numbers)

Last but not least, there are other topics that were also repeatedly mentioned. This is the case of, for example, telework and flexible timetables. Some participants referred to specific situations of “radical” inflexibility. For example, inflexible timetables mean avoiding options such as the bike, in the case of certain workers who take their children to school just before work. Perhaps, the company could make an effort for the sake of an increase in cycling and in the use of the bus. Offering rewards for those who avoid solo car driving could, as already mentioned, be controversial. The idea might be seen as positive, but certain workers would feel left out (think of cases such as those of workers who live in remote villages and cannot share rides with others). Box 1 illustrates the participants’ comments with some examples.

Box 1. Selected comments/verbatim

1- Regarding the urgent need to take action:

“The company should promote sustainable mobility due to the problems linked with parking spaces and the chaos that the arrival to the building of nearly 300 people will soon originate.” [Male employee, 42, solo car driver]

“This is a good time for implementing measures, as many more people will start to work in our building very soon.” [Male employee, 30, commutes by bike]

2- Regarding the alternatives to solo car driving:

“In the past, the company missed the opportunity to promote non-motorised modes (cycling, walking, running) when they rejected to offer showers and changing rooms for their use before and after work.” [Male employee, 50, commutes by bus]

“I would find this survey a very nice initiative only if the company will take it seriously and make an effort to promote sustainable alternatives to the car by implementing measures such as showers and changing rooms for cyclists, discounts on meals, etc.” [Male employee, 57, commutes by bike]

3- Regarding the influence of the measures taken:

“I would take into consideration the option of cycling to work if we had showers. If we had charging points, I could also consider electric bikes and e-scooters as options. Right now, the car is the most convenient option in terms of flexibility and the time spent commuting.” [Male employee, 28, solo car driver]

4- Regarding the case of those who live far away:

“For those who live far away, a good idea for encouraging more sustainable mobility patterns would be to build a dissuasive parking where we could leave our cars and cycle to our workplace using safe paths.” [Male employee, 41, solo car driver]

5- Regarding the total number of journeys:

“Teleworking would help me a lot in both my work and my family life.” [Female employee, 43, solo car driver]

“I would cycle more regularly if I had non-split work days and I could make only two journeys instead of four journeys a day.” [Female employee, 51, solo car driver]

6- Regarding the lack of flexible timetables:

“More flexible entry and leaving timetables would make it possible to tackle, at least to a certain extent, the congestion that we suffer at the overcrowded roundabout of the main town of Sarriguren.” [Male employee, 40, commutes on foot]

7- Regarding the idea of rewarding certain habits:

“I would like that those who live in distant towns, have no chance of using any other mode than the car and cannot benefit from the subsidies for public transport would be taken into account for the distribution of our company parking spots. Many times, they get full of drivers who have other alternatives, so we must park far away. They should compensate us in some way.” [Female employee, 40, solo car driver]

“I cannot understand why those who move around in a more sustainable way should be rewarded, as there are others who cannot do so (for whatever reason).” [Male employee, 45, solo car driver]

“For me, rewarding those who commute by bike is not a bad idea, but it wouldn't be fair with those for whom cycling is not viable.” [Male employee, 49, solo car driver]

Source: Own elaboration

10.5-THE INFLUENCE OF GENDER AND AWARENESS ON SUSTAINABILITY

The influence of certain variables on the participants' answers was analysed in order to check whether there was any type of correlations. For example, we could assume that there might be some correlation between factors such as age or education and mobility patterns. Nevertheless, the results led to the conclusion that gender and awareness on sustainability-related issues may be the most determinant factors in this case.

Firstly, I wanted to know whether the position in the company had some weight, as we may perhaps think that “middle-managers” care more about their status-related image and are therefore more prone to drive cars. However, this inter-connection was not found.

The educational level of the employees was not significantly connected to their answers either. A hypothesis could be that those who had a higher educational level would be more informed and aware on mobility issues. Nevertheless, the answers did not follow this logic, as those workers who had a university degree did not report commuting in a “greener” way.

Neither was age found to be an influential factor. We might probably expect that young employees are less attached to solo car driving and more interested in alternative modes such as bicycles (which demand physical effort), but this was not the case here. The group aged between 24 and 37 did not report a lower use of cars.

However, the variable gender did have an impact on the answers obtained. Women were more prone to be solo car drivers than men. A total of 50 female respondents (out of 75) reported that they drove alone on a regular basis. The proportion of female solo car drivers was significantly higher than the proportion of male solo car drivers, as 48 men (out of 97) reported being solo car drivers. The different alternatives were analysed as well. Commuting by bike (or motorbike) and on foot were less frequent among women. While only 5 female participants did so, 17 male participants commuted either by bike (11) or motorbike (6) on a regular basis. Two-wheel vehicles were much less popular among the female respondents. Furthermore, men tended to commute on foot more frequently (only 2 female participants commuted on foot regularly, while 15 male participants did so).

The reasons for these differences between male and female participants were not clear. There could be different explanations, such as female workers taking their children to school by car more frequently than male workers (we will see in the in-depth interviews to selected profiles that unbalanced family responsibilities were blamed for being an important cause), women being more afraid of cycling (the metropolitan area lacks a well-connected network of bike lanes) and riding motorbikes, etc. Moreover, concerning the workers' predisposition to change, female respondents were more interested than male respondents in improving the public transport network and finding compatible colleagues with whom they could share rides.

Finally, the variable level of awareness affected the answers in a logical way. Those who considered themselves to be "very or quite informed" drove alone to work half of the times if compared to those who said that they were poorly informed or not informed. The former had a lower proportion of solo car drivers (38%) than the latter (77%). These results suggest that raising awareness is one of the key factors for achieving change.

10.6- MAIN CONCLUSIONS AND EVOLUTION WITH RESPECT TO PREVIOUS STUDIES

Other studies on home-work mobility counting on the participation of this company had been conducted in the industrial park. One of them had been made 8 years before, in 2010. We could obtain comparative data from it (such as, for example, the modal split reported at that moment). Monitoring this evolution is an important task, as it makes it possible to know whether change is being achieved.

The residential distribution of the employees has a clear impact on their daily commutes. If compared to the year 2010, this distribution remained quite stable. In 2010, around half of the respondents lived in Pamplona-Iruña. This proportion had slightly decreased by 2018. There was a small increase in the proportion of participants who lived in suburban towns of the Pamplona Metropolitan Area such as Sarriguren (in Valle de Egüés) or Zizur Mayor. The proportion of respondents who lived outside of the Pamplona MA had decreased. The time spent commuting remained quite stable as well. Similar to the year 2010 survey, commuting 10, 15 and 20 minutes were the most repeated answers in what refers to the duration of a normal-day commute (one way).

The modal split remained very similar, although solo car driving had slightly decreased (65% was the reported percentage of frequent solo car drivers in 2010). We could see that, according to the data gathered, the alternative to driving alone that had grown the most was cycling. Cycling to work was in the penultimate position in 2010, only ahead of riding a motorbike. In 2018, cycling had become the second most popular option. Solo car driving maintained its largely hegemonic role.

Mobility issues are trendy right now and, consequently, the company should ideally make an effort not to stay behind. In fact, it might happen that measures on mobility are imposed to companies in the future. Any step taken before this happens will be positive. Moreover, innovative trends (e-bikes and e-scooters, for example) are increasingly becoming popular. Thus, monitoring home-work mobility is highly advisable.

It is important to note that the excessive use of private cars could be reduced by cutting down the total number of journeys made. If the workday is not modified (if it was not split, the number of journeys would be reduced), there would be two options for achieving some change in this domain: offering telework (occasionally or often viable for many workers) and further encouraging that the employees stay at the canteen (or at nearby places) instead of driving at lunchtime. Introducing new questions on lunchtime would be advisable for future surveys.

According to the results, raising more awareness on sustainability should be one of the top priorities. It was detected that the proportion of solo car drivers among those workers who considered themselves to be poorly informed or uninformed was double than among those workers who claimed that they were very or quite informed. Therefore, informing the workers about these matters could make a difference. Even though their educational level is high, healthy habits and sustainability matters were not reported to be prioritised by most of the participants. Encouraging them to adopt healthier mobility habits would be advisable, as well as trying to achieve that a greater proportion of workers switch to “greener” options when the weather is fine. Female participants drove more often than male participants. This fact should also be taken into account.

On the one hand, there were certain demands over which the company has no direct competences (for example, improving public transport and its frequencies). In any case, they should ask the local administrations to take the business hub’s mobility needs into account. However, there were cost-free demands that can easily be matched: creating a website, app or service for sharing rides and promoting that the workers buy more sustainable vehicles collectively. Another measure that could work is creating reserved parking spots for those who share rides (with a minimum occupancy of three workers). This could help to rationalise the excessive use of private cars.

On the other hand, there were two important demands that need some investment of money. Installing charging points for electric cars, and more importantly (as they need less space and less energy) for e-bikes, was one of the demands. But the most repeated demand in the section of comments was building showers and changing rooms for those who want to take their bikes to work.

In a few cases, there is a risk of mobility measures leading to some debate. There were respondents who said that they would feel left out, as their circumstances may make them incompatible with any type of reward or incentive. In these cases, the company could assess offering compensations such as reserved parking spots for those who live in remote places and cannot share rides with anyone.

A very positive conclusion is that only a few respondents argued that they would in no case consider the possibility of switching from solo car driving to alternatives. This probably means that competing with driving alone to work is possible, and that a growth in the rest of the options can potentially be achieved. Furthermore, cycling to work, commuting by bus and sharing rides were ranked as as desirable as solo driving in terms of perceived wellbeing.

Offering more flexible timetables was another demand that can push alternative mobility modes forward. Bikesharing, especially if it included e-bikes, would contribute to the use of alternative options (only occasionally, in this case). It is positive news that cycling to work is a growing trend if compared to the previous survey, which was conducted in 2010. Cycling was in the penultimate position at the time but, in 2018, it was in the second place. Solo car driving was the hegemonic option in both cases.

Apart from taking action, it is highly recommended that the company keeps monitoring its home-work mobility. This would make it possible to analyse the positive (or negative) evolution of the modal split and push sustainable mobility further. Reverting the hegemonic position of solo car driving as the first choice for the majority of the employees will not be possible unless the company opts for promoting sustainable mobility in a determined way. Diversifying the range of reliable alternatives is key to achieving change. There is no specific measure that can revert the situation. Promoting all the alternatives to driving alone could make it possible that each of them contributed their grain of sand. Their sum could be the key to change, while not doing anything would mean that solo driving remained in a position of disproportionate privilege.

The findings lead to backing an approach to the issue that is opposite to “inaction”: Not doing anything will almost certainly lead to even greater problems in the future. The solution would be to progressively implement measures and/or incentives in order to empower the employees by making the alternatives to solo car driving more appealing. A new managerial board was formed by the beginning of 2020. The committee had hopes on these managers, as they had shown some interest in promoting change. However, it is still to be seen whether they take action.

10.7-COMPLEMENTARY IN-DEPTH INTERVIEWS

The conclusions obtained after having carried out eight interviews with workers who had specific profile characteristics made it possible to further understand the reasons why the employees choose one option or the other and their demands for achieving a more balanced home-work mobility. Conducting these complementary in-depth interviews was also meant to help in further exploring the correlations between mobility and variables such as gender,

as the survey had revealed that male workers are less prone to drive cars alone to work than female workers. The eight selected profiles were intended to be representative of some of the most common situations identified.

Most of the interviewees argued that the survey was complete and detailed, comprising questions on the current situation and on future potential changes. One person found it a little complex. The company's involvement (meaning the direction board's determination to implement change) was unanimously said to be little or very little. While certain people positively valued the small efforts made (although they considered them to be insufficient), others believed that the board's engagement was inexistent. Some participants suspected that there was no intention of achieving a real change, but only a desire of showing a fake façade of making efforts towards change. In any case, no one said that they were happy with the company's engagement with sustainable mobility. The interviewees were not optimistic about the future, as none of them claimed that they had high expectations on achieving a significant change.

The very few measures that had already been taken were generally seen as useful but insufficient. The company's initiative of paying those who commute by public bus half of the price of their tickets was one of the most valued. However, the recent installation of electric charging points in the company's underground parking raised some debate. The idea behind it was not criticised, but the interviewees argued that nobody charged any electric car or e-bike (not yet at least), and that this measure was not one of their main priorities.

There were some doubts about the company board not being very interested in reverting the situation (which implies problems for parking and traffic congestion) because it does not affect them in the same way. This could be a factor that makes them immune in some way, as they have their designated parking spaces. Another factor that could be influencing the board's decisions is a fear of provoking debate and complaints. Some interviewees believed that the board was afraid of the potential complaints against their measures. A participant regretted that *"it's difficult not to be pessimistic. I don't really have much hope on reverting this situation. I only see small steps like installing a few charging points. It's clear that getting many people out of their cars is a hard task, but the company should be more ambitious"* [Male employee, 33, commutes on foot and stays for lunch]. Another participant explained that he could partly understand the company board, but he also claimed that their lack of determination on implementing change should not prevail:

"The company has to deal with many issues and, from their point of view, mobility is just another issue. They try to do something, but they don't really do much. Mobility-related problems are increasing, as many new workers are coming to this building and the surrounding parking spaces are becoming more and more congested."

[Male employee, 46, solo car driver who lives far away]

One interviewee put emphasis on the importance of starting early, as measures could be imposed by public administrations or by extreme circumstances in the future: *"They are only implementing a few insufficient measures. We already are a lot here, and many more people will arrive to the building. Sooner or later, they will feel forced to intervene and implement a*

different mobility. They shouldn't wait for bringing the necessary changes" [Male employee, 39, solo car driver who drives home for lunch].

The participants were asked several questions on the motivations that explain their daily mobility choices. A clear conclusion was drawn: Their habits are inextricably linked with their lifestyles. These lifestyles generally are the result of a series of choices that lead to moving around in one way or another. Certain decisions shape specific types of lifestyles and have an influence on the workers' timetables and "pace of life". The box below (box 2) illustrates the interviewees' narratives through some examples.

Box 2. Selected comments/verbatims

1- Regarding lifestyles based on solo car driving:

"Even though I live close by, just 12 minutes on foot from here, I always bring my car and take it back home for lunch. The reason is that I take my partner to work before coming, and then we have lunch together. Driving enables me to conveniently adapt to my choice." [Male employee, 39, solo car driver who drives home for lunch]

"I take my kids to the kindergarten and to school before coming to work. I don't like driving, but I need to drive, as I have chosen a kindergarten that is next to my mom's home so that she can take my kid for lunch. I chose the school where my sister works so that she can take care of the older kid. Being close to our home was not a priority for me, as having my family helping me was more important."
[Female employee, 34, solo car driver who takes her children to school]

2- Regarding eco-friendlier lifestyles:

"It's a lifestyle choice. I studied a university degree linked to environmental sciences and I want to be coherent, so I live in the city core and I only use the car during the weekends. Commuting by bus cuts emissions, and I have several bus lines connecting my place to the company building. Besides, if plenty of my activities take place in the city centre, why would I live somewhere else and continuously drive to the centre?"
[Male employee, 36, commutes by bus]

"I always move around by bike, unless it is not viable. I find it convenient and faster than taking the bus. Exercising through cycling is a good thing, but the main reason is convenience. It takes me 35 minutes to get to work. It's faster than the bus and it makes me feel less stressed." [Female employee, 36, commutes by bike]

"Since long ago, I share rides with a colleague who lives in my area. In our way, we pick up a third colleague who lives in the city centre. I like it, as I find it a contribution to sustainability matters and a way of being sociable."
[Female employee, 50, shares rides with colleagues]

"Staying here for lunch suits me. If I walked home, even though I live close by, I would need to do a longer pause. Thus, I would leave work later. I only stop for half an hour. It is enough time, the food is good and cheap, and I like having lunch with colleagues and chatting with them." [Male employee, 33, commutes on foot and stays for lunch]

Source: Own elaboration

There was a variable that needed to be examined in more detail: gender. Female workers had been found to be more prone to drive to work than their male counterparts. Thus, when I asked for a volunteer who drove their children to school, it was probably not a coincidence that the volunteering worker was a woman. She explained that

“the fact that women drive more often than men is not a surprise to me. I’m sure that it has something to do with unbalanced family responsibilities. Women are usually the ones who drive their children to school, drive them to other activities, do the shopping... In fact, when we finish working, I see that many female workers go to do the shopping or pick their children up.” [Female employee, 58, solo car driver]

The lack of gender equity concerning family responsibilities might not be the only factor that explains the greater proneness to drive cars among the female employees, but it was thought to be an important factor. Future surveys should take family responsibilities into consideration.

As seen before, the key to understanding the company’s home-work mobility is lifestyles. This implies that change will not be easy to achieve, as the employees would need to modify their daily routines. Giving up certain habits and readjusting one’s life to new alternatives is not always easy, and many workers could be reluctant to do so. Nevertheless, once change has been adopted, it may be seen not only as something good for the environment but also as an improvement in their quality of life (if they start to walk and cycle more, for example).

The participants were questioned on what they would need and desire to abandon their excessive car use. As these were in-depth interviews, not a closed survey, the answers were much more detailed and helped to further understand these matters. The main conclusion is that change should be based on offering alternatives that do not affect their lifestyles too much. The workers’ lifestyles are linked with certain paces and the idea of a good quality of life. Therefore, the alternatives should be similar to solo driving in terms of convenience, or at least relatively similar (not much worse, in any case). One of the interviewees explained that

“I consider myself to be aware about taking care of the environment, even though I’m a frequent solo car driver. The reason why I commute by car is that coming here by bus would take me a lot more time. The environment is important, but my time is important too. I want to make the most of my days. If the alternatives got better, I would not sell my car, but I would use the different modes in a more balanced way.”
[Female employee, 58, solo car driver]

The interviews showed that driving was perceived as an enabler of a “non-stop lifestyle” that would be hard to keep without a car. Taking the children to school, going shopping after work, going to other activities, etc. It seems difficult that all this could be done without any need for driving. Thus, offering attractive alternatives to the private car is a great challenge.

In some specific cases, it seems that giving up driving is nearly impossible. For this type of circumstances, switching to private electric cars could be a reasonable option (although they are not ideal in terms of space occupancy, traffic congestion, etc.). Certain interviewees said that they had thought of buying an electric car, but they preferred to wait for a relatively distant future:

“Given my lifestyle, which is extremely dependent on taking my children everywhere, I cannot imagine living without a car. The only alternative that I would consider is to buy an electric car.” [Female employee, 34, solo car driver who takes her children to school]

“As I live far away, I can’t share rides with anybody, so an electric car could suit my daily mobility. However, I don’t consider it to be a trustworthy technology yet. More time is needed for it to be improved. It would be a risky choice right now.”

[Male employee, 46, solo car driver who lives far away]

Even though the participants did not see it as one of their priorities, it is good news that the company installed a few charging points, as this can help to reduce emissions if at least some workers replaced their combustion-engine cars for electric cars. Charging points for e-bikes were installed. E-bikes are another alternative that is not frequent (not yet at least). However, it would be a good alternative to the private car, as e-bikes need little space and do not have much impact on traffic congestion. In any case, one of the interviewees argued that

“I’m a frequent cyclist and I wouldn’t personally prefer an e-bike to a conventional bike. I have sometimes brought my partner’s e-bike and I haven’t liked the experience. It is true that you feel less tired and it is a faster mode. However, I find e-bikes a little risky and hard to be ridden. They are more similar to motorbikes than to conventional bikes.”

[Female employee, 36, commutes by bike]

Whether the workers prefer regular bikes or e-bikes, achieving that many of them cycle to work is a challenge. The participants who had abandoned a car-oriented lifestyle said that they were not willing to go back in time. They had adjusted their lives to alternative modes:

“I live right in the city core and I commute by bus. I’m considering the option of moving to another area, and I have calculated that moving there would mean commuting for 5 more minutes and combining two buses. Even though I have a car for weekends trips, I prefer to move around by bus and I’m willing to make a small effort. I would only switch to cycling from time to time if showers were installed.”

[Male employee, 36, commutes by bus]

This participant asked for more flexible timetables and a better communication with the public administrations for increasing the use of public transport:

“There is a lack of communication with the MCP. Several companies of the industrial park have very similar timetables, but the bus is not adjusted to our rush hours. Besides, the company should allow the workers to have more flexible timetables so that stupid situations like the following would not happen: If I arrive 5 minutes earlier than my time margins and I want to leave 5 minutes earlier, I’m not allowed to do so, so I will miss a bus that suits me better.” [Male employee, 36, commutes by bus]

Apart from encouraging the use of the bus, another alternative that should be promoted is the bike. According to the survey results, cycling had risen from the penultimate position to the second in recent years, even though the company does not subsidise its use: *“It would help if they offered economic incentives. It must be proportional to the distance covered, as it is not the same to cycle from a distant area than from a neighbouring place. If money was not offered, the board should at least compensate us with more flexible timetables”* [Female employee, 36, commutes by bike].

The participant who shared rides was questioned on the option of creating a website or platform in which the employees could find compatible colleagues. She did not only find it useful but also made a contribution with the idea of extending the initiative to neighbouring companies:

“It would be successful, as there are probably compatible workers who don’t know each other. I believe that the hardest thing would be to find compatible workers in terms of timetables or people who are willing to adapt to another worker’s timetables. I know a person who shares rides with people from other companies, so it would make sense to expand this service to the industrial park.”

[Female employee, 50, shares rides with colleagues]

Another habit that should be encouraged is staying for lunch at the company canteen, or not using cars and going somewhere near by. The interviewee who stayed for lunch argued that there could be ways of making staying more appealing:

“Even though lunch is cheap, making it even cheaper could make a difference. Besides, building a kitchen for those who want to cook their own food may also help, as we only have a couple of microwaves. I guess that there would be certain people who wouldn’t stay anyway. For example, some may prefer to relax at home and make a longer pause.”

[Male employee, 33, commutes on foot and stays for lunch]

New mobility trends were spontaneously mentioned in the conversations. For example, the driver who lived far away referred to the option of buying an e-scooter and taking it to work in his car boot. In situations of congestion and saturated parking spaces, he would park his car somewhere else and use his e-scooter for covering the last mile. However, he argued that *“it’s a very new alternative mode and just an idea for the future. Besides, it wouldn’t be useful when the weather is bad”* [Male employee, 46, solo car driver who lives far away].

Finally, some interviewees said that they suspected that the company board would not try to implement more ambitious measures because of a fear of being criticised and raising debate, as well as a fear of trying new things. Nevertheless, they argued that they would not back *“inaction”*. Even if they could understand some of these fears, they said that not doing anything would lead to an even worse situation:

“Certain steps that would be useful are difficult to take. For example, I haven’t insisted on reserving parking spots for those who live far away, those who share rides... as there might be other people who have their own specific circumstances who may feel treated unfairly. Despite this, I think that it would be a good measure.”

[Male employee, 46, solo car driver who lives far away]

“Whatever they do, there will always be unhappy people. Some will say that one or the other circumstance affect them and that they feel treated unfairly. You will never make everyone happy, so it is easier to turn a blind eye on all this and change nothing.”

[Female employee, 50, shares rides with colleagues]

“Due to living far away, I’m given the chance to telework on Fridays and save these two journeys. However, the company refuses to offer telework on a larger scale. I guess that they are afraid of trying something new and contributing to create some kind of chaos.”

[Male employee, 46, solo car driver who lives far away]

10.8-SUMMARY OF RECOMMENDED GUIDELINES AND FOLLOW-UP REPORT

The conclusions of the research work carried out were translated into a set of guidelines that I sent to the workers' committee. A summary of these recommendations can be found in the box below (box 3).

Box 3. Summary of recommended guidelines

- MORE FLEXIBLE TIMETABLES could help in increasing the use of alternative modes. The margins in which the employees are allowed to start and finish work should be broadened.
- TELEWORK: Limit the obligation to stay at the workplace to those days when it is strictly needed. Let the workers make their decisions whenever their presence is not indispensable.
- AVOID EXTRA JOURNEYS DURING LUNCHTIME: Make efforts to encourage that the employees stay at the building's canteen. Provide them with a kitchen.
- AWARENESS CAMPAIGNS: Distribute information and participate in campaigns for sustainable mobility, as those who reported to be more aware tend to drive less.
- COST-FREE INITIATIVES: web/app for sharing rides, buying vehicles collectively (e-bikes particularly), reserved parking spots for high-occupancy vehicles, etc.
- CHARGING POINTS for e-bikes and electric cars.
- SHOWERS AND CHANGING ROOMS for cyclists.
- CONTACT PUBLIC ADMINISTRATIONS in order to adjust public transport to the peak hours, assess the option of building (e-)bikesharing stations, etc.
- DIVERSIFY the measures taken for enhancing the different alternative options.

Source: Own elaboration

Very little progress was made until 2020, more than a year after the report was sent and just before the managerial board was replaced by a new one.

Probably the most important measure was the installation of charging points for electric cars and e-bikes in the company's underground parking. Nevertheless, as explained before, it seemed that the workers were not enthusiastic about it, as it was not seen as one of their priorities (they did not drive electric cars and very few employees had e-bikes). The direction board did not finally assess the implementation of other measures, such as the creation of an app or website for sharing rides, buying "greener" vehicles collectively, etc.

A couple of much less ambitious measures were taken. CCTV cameras were installed for surveilling those bikes that are locked in the underground parking, and a repair kit for bikes and additional lockers for cyclists were offered.

It is to be seen whether the new members of the managerial board are more determined to implement change. We can see that not only politicians but also other stakeholders (such as company managers) could potentially lead the transition towards sustainable mobility.

11 - THE MOBILITY TRANSITION IN RURAL AREAS. THE VILLAGE OF BIURRUN AS A CASE STUDY

11.1-CONTEXTUALISATION OF THE CASE STUDY

Even though this thesis is mainly focused on urban mobility, as most changes are taking place in cities and urban areas host the majority of the population in advanced societies, we should also explore the social impact of the transition towards a more sustainable mobility in rural areas. This type of areas has also been intensely influenced by the irruption of cars. Private cars have made it possible to connect villages, towns and cities in a faster and more convenient way. The automobile has become an element of indisputable centrality in rural settings, as it solves many accessibility challenges. Therefore, private cars could contribute to stopping the process of depopulation of rural areas, as they facilitate that rural residents have access to more opportunities and basic services (Moseley, 1979).

Electric cars could potentially become common in rural areas in an effort to reduce tail-pipe emissions. In fact, in their study on “early adopters” in Germany, Plotz et al. found that

the most likely group of private EV buyers in Germany are middle-aged men with technical professions living in rural or suburban multi-person households. They own a large share of vehicles in general, are more likely to profit from the economical benefits of these vehicles due to their annual vehicle kilometres travelled and the share of inner-city driving. (Plotz et al., 2014: 96)

Nevertheless, incorporating other options such as collective transport modes seems to be a very challenging task in remote rural villages due to their lack of demand. The adoption of new mobility services, such as carpooling and ridesharing, could lead to a better model than the current rural mobility based on solo car driving. In any case, the centrality of private cars in rural settings is unquestionable (Oliva & Camarero, 2019). For example, in 2015 the motorisation index of the Spanish towns and villages that had less than 2,000 residents was considerably higher than the national average, according to data provided by the national transport authority (the DGT: “Dirección General de Tráfico”). While the national average was 479, the average for towns and villages of less than 2,000 inhabitants was 622.

In this context, the heavy use of cars can lead to both positive and negative effects:

automobility, as a systematic resource to compress time and space, has become a key dimension of rural social sustainability today. In many rural habitats, commuting plays a determining role for retaining young people, women and skilled workers, providing more effective combinations of residence, labour strategies and sociality. However, these processes also open up a new range of vulnerabilities and social inequalities. (Oliva, 2010: 277)

Daily mobility strategies and a widespread use of the private car have led to establishing a close connection between urban and rural areas, as residential patterns, labour strategies and economic processes have hybridised and have allowed rural commuters to stay or settle in rural areas (Oliva & Lopatnikov, 2019a). This hybridisation has been needed for this type

of territories to survive as, in recent decades, most rural areas in Europe have suffered from socioeconomic decline and they are no longer dominated by the primary sector, mainly by agriculture (Silva & Figueiredo, 2013). Their vulnerability is also explained by a convergence of different types of broad challenges, as explained by Papadopoulos:

Recent research has revealed that to varying degrees, rural areas in Europe are becoming more vulnerable to different sets of environmental, social, economic, global and state-led processes (...) It may be argued that processes of mobility and vulnerability, operating at multiple scales, tend to question the overall sustainability of rural areas. (Papadopoulos, 2019: 183-184)

As we have seen throughout the thesis chapters, the differences between cities and rural areas have an impact on people's lifestyles, as mobility and car dependency influence daily life choices, job opportunities and leisure activities. As Milbourne and Kitchen argue,

much of the recent geographical scholarship on mobilities has focused on the city, with 'the urban' constructed as the archetypal space of hyper-mobility. Less attention has been given to mobilities in the context of rural spaces and places. In this paper, we suggest that mobility represents an equally important constituent of rural lifestyles and rural places. (Milbourne & Kitchen, 2014: 326)

Research studies have found that not only cities but also rural areas have been reshaped by the massive adoption of cars. In parallel, the irruption of new technologies such as the Internet has had an important impact on the rural. In this respect, Camarero and Oliva argue that factors such as *"information and communication technologies and private automobility have completely changed rural life modes, affecting labour relations, social practices, and family strategies"* (2016: 93). These changes could potentially help in stopping the process of depopulation in rural areas but could also generate or reinforce social inequalities due to the dual effect of automobility as the hegemonic system. As Camarero, Cruz and Oliva note,

the conclusions point to the dual effect of mobility: on the one hand, it regulates the actual subsistence of rural populations to the point of making them highly dependent on cars; on the other hand, it transmits social inequalities in the social structure, such as those related to gender. (Camarero, Cruz & Oliva, 2016: 734)

Different vulnerable groups have been identified. For example, elderly rural residents for whom the centrality of the private car has become a factor of social exclusion in a context of an ageing society, as the elderly who cannot drive experience constraints such a limited participation in community activities (Shergold, Parkhurst & Musselwhite, 2012). Moreover, Graham et al. (2018), in a study based on a compilation of papers that analysed the case of the United Kingdom, conclude that everyday travel is key to quality of life in an older age. In this context, Papadopoulos et al. emphasise that rural areas can also be affected by broader socioeconomic contexts that exacerbate inequality:

The mobilities and immobilities of various social groups relate to their differential resources, determine the socioeconomic opportunities available to them in these areas. Moreover, the broader socioeconomic processes have negative implications for more vulnerable social groups, while also increasing social and economic inequalities within regions. (Papadopoulos et al., 2019: 475)

The central importance of cars in rural areas is reflected by the fact that the structure of car ownership in Spain has been found to show that rural households are usually less income sensitive than urban households concerning car ownership (Matas & Raymond, 2008).

In the case of Navarra, private cars play a fundamental role in keeping rural areas alive, as remote rural areas such as the Navarre mountains greatly depend on a car-based mobility (see Oliva and Iso, 2018, as well as Sanz and Martínez-Lorea, 2018). Sanz and Martínez-Lorea (2019) underline that these ties between the rural and the city lead to some kind of hybridity that can have an impact on social sustainability and identity.

Rural accessibility was highlighted as a crucial factor for social and territorial cohesion by one of the key informants. The head of transport planning and modernisation of the regional government argued that

“rural areas clearly lack mobility options. Rural dwellers ask for a better network, as not being able to do the shopping elsewhere or go to the doctor’s influence their decisions on staying or leaving. As rural bus routes are deficitary, we are trying to achieve change by combining profitable routes with deficitary ones, so that the bus companies accept to run them.” [Head of transport planning and modernisation, Government of Navarra]

Specific social groups were identified as the most vulnerable in the rural areas of Navarra: *“Our services are important mainly for certain prototypical users, such as people with special mobility needs, women and young people and students who have no driving license”* [Head of transport planning and modernisation, Government of Navarra].

Reducing car dependency in rural environments is a global challenge. A study on Swedish rural areas argued that rural households are less likely to exit from car ownership and are more likely to increase their car ownership than comparable urban households (Pyddoke & Creutzer, 2014). In another Swedish research study, Berg and Ihlström (2019) point out that frequent car use in rural areas is a consequence of a combination of time-space restrictions and a lack of services and public transport that limits children’s and adolescents’ mobility in particular.

Similar research works on the role of automobility and its social implications in rural areas have been carried out in other regions and have led to similar conclusions (see, e. g., Osti, 2010, on the case of Italy, and Figueiredo, Oliva and Teles, 2018, on the case of Portugal). After the implementation of a basic rural transport service in Ireland (more precisely in the town of Bantry), O’Shaughnessy, Casey and Enright (2011) concluded that the link between the automobile and freedom is deeply rooted in rural territories. As these authors point out, *“the responses revealed a very restricted social life mainly because the respondents lacked transport and had to depend on getting lifts from family or neighbours (...) A common theme in the interviews was the desire to be independent when it came to travel arrangements”* (O’Shaughnessy, Casey & Enright, 2011: 188).

Innovative mobility solutions are already being tested in rural areas. As explained in the chapter on the Finnish case (chapter 6), this country is trying to implement change not only in cities but also in the rural. Nevertheless, Finnish experts argue that adopting a sustainable mobility in non-urban areas will be extremely challenging:

Urbanization and a decreasing population lower the population density, at the same time that the population is aging and will probably need more health service transportation. These issues create even greater challenges to constructing efficient mobility services, maintaining an appropriate service level, keeping entrepreneurs, and maintaining the infrastructure in rural areas. Furthermore, the accessibility and equity of people with limited means or without a driving license, such as the elderly or youth, is a concern. (Eckhardt et al., 2018: 79)

In order to explore this issue, several pieces of research work have been carried out in a rural area of Navarra. Biurrun is a small village that is relatively close to the city of Pamplona-Iruña (see map 13). Therefore, daily life in this village is strongly influenced by the Pamplona Metropolitan Area (as a hub of job opportunities and social participation) and by the private car as an enabler that connects rural residents to the Pamplona MA or to other destinations. For understanding the influence of private cars on rural residents' lives, a discussion group and a survey were conducted in the village. The participants had their primary residences in the village, although they were also asked on second residences (perhaps, in the Pamplona Metropolitan Area). As reflected by researchers such as del Pino (2015), second residences are not always used for recreational purposes, as certain people have more than one home for daily life purposes.

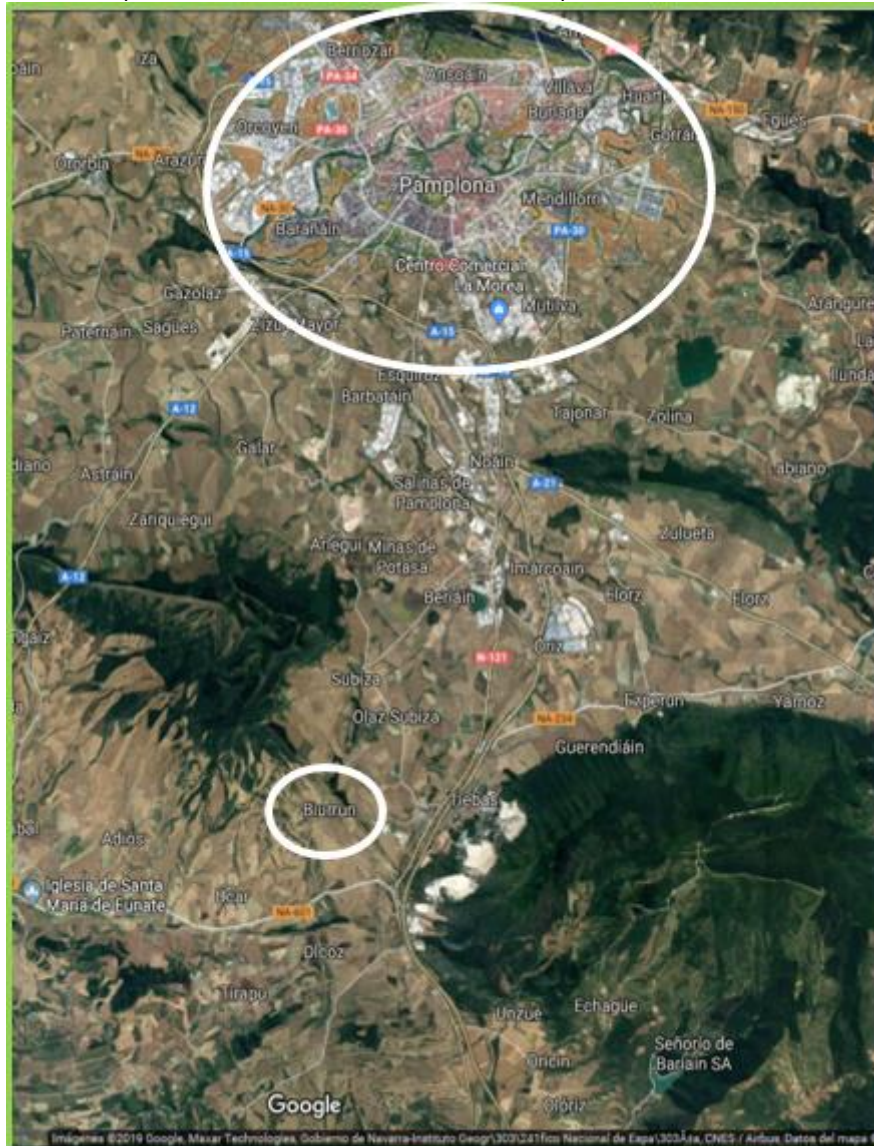
Figure 53. A road links Biurrun to the neighbouring villages and towns and to the Pamplona MA



Source: Biurrun-Olcoz town council (biurrun-olcoz.es)

A collaboration with the local community made it possible to conduct a questionnaire on mobility habits and expectations for the future, as well as a discussion group in which the participants offered their views on their car-based rural lifestyles and their alternatives to private cars (if any). The results helped to understand the existing nuances between urban and rural territories in terms of expectations about a sustainable and less car-dependent future. Tackling the omnipresence of cars in the rural and the prevalence of mobility habits based on solo car driving would be extremely challenging.

Map 13. Biurrun is located close to the Pamplona MA to the South



Source: Google, Maxar Technologies, Gobierno de Navarra, Instituto Geográfico Nacional de España, CNES, Airbus (2019). Own elaboration

This village of only approximately 160 inhabitants is located close to the Pamplona MA (around twenty kilometres away from the capital city). Biurrun shares a unified council with a smaller neighbouring village (Olcoz). The population of the joint entity Biurrun-Olcoz is of around 200: According to the Statistics Institute (“Instituto de Estadística de Navarra”) of the Government of Navarra (“Gobierno de Navarra”: navarra.es), the population of Biurrun-Olcoz was 204 on the first of January of 2018. The new regional map of Navarra, approved by the beginning of 2019, includes Biurrun-Olcoz and the neighbouring villages and towns as part of the county of Valdizarbe-Novenera. This categorisation takes into consideration an area’s specific features, so it has been taken as a reference for delimiting this case study: the village of Biurrun, mainly, and the rural county of Valdizarbe-Novenera.

11.2-EVOLUTION OF RURAL POPULATIONS AND MOTORISATION

The village of Biurrun could be considered a prototypical example of a rural setting that is very dependent on the private automobile. It presents several of the features mentioned previously that are frequent in rural areas. Many residents are strongly attached to private cars. Being relatively close to the regional capital city makes them very prone to rely on car-based lifestyles that link the village to the city, although other destinations might also have some relevance. Many rural residents seek job opportunities and leisure in the city, which is a relatively short twenty-minute drive away. Other important activities such as shopping are also linked to driving to the Pamplona MA or a nearby town. Only a few basic services are directly provided in the village. In such a context, many of these rural households have several cars, and not owning an automobile can lead to difficulties in coping with daily life and to rely on the help of relatives and other residents.

There are two aspects that seem to be connected: The irruption of private cars in recent decades and a turning point by which the populations of these areas stopped plummeting. As table 19 illustrates, the motorisation indexes of the towns and villages of the county of Valdizarbe-Novenera are very high and reflect the key role that private vehicles play in the social sustainability of these rural areas. Moreover, their proportions of drivers (those who have driving licenses out of the total populations) show that there is a gender divide, as the proportion of male residents who drive is significantly higher than the proportion in women.

Table 19. Motorisation indexes and proportions of drivers

	Motorisation index	Prop. of drivers in total population	Prop. in men	Prop. in women
Adiós	676	64%	70%	57%
Añorbe	827	61%	69%	52%
Artajona	793	63%	79%	47%
Artazu	973	66%	77%	54%
Berbinzana	834	67%	85%	48%
BIURRUN-OLCOZ	849	72%	75%	68%
Cirauqui/Zirauki	785	54%	63%	44%
Enériz/Eneritz	779	60%	71%	50%
Guirguillano	852	54%	69%	38%
Larraza	789	61%	76%	44%
Legarda	791	71%	67%	75%
Mañeru	752	60%	61%	58%
Mendigorría	818	66%	79%	53%
Miranda de Arga	803	61%	79%	42%
Muruzábal	699	65%	80%	53%
Obanos	742	63%	72%	54%
Puente la Reina/Gares	671	60%	69%	51%
Tirapu	1,118	59%	63%	53%
Úcar	786	58%	64%	50%
Uterga	730	63%	61%	66%
VALDIZARBE-NOVENERA COUNTY	766	62%	74%	50%

Source: DGT (2015). Own elaboration

The largest town in the county (Puente la Reina) has the lowest ratio of private vehicles. Its proportion of vehicles is slightly higher than the average of the “outer suburban ring” of the Pamplona MA. This may be logical, as living in the largest town of this county might be relatively similar (in terms of car dependency) to life in a hybrid “outer-suburban-ring” area (which is the most car-dependent part of the metropolitan area).

As expected, the average motorisation index in the county is much higher than in any of the parts of the Pamplona MA (632 in the city, 642 in the “inner ring” and 662 in the “outer ring”). There were 766 vehicles per a thousand citizens in the county of Valdizarbe-Novenera in 2015. According to 2015 DGT data, the proportion of passenger cars (average of 66% in the county) decreases in a stable way if compared with the Pamplona MA (75% in the city, 72% in the “inner ring” and 69% in the “outer ring”).

Except for a pair of cases, the proportions of male drivers in these rural towns and villages are higher than the proportions in women. In fact, the overall averages of the county reflect that the proportion in men is significantly higher than in women. Nearly three in every four men have a driving license, while only half of the women have a license. Traditional families tended to have one family car, and the husband used to be the driver, so this imbalance has probably been inherited from the past. However, the situation is presumably more balanced in the case of the youngest generations.

The municipality of Biurrun-Olcoz presents the two trends: It has a very high motorisation index (even higher than the county’s average), and the proportion of drivers among men is higher than in women. However, the difference between men and women is less acute than in the case of the county of Valdizarbe-Novenera.

Figure 54. Rural houses and private cars at their doorsteps dominate this landscape



Source: Own picture

The population of the municipality of Biurrun-Olcoz and the population of the county of Valdizarbe-Novenera have increased, or at least stabilised, in recent decades. As we can see in table 20, their populations dropped significantly between 1950 and 1981.

Table 20. Evolution of rural populations

Population in ... (year)	1950	1981	1991	2011	2018
Adiós	257	136	114	184	156
Añorbe	730	452	410	582	568
Artajona	2,406	1,745	1,701	1,727	1,669
Artazu	275	132	94	122	118
Berbinzana	1,161	764	736	720	610
BIURRUN-OLCOZ	545	188	169	228	204
Cirauqui/Zirauki	1,059	534	470	506	490
Enériz/Eneritz	337	193	189	358	298
Guirguillano	430	81	76	90	78
Larraga	2,501	1,894	1,892	2,122	2,060
Legarda	228	98	73	119	113
Mañeru	764	425	362	415	437
Mendigorría	1,453	982	994	1,084	1,057
Miranda de Arga	1,622	1,065	1,002	900	850
Muruzábal	282	197	200	279	239
Obanos	997	695	704	909	912
Puente la Reina/Gares	1,733	1,951	2,124	2,820	2,843
Tirapu	137	65	69	53	42
Úcar	245	121	115	178	177
Uterga	309	126	142	191	164
VALDIZARBE-NOVENERA COUNTY	17,471	11,844	11,636	13,587	13,085

Source: INE (1950-2011) and (na)stat (2018). Own elaboration

It is in the eighties when we see a much slower decline. In both cases (the village and the county), the populations decrease only slightly between 1981 and 1991. From 1991 to 2011, there is an important recovery. Later, from 2011 to 2018, their populations decrease again, but much less significantly than before. This could mean that, in both cases, the populations are stabilising (although, at the county level, there are exceptions to these general trends).

The boom of the private automobile has made it possible for many rural households to buy cars in recent decades. Many of these households now have not only one car but several cars. Their initial “a car per household” logic has evolved into “a car per person” rationale. Brand-new car sales more than doubled in Spain between 1960 and 1964¹⁵⁶. However, there were still less than a million cars on the Spanish roads back in 1964. According to the Spanish Traffic Authority (DGT, 2018), there were over 24 million cars in Spain in 2018 (find further details on the evolution of the number of cars in Spain and Europe in chapter 1, section 1.4).

The links between private cars and rural populations in the rural territories of the county of Valdizarbe-Novenera and Biurrun-Olcoz appears to be evident. Even though other factors (mobility alternatives, services, telecommunications, etc.) may have had an impact too, cars have certainly helped in enabling these rural residents to have access to job opportunities and services that are not available in villages and small towns. Moreover, in the case of the county of Valdizarbe-Novenera, its proximity to the regional capital has probably enhanced

¹⁵⁶ According to the Central Traffic Authority (Jefatura Central de Tráfico, 1964), the total number of cars in Spain in 1964 was 652,297. Motorbikes were more popular at that moment (1,026,734), but automobiles were already booming. The sales of new cars had increased by 253% during the 1960-1964 period.

the central role of private cars in daily life (for example, in the case of those drivers who live in a village or small town and commute to the city on a regular basis).

11.3-DISCUSSION GROUP WITH RURAL RESIDENTS

A discussion group with rural residents from Biurrun was organised with the help of the local community. It was intended to offer insights on car dependency in this rural area in a more detailed way than the survey. Therefore, conducting a discussion group was conceived as a complementary fieldwork item linked to the findings from the survey and to the analysis of statistical data. All the participants reported having driving licenses and owning cars. This fact gives us an idea of how dependent on cars their lifestyles are. Their average household consisted of three members and two cars. With the exception of one participant, all of them reported that they drove on a daily basis.

11.3.1-An extremely car-oriented environment

The key importance of private cars as enablers of better life conditions in such an isolated rural setting was obvious. Cars were a synonym of individual freedom for these residents. Not being able to drive would mean to depend on others and to miss job opportunities and leisure activities: *“We need our cars for everything: going to work, going shopping... Cars are indispensable. I cannot imagine living here without my car. If I had no car, I’d be extremely dependent on other residents. I’d need them to take me to shopping malls, the hairdresser’s, the doctor’s...”* [Female 3, 42, shop assistant].

Daily routine activities were mostly based on driving to the Pamplona MA, although other options (mainly county head towns) were also taken into consideration in specific occasions: *“I sometimes drive to Puente la Reina, where they have two good supermarkets”* [Female 5, 24, teacher/pedagogue]. Another participant said about another nearby town that *“it is also a reasonable option. It takes 15 minutes to get there by car and they too have supermarkets”* [Female 3, 42, shop assistant].

In any case, most activities imply being a frequent solo driver, as each resident has their timetables and routines. These intensely car-based mobility patterns were reported to have a negative effect on their lives, even though the villagers reported having got used to them. Those who could avoid driving for a while reported feeling liberated. As a resident pointed out, *“one summer, I had the chance to live without driving for a month and a half. It felt like a liberation from the car. My sister did the errands for me when she came back from work”* [Female 6, 44, on maternity leave]. Another resident explained that *“I sometimes feel that I’m fed up with driving. I need to drive on a daily basis, so I end up tired of it. I’m lucky now, as I have been offered the chance to take a company bus to my workplace and only drive to the nearby village of [name of the village]. Thus, I feel relieved”* [Male 1, 32, factory worker].

The perception of this model based on an intense use of automobiles as a problem was particularly present in the case of those who had lived in an urban area in the past:

"I have two friends who have just moved from Pamplona to a nearby village and they are suffering from our extreme car dependency. They always ask me: How have you got used to driving so much? How can you like living in a village where you need the car for going everywhere? For me, it has always been this way, so I'm just used to it."

[Female 2, 24, shop assistant]

If the need for driving nearly everywhere was perceived as a burden: Why did they still prefer to live in the rural village of Biurrun? Why not move to the city or to a nearby town? Firstly, as seen in the previous comment, the participants remarked that they had grown up with the private car as a central component of their lives, a fact that mitigated (at least to a certain extent) their perception of driving so often as a burden: *"The normal thing to do here is to turn eighteen and get a driving license and a car. If you don't do so, you know that you might miss job opportunities and so on. Driving has always been a necessity for us"* [Male 2, 49, lorry driver].

But, most importantly, they agreed that the benefits of living in the village were greater than these inconveniences. According to the rural residents, the pros of living in their village outweighed the cons, so none of them reported having taken into serious consideration the option of moving elsewhere: *"Living here is convenient enough. We are relatively close to Pamplona. As we are not far away from the city, we don't think that we would rather move elsewhere"* [Male 2, 49, lorry driver]. In this sense, a rural resident who had lived in a town of the Pamplona MA concluded that *"I lived in [outer-crown peripheral town] before coming. I wouldn't move anywhere else now that I live here. This peacefulness, our people... It's all fantastic"* [Female 1, 22, student]. Moreover, the difference between living in those areas of the city that lie further away from the city core and living in the village were not perceived as too important: *"We are quite well connected to Pamplona. Imagine a person who lives in [“uptown” area] and takes a bus for going to the old town. It might take me a similar amount of time to get there by car"* [Female 3, 42, shop assistant].

Life in the village was said to offer the positive sides of a rural lifestyle combined with a reasonable accessibility to the regional capital. Furthermore, as we will see in the comments on rural households without private cars, the villagers seemed to experiment a strong sense of community that strengthened their social ties and mutual assistance. Their attachment to other locals and the calmness of rural life were valued as important factors.

However, the participants also mentioned a few negative aspects of living in Biurrun. For example, they regretted the inconveniences linked with participating in weekend night-time leisure activities: *"Every time I go out I need to pay over 30 euros for a taxi to take me back from the city or ask friends to stay at their place"* [Male 1, 32, factory worker]. Some of them took risks when heading back home after having socialised with friends in the city: *"Going out is a problem. We sometimes leave our cars in the periphery and drive back after having had a couple of glasses of wine. It's not a nice thing to do, but it doesn't feel too risky, as the roads to the village are nearly empty"* [Female 3, 42, shop assistant]. A participant regretted that he sometimes stayed at home to avoid this kind of problems: *"We sometimes skip some meetings with friends with the intention of avoiding all these inconveniences: parking in the city, coming back after having had some drinks..."* [Male 2, 49, lorry driver].

Biurrun has no public transport, except for a school bus. The participants agreed to make emphasis on their car-oriented environment. This dependency on the automobile is mainly due to the lack of alternatives for covering the residents' mobility needs and the lack of basic services, such as supermarkets, shops, schools, etc. This situation forces these rural dwellers to disproportionately rely on private cars, as driving allows them to access many services.

Work is also closely connected to cars, as many more jobs can be found in the Pamplona MA and in nearby towns. The participants argued that finding a job in the village was nearly impossible, unless someone came from one of the very few families who worked in agrarian businesses. When asked about the possibility of starting new businesses, they regretted the lack of demand that would probably turn any type of shop, restaurant or service unviable:

"It's very unlikely that anyone finds a job here, as you would need to come from a family who have an agro-business. There are no other businesses in Biurrun."
[Female 2, 24, shop assistant]

"You could try to start some other type of business, but making a living would be nearly impossible. Long time ago, we had three bars. Now, we have none."
[Male 2, 49, lorry driver]

"Even the van that carries products might find it hard to be profitable. As it cannot offer very cheap prices, many villagers prefer to drive to big shopping malls where the prices are lower. We tend to do the weekly shopping there." [Female 3, 42, shop assistant]

"It's probably so hard for them to run a business around here that I try to reward their efforts by buying milk and fruits every time they come, even in those occasions when I don't really need anything." [Female 4, 48, unemployed]

There was general agreement among the participants that the few services with which they were directly provided in the village were helpful in mitigating their extreme need for driving nearly everywhere, even though the residents have to drive to basic services such as the doctor's (only the elderly and care-dependent are allowed to go to the village doctor's, while the rest of the residents must drive to bigger municipalities). A participant explained that *"we also have the baker coming on a daily basis. People buy him bread every morning, and he also brings some basic stuff like eggs, milk and pastry"* [Female 1, 22, student].

A van that carries frozen food also goes to the village from time to time. The participants came to the conclusion that, although life without a car would possibly be very hard, or even unviable, these basic services helped in reducing their need for driving. In this context, the car is not only a means for gaining access to services. It also stands as a symbol of freedom of choice. Without driving, daily-life choices would be drastically reduced: *"For example, the only bus service that we have is a fixed-route school bus that takes children to a designated state school in [outer-crown peripheral town] and to a high school in ["uptown" area]. You have no choice, unless you decide to drive them elsewhere"* [Female 2, 24, shop assistant].

As reported by the participants, driving is not only a way of accessing basic services, but it also makes it possible to maximise one's opportunities and choice sets. Life without a car could significantly limit a rural resident's wellbeing and quality of life.

Nevertheless, the idea of not being able to drive when they grow old did not scare them. Surprisingly, none of the participants seemed to be worried about it: *“When the time comes, we will rely on younger people. Our children will drive for us”* [Male 1, 32, factory worker]. Another participant offered an example: *“My father is 85 and he still drives. Every year, after passing his medical check, he is super happy to keep driving his car. When he loses his driving license, we will help him. He has three children who live here. He will need us”* [Female 6, 44, on maternity leave]. The participants stressed the strong sense of community that the locals have. Even if someone had no relatives left, they would rely on lifts from other residents. A participant concluded that *“nobody has moved elsewhere because of not being able to drive anymore. Even if you had no relatives in the village, other residents would help you. We know each other, and we are willing to help. Those who have always lived here are not willing to leave, not at any price”* [Male 2, 49, lorry driver].

The participants claimed that the regional capital city is not only the place where they can find more jobs, but also a pole of attraction for all types of activities, such as leisure and shopping. Depending on their needs and choices, they either drive into the city core or leave their cars in the periphery: *“We usually search for free-of-charge parking areas from where we can easily reach the city core. I park my car in neighbourhoods like [two “uptown” areas] and then walk to the city centre”* [Female 5, 24, shop assistant]. Another participant added that *“we also have the option of parking underground right in the core of Pamplona, if we pay extra. For the weekly shopping, we tend to drive to the periphery. We don’t always need to drive into the city”* [Female 6, 44, on maternity leave].

Leisure activities, which are mostly linked with the regional capital city, are the only ones that are sometimes associated with sharing rides with other locals. As some of these people are close friends, they spontaneously organise carpooling trips to Pamplona-Iruña, where they go to bars or restaurants together. The participants explained that, in specific occasions (such as going out), they share their cars and try to avoid solo car driving: *“We like to share rides when we go out with other residents, although we all have cars. However, daily routine activities are not so compatible with sharing rides. Everyone has their own lifestyle: errands, children, working timetables... We really need our cars”* [Female 6, 44, on maternity leave].

11.3.2-Exploring the alternatives to solo car driving

As we have seen, the residents sometimes share leisure-related trips. However, most of their journeys are based on solo car driving. Could this be reverted? Are there real chances of evolving towards a more sustainable mobility in rural settings like Biurrun? The challenge of reducing solo car driving seems to be extremely difficult to accomplish in such a context. Private automobiles have clearly become hegemonic, and convenience is mainly associated with solo driving. Many residents can drive and afford a car, so no mobility company seems to be interested in offering any kind of service, as the potential demand would be very low: *“Driving is super convenient. You have your timetables and you can stick to them. If you took a bus, you would need to adapt to its timetable”* [Female 2, 24, shop assistant]. For example, a bus service was cancelled in the past due to the lack of demand:

“A few years ago, we still had a rudimentary bus service, four days a week. A company ran the business, but they decided to stop this service. In the past, we usually had a car per household. Some villagers were interested in taking the bus. Nowadays, we have a car per adult person, so nearly nobody would use the bus.” [Male 2, 49, lorry driver]

A few people had tried to challenge the dominant role of solo car driving, but so far any attempt had always been blamed for being unsuccessful or too inconvenient: *“My mother can’t drive. When I can’t offer her a lift, because I’m working or not at home, she just walks to the road exit towards Pamplona and waits as much as needed for anyone heading there”* [Male 1, 32, factory worker].

One participant had attempted to offer informal lifts. She had put her working timetables on the walls of the “sociedad” (local collaborative-economy bar). However, she argued that *“nobody has ever shown any interest in sharing rides with me since I put that information...”* [Female 3, 42, shop assistant]. The participants said that trying to share rides in weekdays had not worked.

So, what could be done? Did they have anything in mind? Beyond a specific measure that could be taken, or an innovation that could be implemented, a profound change in people’s mindsets was seen as necessary: *“For example, why cannot we adapt our lifestyles to a bus service? If we knew that the bus leaves at 9:30 on Saturdays, we could go shopping then. But it seems that we are not willing to adapt to anything that limits our freedom”* [Female 3, 42, shop assistant].

The private car was interpreted as a synonym of individual freedom. Implementing any alternative would imply certain constraints. The rural residents would need to readjust their lives and accept to make some sacrifices for the common good in order to implement a more sustainable mobility.

Finally, the participants were asked on their views about future mobility and on whether change is possible in rural environments like Biurrun. They did not seem to be optimistic. On the one hand, the regional public authorities were not expected to do much about mobility issues. Political determination was seen as important, but the participants had doubts on whether the local politicians will opt for change and invest in a different mobility model for rural areas. On the other hand, there was hope on new innovative technologies arriving to this type of areas, but it was the richest villages the ones that were expected to benefit from them in the early stages: *“Innovative technologies will probably be implemented here in the future: autonomous vehicles, app-based services...”* [Female 2, 24, shop assistant]. *“Sure, but they will arrive to richer villages first. Technologies like automated cars will serve the rich first. For example, there is a nearby village where the residents can take on-demand taxis to Pamplona for a couple of euros, as it is a rich village where this is heavily subsidised”* [Female 3, 42, shop assistant].

Some of the participants claimed that, meanwhile, they should ideally try to manage their resources in a more efficient way and test self-developed non-conventional alternatives to solo car driving: *“We shouldn’t wait for the regional government to create mobility services, I would say that we should do something. We could start some kind of shared platform for*

moving around” [Female 3, 42, shop assistant]. *“Absolutely, why not? We could collectively buy a van and offer cheap ridesharing, or start anything else that can replace some solo car journeys”* [Male 1, 32, factory worker]. In any case, it all seemed to be quite “utopian”, as it looked unlikely that anyone would actually start a new business or a new mobility service.

11.4-SURVEY ON RURAL MOBILITY

The survey (find its full version in the methodological annex) explored the mobility habits and perceptions on mobility issues of the rural residents. The survey respondents’ profiles (which can be consulted in chapter 3 on the methodology) were quite representative of the population (in terms of age, for example) and reflected their extreme dependency on cars.

Only one respondent (an eighty-year-old woman) reported that she did not have a driving license. Only her and a sixty-seven-year-old woman did not own a car. Indeed, it may not be a coincidence that the two exceptions correspond to old women, as men have traditionally been the family drivers when households did not have more than a car. The local households were reported to consist (on average) of three members who had two cars (or other vehicles such as vans, if used for similar purposes). The average was consistent with the village’s car-related motorisation index.

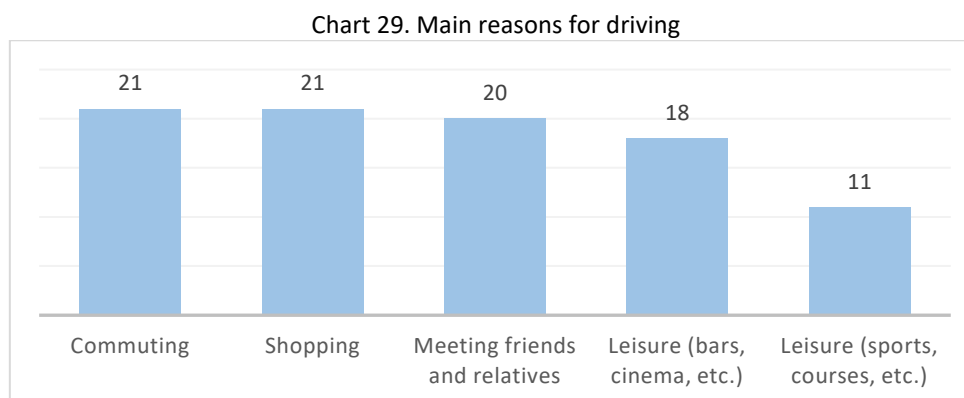
The survey respondents were asked a few questions on daily mobility patterns and other related matters that had a direct impact on their habits and their dependency on cars. These questions were intended to provide with a better understanding about how much and why these rural residents need to own and drive cars. More than half of those employed worked in the Pamplona Metropolitan Area. The rest worked in other municipalities of the region of Navarra or in the village. Many of those who live in the village need to drive for their daily commutes. Only a very small proportion of the residents reported having their workplaces in Biurrun. On average, the respondents claimed driving for nearly 50 minutes and covering slightly over 50 kilometres a day (49 minutes, 52 kilometres). These averages made sense, as a great part of their daily mobility is linked to commuting to the city and its surroundings.

Most of the participants stated that they only travel as car passengers occasionally. When asked on how often they share rides with fellow residents, “occasionally” (12 respondents) and “never” (12 as well) were the most repeated answers. This means that sharing rides is not a common habit. In fact, no one reported sharing rides on a daily basis.

In spite of the redesign of the city core that had just been implemented and had sparked debate due to controversial measures such as restricting car use, most of the respondents stated that they did not feel affected. Only two residents reported going to the Pamplona MA less often since the reconversion took place.

The participants were asked some questions on their car-centred lifestyles and how this might evolve in the future. As reported by the discussion group participants, commuting to work and going shopping are two activities that are very closely linked to driving. A total of 21 respondents claimed driving for these two purposes. Meeting friends or visiting relatives are other activities that commonly involve driving, as well as going to bars, restaurants, the

cinema, etc. Other types of leisure, such as sports activities and courses, were less cited (see chart 29).



Source: Own elaboration (absolute numbers)

It was important to know whether these rural residents considered that life without a car would be viable in such a context and how they imagined their lives without driving. Over half of them claimed that they considered life in Biurrun so car-dependent that not driving a car would make it unviable. A total of 10 respondents said that life without a car would be hard to cope with but possible. Finally, only a pair of participants found this situation viable.

Nevertheless, when asked whether they would leave Biurrun and move somewhere else in case of not being able to drive anymore (due to ageing, for example), the majority claimed that they would stay in the village. Only 5 participants reported that they would move to a less car-centred environment. Two of those who claimed that they would leave had a second residence in the Pamplona MA. Among those who would stay in the village, 13 people said that their quality of life would be worse, whereas 8 people said that it would remain similar.

The survey also aimed to gain some knowledge on how they thought that future mobility will be like. The locals were asked on the implementation of new mobility solutions (such as electric cars, on-demand services or automated vehicles) and on whether their lifestyles will probably be even more private-car-dependent or less attached to private cars in the future. Most of the survey respondents considered that electric cars will be adopted at some point. Switching to “greener” cars could potentially help in reducing the environmental impact of daily mobility, even though mobility would still rely too much on private cars, and those who are not able to drive cars would remain left behind. In any case, rural populations might be potential “early adopters”.

Even though pilot tests are being carried out in other rural areas, a very small minority of the respondents thought that self-driving cars will be implemented in the village. Only a few more believed that on-demand mobility services will be provided. The convergence of these trends is expected to revolutionise urban and rural mobility, but these villagers were not so optimistic about their specific case.

Overall, a large majority expected their dependency on private cars to remain stable in the future. A few participants considered that life in the village will become less car-centred, whereas none of them predicted that they will live in a more car-dependent environment.

The survey included a last section where the participants could add brief comments on mobility issues. Four respondents offered some complementary insights. For example, one comment reflected that the residents regretted the fact that they have always lacked proper public transport connections and that they have lost some of the few services that they had in the past: *“We nowadays have no public transport, either by road or by rail. There are only a few parking lots in the periphery of Pamplona that can be combined with the buses or bikes for getting to the city core”* [Female, 47, admin. assistant]. This person also made emphasis on the importance of increasing the number and the capacity of dissuasive parking spaces in the periphery of the Pamplona MA, as it would help rural residents to avoid driving their cars into the city.

Another comment was pessimistic about the idea of living in this locality without driving, and a third comment highlighted the key role of the basic services provided in Biurrun: *“The baker comes on a daily basis. Once a week, a supermarket-van comes. We also have the gas man, the fruit seller... coming from time to time. They help us in reducing our need for driving so much”* [Female, 22, student].

Finally, a last comment made reference to a matter that has already been discussed. Even if challenging the hegemonic role of solo car driving seems to be nearly impossible in such a context, some residents believed that more could be done before governments and private companies will bring change to these rural areas: *“Meanwhile, it’d be nice to create our own initiatives and organise ourselves for sharing more rides”* [Female, 24, teacher/pedagogue].

11.5-CONCLUSIONS: THE CENTRALITY OF THE PRIVATE CAR IN RURAL AREAS

The democratisation of private cars in rural areas might be a blessing and a problem at the same time. Even though it has probably meant an increase in pollution levels and, thus, an environmental threat, the irruption of the automobile has made it more viable for rural residents to live in isolated settings where basic services are scarce. Cars could contribute to stopping the depopulation of the rural, but social and environmental challenges must be overcome.

This piece of research work, based on the case of the village of Biurrun (mainly) and the county of Valdezarbe-Novenera (Navarra, Spain) illustrates how many rural populations have established close links between their localities and the regional capital city. A relatively short twenty-minute drive makes it possible for the rural residents of the village of Biurrun to have access to many services, leisure and job opportunities, which are mostly concentrated in the Pamplona Metropolitan Area.

Previous academic work on mobility in rural areas, which have generally been paid less attention than cities, has made emphasis on the centrality of private cars. As we have seen,

the private car is deeply rooted in rural lifestyles. However, certain social groups such as the elderly might find it difficult to cope with such a car-centred life.

After having dropped very significantly until the eighties, the populations of Biurrun and the county of Valdizarbe-Novenera have increased in recent decades, or at least stabilised, more recently. The fact that many rural areas have adopted “a car per adult person” logic (after the previous “a car per household” rationale) has probably had a relevant influence on helping to link the village with the regional capital city and making these rural residents’ commutes to the city more convenient. The locality that has been analysed seems to have experienced similar trends to those that have affected the county of Valdizarbe-Novenera.

In the discussion group, the car was reported to be a symbol of freedom. Car ownership and driving allow the residents to have access to jobs and services, as well as to be able to choose what school to take their children to or where to do the shopping. So, why did they stay in the village if they could move to the regional capital city or elsewhere? The residents reported being well connected to the capital city. Moreover, they valued the positive sides of rural life: calmness, peacefulness, strong attachment to fellow locals, etc. Even if they had to give up driving, due to reasons such as ageing, most of them would stay in the village and rely on lifts from their relatives and other villagers.

There was skepticism about a potential change towards a sustainable paradigm. Change was expected to take place extremely slowly. Innovative technologies were expected to be implemented in the richest rural areas first. Meanwhile, some residents said to be interested in trying to create their own platforms and mobility services, but this did not seem likely to actually happen.

The discussion group participants were asked to help in reaching other rural residents for answering a survey. The results contributed to understand their mobility habits, which are based on solo car driving, as well as their expectations for change. Rural households were reported to have two cars and consist of three members (on average). Commuting and going shopping were said to be the activities that are more closely linked to driving. Sharing rides with other locals is not common, as it was only attributed to specific weekend activities.

The survey respondents were skeptical (or only slightly optimistic) about change in rural mobility. The most expected innovation was the adoption of private electric cars. In certain cases, on-demand services were cited as well. Nearly no one expected autonomous vehicles to become popular in the village. Therefore, Biurrun was expected to keep a stable level of car dependency, even though a few respondents were optimistic about becoming less car-dependent in the future.

As implementing collective transport might be nearly unviable in such an isolated place, the popularisation of electric cars could possibly help to reduce the environmental footprint. The convergence of electric (and, perhaps, autonomous) vehicles with mobility services such as carpooling and ridesharing could contribute to achieve a “greener” and socially inclusive rural mobility. Meanwhile, combustion-engine private cars and solo car driving will probably remain hegemonic in these rural areas.

The car was conceived as a synonym of individual freedom. Implementing any alternative to private cars would probably imply certain constraints. Residents would need to readjust their lives and accept to make some sacrifices for the common good in order to achieve a more sustainable model. Private electric cars or other alternative cars could potentially help to reduce the environmental impact of rural mobility, but other challenges would persist.

FINAL CONCLUSIONS

The turn of the century has brought a transition towards a sustainable mobility paradigm that is putting advanced societies to the test. In order to take a great step forward, not only technological advancement but also a sea change in mindsets and mobility habits is needed. Indeed, we have seen throughout the thesis that a wide variety of stakeholders argue that the most crucial transformations will be social rather than technological. Understanding the social appropriation of the new paradigm is key, as well as managing its vast implications. It is difficult to predict when and how change will exactly happen, but it is obvious that change is necessary and that some of the most advanced societies are already implementing it.

It is relevant to underline that the main focus of attention has been put on daily mobility and on those lifestyles that have been adopted in advanced societies that embraced a car-oriented mobility. The system of automobility based on driving combustion-engine private cars is increasingly being challenged due to its inherent downsides (despite the fact that the democratisation of the private car has brought certain benefits as well). It is also relevant to point out that urban mobility (rather than rural mobility) has been my prime focus, although I have also included a chapter on rural areas. As cities are expected to become the settings where the vast majority of us will live in the future, and “urbanites” already outnumber rural inhabitants, the thesis has mainly been devoted to analysing the transformations made in urban areas. Moreover, so far, the greatest changes have generally taken place in cities.

Through my research work and the elaboration of the thesis, I have tried to offer a holistic perspective of the sociological side of the phenomenon of the mobility transition. With this intention, I have combined different qualitative and quantitative methods, and I have given shape to a set of thesis chapters. The collection of diverse types of data (mainly qualitative) was aimed at achieving a deep understanding of how the transition is being socially adopted and managed in different international contexts.

Even though such a complex phenomenon cannot be covered in its entirety, I have made a selection of specific case studies that are representative of some of the different types of contexts where the mobility transition is already taking place or could potentially take place. The case studies analysed in the thesis illustrate how mobility is socially appropriated, what its implications are and how the public authorities manage it.

I conducted a set of case studies, such as the city of Pamplona-Iruña, its suburban areas and a nearby rural area in the region of Navarra, as well as four foreign cities that I visited for research purposes. Such a comparative study had not been carried out before, certainly not using these specific case studies. All this was done with the intention of making a new contribution to what many other social sciences researchers keep trying to decipher: how the mobility transition is being socially appropriated, what its implications are and how the public authorities should manage it.

This transition is a complex phenomenon that has been analysed in academic literature from multiple perspectives. Some of these sub-topics, for example technical advancements, have been mentioned, as mobility cannot be fully understood without them. However, the principal focus has been put on the social side of mobility, such as the inequalities linked to the system of automobility and the risk of gentrifying those settings where change has been successfully implemented.

We have seen how the extensive pre-existing research on the matter has analysed a wide variety of inter-related sub-topics linked to the mobility transition. Despite this complexity, most researchers seem to agree that we are witnessing a period of transition towards a new paradigm that is reshaping in a profound way not only daily mobility but also lifestyles and advanced societies in a broad sense.

From a social science perspective, it is relevant to stress the great importance of evolving towards a just mobility. Certain people might only associate the mobility transition with the aim of achieving an environmentally-friendly mobility. This clearly must be one of the main objectives, but analysing who will pay the toll for this transition (and how) is also important. Change will not come for free, so managing the social implications of the mobility transition is of crucial importance.

Not only academic literature but also reports, the media and other sources have reflected the increasing presence of the mobility transition as a topic of special interest. Numerous sub-topics have been found to be closely interdependent with mobility (inequality, health, the environment, urban planning, rural depopulation, etc.). In an attempt to simplify this complexity, I have placed emphasis on three spheres: the political struggles around mobility, the impact of mobility on lifestyles (through the analysis of aspects such as marketing) and the implications of the current technological revolution and “smart cities”.

Gartman (2004) described the automobile as the keystone of modern consumerism. For Urry (2004), the twentieth century could be labelled as the “century of the car”. Against this background, two opposing models seem to be colliding. This is reflected by many marketing campaigns, in which we can find opposing elements. Certain companies still try to make the most of perpetuating the old Fordist societal model, whereas others are starting to “sell” alternative ways of moving around that are not based on buying and driving conventional petroleum-fueled automobiles and on idealising car-based suburban lifestyles.

Another key component of this transition is its impact on international and local politics. Mobility issues have been “politicised” in such a way that trying to implement a sustainable paradigm (or not doing so) can potentially lead to intense debate and controversy. In some cases, this debate is rooted in differing ideological visions. Nevertheless, it appears that, in most cases, ideologies are not the main source of friction. Mobility is being used as a political weapon to undermine governments and to try to convince potential voters that those in the opposition would do a better job. As political consensus proves difficult to reach, politicians may see an opportunity to make political capital out of the debate adopting positions out of expediency, even though they all generally claim to be for the implementation of a more sustainable mobility paradigm.

Munich has been analysed as a compact and high-performing city where two apparently opposing elements seem to cohabit in harmony: on the one hand, a powerful car industry and a strong car-centric culture (influenced by the presence of the factory and the main headquarters of the German carmaker BMW), and, on the other hand, a well-run and highly efficient urban mobility ecosystem. Even though private cars are prototypical status symbols in Bavarian culture, both citizens and local politicians appear to be taking the adoption of sustainable mobility seriously.

In an effort to encourage its residents to leave their cars at home and use the private car only occasionally (for example during the weekends), the city provides with an efficient and reliable public transport network, as well as an extensive network of cycling lanes. Munich is usually ranked as a top-performer. Moreover, trends such as carsharing or bikesharing are being enhanced. Munich is an example of collaboration among diverse stakeholders. Since the early nineties, BMW, the city council and other entities have worked together in order to manage the transition towards a new model.

The in-depth interviews with Spanish citizens who lived in Munich led to the conclusion that they could generally be labelled as “early adopters”, as they were not as attached to cars as Bavarians usually are. Indeed, most of them did not have cars. Many of these Spanish people commuted by bike or used public transport, and made use of shared cars for specific tasks. The Spanish “early adopters”, who were relatively young and highly educated, valued walking-friendly built environments, bike-friendly cities and efficient public transport, as well as pay-per-use carsharing schemes.

Munich could be taken as a positive example of how the transition should be managed, even though its specific circumstances (the weight of the car sector and the great cultural importance of the automobile) must be taken into account, as they might have an influence on the local authorities, making them reluctant to advocate for a reduction in car ownership.

On the opposite end of the scale, the French city of Pau is an archetypal example of how the twentieth-century mobility model shaped urban settings in such a way that the private car became hegemonic. In terms of sustainable mobility, it is a dispersed city that performs poorly. Retrofitting extremely car-oriented urban settings like Pau seems to be a challenging task and the pace of change is expected to be slow. Its demographic dispersion makes things harder, and the city not only needs an upgrade in infrastructure but also a deep change in people’s mindsets and habits. The Spanish interviewees, as well as the local stakeholders, reported that the alternatives to the private car were usually seen as a last resort for those who cannot drive or cannot afford to drive. These alternatives are scarce and do not perform well. Thus, the interviewees reported that people feel forced to own and drive cars.

New projects and innovative solutions such as a BRT (Bus Rapid Transit) system were being assessed and implemented. However, the local stakeholders were only moderately optimistic about the chances of these measures achieving any significant transformation in the residents’ mobility habits. In the short term, achieving a drastic change in the locals’ car-based mobility patterns was considered to be unviable, as evolving towards a sustainable model was seen as a long and complex process.

Helsinki is a quite special case, as it is a dispersed but high-performing city. This city is an important hub of innovation in the field of mobility. The Finnish public and private sectors are working on the implementation of new alternatives, such as autonomous vehicles and MaaS (Mobility as a Service) platforms. MaaS is a pioneering concept that aims to replace car ownership as a lifestyle choice that is being tested in the Finnish capital. It is a new idea that consists of integrating in one platform or service all the existing alternatives to private cars, so that car ownership would ideally be replaced (or at least supplemented) by monthly subscriptions (or pay-per-use).

Helsinki is a high-performing city in which the standards of living are high. These living standards and the high Finnish education levels might have an influence on people's values. It seems that many citizens in very developed societies are progressively abandoning their materialistic goals and embracing a post-materialistic approach to their lifestyles.

According to the Finnish stakeholders interviewed, Helsinki is a testing ground for future urban mobility. It is seen as an ideal setting for implementing the new mobility model, as it is a high-performing environment in which the authorities are actively encouraging further improvements and the adoption of innovative services. Pioneering MaaS companies, as well as carsharing companies and other types of mobility businesses, are well established in the Finnish capital city.

Similar to the case of Munich, the Spanish citizens who were interviewed could generally be labelled as "early adopters". Unless they had young children, most of those who lived in the city managed without owning cars. Several interviewees were familiar with bikesharing and carsharing, and even with using MaaS mobile apps. This city is probably one of the best examples of how the future of urban mobility will ideally be. They are not only adopting the latest trends, but they perform well in terms of traditional alternatives such as using public transport and cycling. Moreover, the interviewees reported that not needing to have a car was perceived as a symbol of status. Instead of owning and driving a luxury car, living in an area where cars were not needed at all for moving around was seen as a synonym of being affluent.

An important outcome of the research work carried out in Helsinki is that there seems to be a correlation between such a high-performing environment and its residents' mindsets. Both the "image-based rating exercise" and the online survey conducted with local students led to the conclusion that their attitudes towards mobility appear to be in accordance with the high-performing society in which they live. The students from the University of Helsinki ranked active modes (walking and, in the second place, cycling) as the most desirable ways of moving around. Using public transport was also highly valued. All these options were seen as accessible for anyone (neutral status). Furthermore, in the online survey on mobility, the Finnish students reported being less interested in buying cars in the future than the students from Toronto and Pamplona-Iruña.

Finally, Toronto is a compact but poorly-performing city that was chosen as an example of a prototypical North American city that has been designed for the private car. This logic seems to apply to its suburban areas and to certain inner-city areas, but not to its downtown

core. The core of Toronto is an exception where the modal split is much more balanced and the private car is not dominant. Despite this, solo car driving is estimated to represent 70% of all the journeys made in the metropolitan area. Car-oriented suburban lifestyles and car-centred mindsets are a key component of this North American territory.

Moreover, Toronto is an example of how mobility is inextricably connected to inequality-related issues. A process of gentrification seems to be taking place in the city. As the core of the city is high-performing and attracts economic activity, the cost of living there is high. As a result, the poor might be expelled to other areas where the private car is hegemonic and public transport and other alternatives are not so convenient. Poor people struggle to afford cars, are driven into debt or must cope with long and tedious commutes.

The case of Toronto is also representative of the debate about what innovations are good for the society and what other innovations should not be so welcome. While the benefits of improving public transport networks and expanding bikesharing systems are not (generally) contested, there is debate on whether the adoption of ride-hailing/sharing services such as Uber is beneficial for the society in terms of their impact on the local economies and the use of other alternatives such as public transport.

The in-depth interviews with Spanish citizens reflected the existing divide between the core of the city and the rest of Toronto. As most of these people preferred not to drive in a foreign country, and could afford to live in downtown Toronto, they were less car-oriented than average Torontonians. However, they agreed that Toronto (if taken as a whole) is a poorly-performing environment if compared to European standards.

The online survey carried out with students from the University of Toronto led to logical conclusions such as finding that the downtown-campus participant students had “greener” habits than their suburban counterparts. With the “image-based rating exercise”, we could see that the Torontonians usually had car-centred mindsets. Luxury cars, electric cars, SUVs and average cars were attributed the highest average scores in terms of desirability. Except for average cars, they were also attributed a high social status, meaning that these students interpreted that their preferences were linked to social background.

The city could be divided into “two Torontos”. This division seems to have an effect both on how people move around and how they approach mobility issues. Toronto’s case could be taken as an example of how two opposing lifestyles and mindsets can potentially collide: a high-performing core of the city where people can live without cars and a car-centred and poorly-performing rest of the city where private cars are the “default” mode.

I have also analysed the social side of the mobility transition in the region of Navarra in considerable depth and in a variety of contexts (including a rural setting) in the last part of the thesis.

As we have seen, Pamplona-Iruña (the capital city of Navarra) could be considered a very compact city, but it does not perform well in terms of mobility. It does not perform poorly either. Its mobility is clearly characterised by a duality: the vast majority of the journeys are made either on foot or by car, these two being the locals’ main choices. Its compactness

makes it possible that many distances are walking-friendly, but the private car dominates in the rest of the cases. The use of public transport and cycling fall far below the goals set by the local SUMP (Sustainable Urban Mobility Plan).

The analysis of statistical data suggested that, in general, the further away an area lies from the city core, the less people walk and the more they drive. While the city core already performs well enough in terms of car use, as walking is by far the most frequent choice for moving around, other areas of the city are more car-oriented. The “midtown” is closer to reaching the objectives set by the SUMP than the “uptown”. These findings might call into question the strategy of making the heaviest investments on mobility in the core of the city instead of in other areas that probably need them more.

In fact, the redesign of the city core (through the so-called “Amabilización” Plan) has been the greatest transformation made so far. Traffic flows have been limited and some car lanes have been converted into bike lanes, bus lanes and pavements, meaning that some streets have been pedestrianised. CCTV cameras monitor those who drive on certain roads, as only old-town residents are allowed to do so. In parallel, one of Pamplona-Iruña’s main avenues has been converted into a “sustainable corridor” with fewer parking spots and more cycling lanes and bus-priority lanes.

The implementation of these measures has become a political battleground with strong views and heated debate. The city can be taken as an example of how the management of mobility can lead to social and (mainly) political controversy. This type of reaction seems to be a common feature of those places where the transition starts to be implemented. The city is starting to “sell” the message of the need to rethink the design of the urban landscape along with people’s mobility habits and mindsets to achieve a sustainable model. However, no matter how necessary, there is always resistance to change, and facing these challenges will be not be easy. Reaching political consensus and convincing a vast majority of the people of the benefits of change will be an uphill struggle. However, there was moderate optimism about the city of Pamplona-Iruña being at a turning point.

The 2015-2019 political term brought social and political debate to the city. The redesign of its core and the implementation of other measures that restricted car use divided the population. The newspapers reflected this division. As they were aligned with local political parties, they offered opposing views on mobility matters. Many citizens (as well as certain associations and protest platforms) opposed the decisions taken by the local government, whereas many others backed it. The city council and the old town traders’ association (which feared that their sales would drop) offered differing data on the outcome of the changes.

The local stakeholders agreed to emphasise the importance of reaching consensus, but the political battles make it unlikely to happen. Using mobility-related matters as a political weapon was considered as a temptation. According to the interviewees, the city must ideally redefine its mobility in such a way that alternative modes such as public transport and the bike are prioritised over private cars (pedestrians being at the very top of the hierarchy).

According to the online survey carried out with students from the Public University of Navarra, the local students were fairly evenly divided about their intention to buy a car in the future. Nearly half of them claimed that they would buy a car, whereas the rest said that they would not. This probably reflected the city's overall picture. The "image-based rating exercise" also led to logical results. The local students valued car-related options highly, but they ranked walking the highest. Both the older generation and the young students liked walking, but some differences between the two groups were discernible: the elderly drove more, even though they valued public transport highly.

For their part, the suburban areas of the Pamplona Metropolitan Area usually have a low population density (not in all cases) and are divided in numerous councils, but it seems that social and political tensions are less intense there. These areas must face greater challenges, as they are generally more car-oriented than the inner city. Nevertheless, they have a clear advantage: The suburban town councils can count on a greater consensus.

Three sub-territories have been defined in relation to their location with respect to the peripheral motorway that surrounds the city. The highest dependency on cars is found in the "outer suburban ring", where affluent citizens tend to live. It appears that the poor tend to be expelled to the "inner suburban ring", while those who have average incomes tend to live in the inner city, which is the least car-oriented part of the metropolitan area.

The analysis of statistical data led to the conclusion that the city (if taken alone) is not so far from reaching the objectives set by the SUMP (in terms of car use). However, the "inner suburban ring" and the "outer suburban ring" are (on average) quite far and very far from reaching them (respectively). Urban sprawl appears to have an important influence. Tackling the excessive need for private cars in suburban areas seems to be an extremely difficult task. Public transport is usually considered to be efficient for connecting suburban towns to the city core, but inter-peripheral journeys are extremely dependent on the private automobile. Modal share averages vary in a logical way: when the distances from the city core increase, car use tends to grow, whereas walking tends to decrease.

As illustrated by the discussion group carried out in an "outer suburban ring" town, car dependency could be attributed to several factors: convenience, bad weather, low-density urban developments that lack services, etc. All the stakeholders agreed to underline the fact that urban sprawl is one of the leading causes of car dependency. Furthermore, embracing planning strategies that promote high-density housing developments clashes in some cases with the idealised notion of living in a suburban detached (or semi-detached) house with a garden.

In this context, the interviewees agreed on the necessity of imposing restrictions on car use and campaigning for alternative options. Furthermore, they argued that they worked on making their towns more active, in such a way that their residents could have all or nearly all their needs covered (schools, shops, leisure, etc.). These efforts were being led by local politicians and experts, but change needs to be incorporated into people's mindsets. More sustainable mobility habits were expected to be socially accepted once they are imposed,

not before, in a similar way to what happened with banning smoking in public spaces in the past (it was rejected at first, but it was afterwards readily accepted as a healthier norm).

The difficulty of coordinating the measures taken by the numerous councils (which have their own budgets and priorities) is a great challenge. The role of the Mancomunidad de la Comarca de Pamplona (MCP), which is the metropolitan transport authority, is expected to be of great importance in this sense, as they are the only entity that has the proper authority over the different territories. This is why the MCP was chosen to lead the development of the Metropolitan Mobility Plan (the “PMUS”). All in all, a stabilisation in the apparently ever growing use of private cars in the metropolitan area was expected. Some experts predicted a slight inversion of this trend in those areas of the periphery that are far from being rural.

I also carried out an online survey on home-work mobility. Nearly half of the workers of a company located in the periphery of the Pamplona Metropolitan Area participated in the survey. This initiative revealed that tensions do not only arise in the political sphere but also when it comes to implementing change in other contexts such as companies.

Solo car driving was, by far, the most commonly chosen option for commuting. Driving alone to the workplace was the workers’ overriding choice, whereas other options were of secondary importance. Over half of the respondents regularly drove to work and back home on their own. This is a worrying fact, as this is the least sustainable option and it is having an impact on the saturation of the company’s parking spaces.

Even though the company’s management board opposed it, teleworking would help in reducing the total number of trips. Only a few respondents believed that their type of work was incompatible with teleworking. It was not seen as an alternative for every day either, but could potentially be implemented with a certain regularity in order to reduce the use of private cars. Offering more flexible timetables was another important demand. This would help in increasing the use of alternatives such as the bus (which has fixed schedules).

The vast majority of the solo car drivers argued that they would take other options into consideration. This means that boosting the alternatives to solo car driving could potentially lead to tackling the problem. Cycling to work, commuting by bus and sharing a car with other colleagues were said to be as desirable as solo car driving in terms of perceived wellbeing. The employees’ priorities were convenience and saving time, and many workers regretted their lack of alternatives. These were three of the main causes of their excessive use of cars.

Even though their educational level was high, most of the respondents did not prioritise healthy habits and sustainability matters. Raising awareness could help, as twice as many of those who claimed to be poorly informed or uninformed about sustainability issues were solo car drivers. Female workers drove more regularly than their male counterparts, due to factors such as unbalanced family responsibilities.

The workers demanded changes to allow them to achieve a more sustainable mobility. The company had no competences over some of their demands, such as improving public transport and bus frequencies. However, there were other demands that they could meet: reserving parking spots for employees who share rides, installing charging points for EVs and

e-bikes, building showers for those who cycle to work, etc. A measure that was highly valued is the creation of an app with which workers could find colleagues with whom to share rides. Except for the charging points, none of the demanded measures had been implemented by the end of this research work, even though the workers' committee had some hopes for the newly-formed managerial board.

In a few cases, some risk of generating controversy was detected. Certain measures could lead to debate, as there would be workers who could feel left out. If some workers' specific circumstances would not be compatible with benefitting from any of the changes made, the company should assess the possibility of compensating them in other ways. Apparently, no measure alone would revert the situation if implemented alone. Therefore, diversifying and boosting the alternatives to solo car driving is central to achieving change. The survey led to concluding that evolving towards a more sustainable home-work mobility was possible but difficult. The managerial board's "inaction" could lead to greater problems in the future, so progressively enhancing the alternatives to solo car driving should be the path to follow.

Finally, I included a case study on a rural area of Navarra that would shed light on how the private automobile may be seen as a problem and a blessing in rural areas. Even though the massive use of cars poses an environmental threat and leaves certain groups of residents behind, the democratisation of private cars in rural areas has made it more viable for rural dwellers to live in isolated environments where basic services are scarce. The private car can contribute to stopping the depopulation of rural areas, but social and environmental threats must be faced.

In the small village of Biurrun, many rural residents have established close links between their village and the regional capital. A relatively short drive to the Pamplona Metropolitan Area makes it possible to gain access to job opportunities, services and leisure activities. The village offers very little employment. After having significantly dropped until the eighties, this rural population has increased in recent decades, or at least stabilised, more recently. The adoption of a car per adult logic has probably helped in tackling the depopulation of the village and the county of Valdizarbe-Novenera (the rural county to which Biurrun belongs).

The centrality of the private car was found to be evident. Some social groups (such as the elderly) may find it difficult to deal with such a car-centred life. The car is deeply rooted in rural lifestyles. A discussion group was organised with the collaboration of the locals. The car was reported to be a symbol of freedom. It allows rural dwellers to have access to jobs and services, as well as to choose what school to take their children to or where to shop.

An important question arose: Why did they stay in the village if they could move to the city? The residents reported to be well connected to the capital city and valued the positive sides of rural life: calmness, peacefulness, strong attachment to other residents, etc. Even if they had to give up driving their cars due to reasons such as old age, most of the participants would stay in the village and rely on lifts from relatives and other villagers. They had a strong sense of community, so those who could not drive were not totally left behind.

In this light, a survey conducted in the village showed that these rural residents are very dependent on their cars. An average household was found to consist of three members and to have two cars. Commuting and going shopping were the activities that were most closely connected to driving. Sharing rides was not common. Any alternative to the private car was seen as inconvenient. The village had no public transport, except for a school bus. As offering collective transport options might not be viable in such an isolated place, the popularisation of electric cars could possibly help to reduce their environmental footprint. The convergence of electric (and, in the longer term, automated) vehicles with mobility services could help in achieving a “greener” and more socially inclusive mobility. Meanwhile, combustion-engine private cars and solo driving will most likely remain hegemonic in this type of areas.

The respondents were skeptical or slightly optimistic about bringing change to the village. They expected the services provided in their village to remain similar. The most anticipated innovation was the implementation of electric cars. On-demand services were also cited in some cases. Nearly no one expected autonomous vehicles to become popular in the village. Therefore, the village was expected to keep a stable level of car dependency, although a few residents were optimistic about becoming less car-dependent in the future.

Implementing any alternative to the private car would probably imply certain constraints. The residents would need to readjust their lives and accept to make some sacrifices for the common good in order to achieve a more sustainable mobility. Otherwise, electric or other alternative cars could perhaps help in reducing the environmental impact of their mobility, but other challenges would persist.

OVERALL CONCLUSIONS

Mine is a small contribution to analysing the vast and complex phenomenon of the social side of the mobility transition. I have tried to offer a rather holistic sociological approach to the research problem, even though covering all the social impacts of the mobility transition in advanced societies is not viable. I have analysed in a comparative way a set of eight case studies that are meant to be representative of different types of contexts where the mobility transition is already being implemented or could potentially be implemented. This has not been done before, certainly not using these specific case studies.

We have seen throughout the thesis that there seems to be a correlation between how citizens approach mobility and the environments where they live. In those places that are high-performing and less car-oriented, people tend to value the alternatives to the private car highly. In contrast, in those places where the private car is hegemonic, citizens tend to associate driving with freedom and to have a more positive attitude towards private cars. There also seems to be a relationship between income or wealth and place of residence and how people move around. For example, in the case of the Pamplona Metropolitan Area, we see that the affluent tend to live either in rather car-free city core areas or in the car-centred “outer suburban ring”. The poor appear to be expelled to “uptown” areas and to the “inner suburban ring”, which are more car-dependent than the city core and the “midtown”.

Solo car driving probably is the least sustainable way of moving around in daily life. The system of automobility has shaped our societies in such a way that living without driving has become a great challenge in many places. Moreover, the strong cultural influence of the car has led to the adoption of car-centred lifestyles and habits such as “default” solo car driving. Nevertheless, we can find examples of a successful management of the transition towards a more sustainable mobility paradigm. Even low-density, scattered urban settings (such as Helsinki) appear to be compatible with a non-private-car-oriented mobility, even though urban sprawl usually makes the task of reducing car-dependency more difficult.

A shift in people’s mindsets is crucial for effectively implementing a new paradigm. Many people have grown up in car-centred societies and cultures. It seems that new generations such as millennials are less attached to car ownership and driving. However, it is difficult to predict whether their attitudes towards mobility will last over time. Many stakeholders and experts argue that change needs to be imposed for the common good. Once an environment has become less car-oriented (if it is performing well in terms of mobility), we could expect citizens to become accustomed to it and to progressively embrace less car-centred lifestyles.

It is not clear whether most people will willingly accept to make certain sacrifices for the common good. For example, sharing rides means that riders are not instantaneously picked up. Social and political tensions usually arise when change is to be implemented. Politicians must be brave and careful at the same time, as certain measures might be contested. Radical changes may not be the best solution, but “inaction” should not be tolerated. A progressive implementation of a more sustainable mobility model is probably the best way of evolving towards better societies. Reaching political consensus would help in reducing the tensions provoked by this transition. It is logical to expect social upheaval at the beginning, as many citizens will feel threatened by change. However, in the long term, we could probably expect a progressive and positive adoption of new habits, lifestyles and mindsets.

Governments and stakeholders should manage the social-inequality-related implications of this process with special care. Mobility issues are inextricably linked to numerous factors, such as social background, income, gender, age, etc. Housing and mobility issues need to be addressed in such a way that the needy are not left behind. While the affluent feel freer to choose their lifestyles, the poor might be expelled to areas that are not well served and they might not be able to afford private cars or might struggle to do so.

Measures such as increasing the prices of parking spaces, banning old polluting cars, etc. might be controversial in this sense, as they might benefit the richest and harm the poorest. Thus, most of the efforts should ideally be put into fostering those alternatives to the private car that are accessible and affordable for everyone. The mobility transition should not only bring a “greener” paradigm but also more just societies.

Even though Munich is also considered to be a top-performer, Helsinki probably is the best example (among those studied here) of how future mobility will (or should ideally) be. Helsinki is not only encouraging the adoption of the latest trends but it is also enhancing the use of traditional alternatives such as public transport and the bicycle. Finnish experts such

as Salonen and Ahlberg (2013) argue that changing the urban environments and the context would be more effective than solely targeting people's behaviour.

Moreover, there seems to be a correlation between such a high-performing environment and an egalitarian and eco-friendly approach to mobility, as options such as cycling and using public transport modes were perceived as desirable and accessible for anyone. This was also reflected by the fact that the participant students from the University of Helsinki were less interested in buying cars in the future than their counterparts from the University of Toronto and from the Public University of Navarra.

Despite the emphasis made on the crucial importance of reshaping cities in such a way that the private car no longer plays such a hegemonic role, it is not so clear that this solution is valid or viable for rural areas. Private cars have become important for the survival of rural areas. Implementing collective transport might perhaps not be viable in certain rural areas. Thus, in the short term, adopting private electric cars could possibly imply a better model in rural places, if this led to a reduction in their environmental footprint. In the long term, more profound transformations could possibly be achieved through the adoption of innovations such as automated vehicles and rural Mobility as a Service (MaaS) platforms.

Public authorities, as well as the private sector, will be eager to gain further knowledge on how the transition is having an impact on societies, how it is expected to evolve and how it should ideally be managed. This is an attempt to offer a sociological perspective of the impacts of the mobility transition. Even though it is not viable to cover all these impacts, I believe that this research work reflects one of the main conclusions: The mobility paradigm shift should be interpreted and managed in such a way that a holistic perspective is adopted.

Much more research on this topic is needed. The role of sociologists is key to understand the main implications of the mobility transition as we are witnessing all kinds of inter-related transformations. Merely technocratic approaches to these matters must not prevail, as they could lead to undesirable outcomes. Thus, sociologists and other social science researchers must work in parallel with those who focus on technological advancements. In light of the conclusions, I would suggest that special emphasis is placed on analysing the social attitudes towards mobility before and after implementing change. Even though it is argued here that change is expected to have an effect on people's mindsets as high-performing environments seem to correlate with different values, it would be very useful to explore specific cases and see how people's views on mobility have evolved with the implementation of change.

Governments, companies and other stakeholders must have the will to head towards a new mobility paradigm and take notice of the conclusions drawn by researchers and experts on mobility. Otherwise, societies will either perpetuate a paradigm that is not sustainable in the long term or have no control over the appropriation and the implications of change. Multi-stakeholder co-operation and political consensus are decisive for successfully heading towards a sustainable mobility paradigm in a steady and progressive way.

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IN-DEPTH INTERVIEWS WITH SPANISH CITIZENS LIVING ABROAD: MUNICH (SCRIPT)

SHORT INTRODUCTORY QUESTIONS (a normal, average week)

How often do you use your private car?

How often do you use other privately-owned alternatives (own bike, motorbike...)?

How often do you use public transport? What modes (bus, tramway, metro...)?

Are you familiar with bike-sharing, car-sharing, carpooling, etc.? If so, how often do you use them?

MAIN DISCUSSION

Have your patterns changed if compared compared with your former home cities? (Differences in terms of sustainability, etc.) Would you say that there are stages of advancement in terms of mobility, or, are they just different cities?

What positive things would you incorporate from Munich? What things do you miss when comparing?

What about the prices (affordability, relating it to use)? (Public transport and other options)

What is the role of the car in urban mobility? Is it a status symbol here? How do people in Munich relate to it?

Do you think that there are social inequalities underlying mobility in Munich? (E. g.: public transport often used by..., shared bikes often used by..., etc.)

New trends: Social appropriation of bike-sharing, car-sharing, hybrid/electric cars, electric motor/bikes... (Some groups left behind? Some people reluctant to change? Fashionable for others? ...)

Have you heard of DriveNow, Car2Go, StattAuto...? If so, have you tried them? Are you a frequent user?

CONCLUSIONS

How would you personally like urban mobility to be? Would you own a car in this ideal situation?

Is intermodality the best alternative for cities? Is the private car indispensable (shopping, travelling...)?

PROFILE INFORMATION (ANONYMOUS)

Age:

Gender:

Profession:

Household members (number of people, lives with ...):

Cars/motorbikes:

Bikes:

Other vehicles (electric bikes, etc.):

Years (or months) living in Munich:

Other cities where they have lived for at least a year:

IN-DEPTH INTERVIEWS WITH SPANISH CITIZENS LIVING ABROAD: PAU (SCRIPT)

SHORT INTRODUCTORY QUESTIONS (a normal, average week)

How often do you use your private car?

How often do you use other privately-owned alternatives (own bike, motorbike...)?

How often do you use public transport? What modes (bus, train...)?

Are you familiar with bike-sharing, car-sharing, carpooling, etc.? If so, how often do you use them?

MAIN DISCUSSION

Have your patterns changed if compared compared with your former home cities? (Differences in terms of sustainability, etc.) Would you say that there are stages of advancement in terms of mobility, or, are they just different cities?

What positive things would you incorporate from Pau? What things do you miss when comparing?

What about the prices (affordability, relating it to use)? (Public transport and other options)

What is the role of the car in urban mobility? Is it a status symbol here?

Do you think that there are social inequalities underlying mobility in Pau? (E. g.: public transport often used by..., shared bikes often used by..., etc.)

New trends: Social appropriation of bike-sharing, car-sharing, hybrid/electric cars, electric motor/bikes... (Some groups left behind? Some people reluctant to change? Fashionable for others? ...)

What are your expectations about the new BHNS?

CONCLUSIONS

How would you personally like urban mobility to be? Would you own a car in this ideal situation?

Is intermodality the best alternative for cities? Is the private car indispensable (shopping, travelling...)?

PROFILE INFORMATION (ANONYMOUS)

Age:

Gender:

Profession:

Household members (number of people, lives with ...):

Cars/motorbikes:

Bikes:

Other vehicles (electric bikes, etc.):

Years (or months) living in Pau:

Other cities where they have lived for at least a year:

IN-DEPTH INTERVIEWS WITH SPANISH CITIZENS LIVING ABROAD: HELSINKI (SCRIPT)

SHORT INTRODUCTORY QUESTIONS (a normal, average week)

How often do you use your private car?

How often do you use other privately-owned alternatives (own bike, motorbike...)?

How often do you use public transport? What modes (bus, tramway, metro...)?

Are you familiar with bike-sharing, car-sharing, carpooling, etc.? If so, how often do you use them?

MAIN DISCUSSION

Have your patterns changed if compared compared with your former home cities? (Differences in terms of sustainability, etc.) Would you say that there are stages of advancement in terms of mobility, or, are they just different cities?

What positive things would you incorporate from Helsinki? What things do you miss when comparing?

What about the prices (affordability, relating it to use)? (Public transport and other options)

What is the role of the car in urban mobility? Is it a status symbol here?

Do you think that there are social inequalities underlying mobility in Helsinki? (E. g.: public transport often used by..., shared bikes often used by..., etc.)

New trends: Social appropriation of bike-sharing, car-sharing, hybrid/electric cars, electric motor/bikes... (Some groups left behind? Some people reluctant to change? Fashionable for others? ...)

Have you heard about MaaS (Mobility as a Service)? If so, have you tried it? Are you a frequent user?

CONCLUSIONS

How would you personally like urban mobility to be? Would you own a car in this ideal situation?

Is intermodality the best alternative for cities? Is the private car indispensable (shopping, travelling...)?

PROFILE INFORMATION (ANONYMOUS)

Age:

Gender:

Profession:

Household members (number of people, lives with ...):

Cars/motorbikes:

Bikes:

Other vehicles (electric bikes, etc.):

Years (or months) living in Helsinki:

Other cities where they have lived for at least a year:

IN-DEPTH INTERVIEWS WITH SPANISH CITIZENS LIVING ABROAD: TORONTO (SCRIPT)

SHORT INTRODUCTORY QUESTIONS (a normal, average week)

How often do you use your private car?

How often do you use other privately-owned alternatives (own bike, motorbike...)?

How often do you use public transport? What modes (bus, tramway, metro...)?

Are you familiar with bike-sharing, car-sharing, etc.? If so, how often do you use them?

MAIN DISCUSSION

Have your patterns changed if compared compared with your former home cities? (Differences in terms of sustainability, etc.) Would you say that there are stages of advancement in terms of mobility, or, are they just different cities?

What positive things would you incorporate from Toronto? What things do you miss when comparing?

What about the prices (affordability, relating it to use)? (Public transport and other options)

What is the role of the car in urban mobility? Is it a status symbol here? How do people in Toronto relate to it?

Do you think that there are social inequalities underlying mobility in Toronto? (E. g.: public transport often used by..., shared bikes often used by..., etc.)

New trends: Social appropriation of bike-sharing, car-sharing, hybrid/electric cars, electric motor/bikes... (Some groups left behind? Some people reluctant to change? Fashionable for others? ...)

CONCLUSIONS

How would you personally like urban mobility to be? Would you own a car in this ideal situation?

Is intermodality the best alternative for cities? Is the private car indispensable (shopping, travelling...)?

PROFILE INFORMATION (ANONYMOUS)

Age:

Gender:

Profession:

Household members (number of people, lives with ...):

Cars/motorbikes:

Bikes:

Other vehicles (electric bikes, etc.):

Years (or months) living in Toronto:

Other cities where they have lived for at least a year:

DISCUSSION GROUPS

PARTICIPANTS' PROFILE QUESTIONS (SAMPLE: RURAL AREA, BIURRUN)

Gender: Participant's number:

Age: Educational level: Basic / Baccalaureate / Vocational training / University

Second residence in Pamplona-Iruña or in another municipality; own home or family home to which you have access (Yes or Not; if Yes, write the name of the municipality):

Employment status (type of job or studies, pensioner, etc.):

Driving license (Yes / No): Own car (Yes / No):

Number of household members: Number of household cars:

Frequency of use of the car (as a driver): Daily / Often / Occasionally / Never

Frequency of use of the car (as a passenger): Daily / Often / Occasionally / Never

UNIVERSITY STUDENTS AND MOBILITY

PROFILE QUESTIONS

*Required

1. Gender *

Mark only one oval.

- Female
- Male
- Other
- Prefer not to say

2. Age *

3. City/town of current residence *

Mark only one oval.

- Helsinki
- Other municipality in the metropolitan area (Espoo, Vantaa, etc.)
- Other municipality

4. Type of studies *

Mark only one oval.

- Undergraduate
- Master's
- PhD
- Others

5. University of Helsinki campus

Mark only one oval.

- City centre
- Kumpula
- Viiki
- Meilahti
- Other

6. In possession of driving license *

Mark only one oval.

- Yes
- No

7. Car owner *

Mark only one oval.

- Yes
- No, but I have free-use of a household member's car
- No

MOBILITY HABITS

University students and mobility

8. Usual way/s of commuting in good weather conditions *

Tick all that apply.

- Personal bike
- Personal mobility vehicle (e-bike, e-scooter, etc.)
- Shared bike
- Motorcycle
- Bus
- Streetcar
- Subway
- Commuter rail
- Single occupancy vehicle (private car)
- Carpooling (private car)
- Walking
- Other options

9. Usual way/s of commuting in bad weather conditions *

Tick all that apply.

- Personal bike
- Personal mobility vehicle (e-bike, e-scooter, etc.)
- Shared bike
- Motorcycle
- Bus
- Streetcar
- Subway
- Commuter rail
- Single occupancy vehicle (private car)
- Carpooling (private car)
- Walking
- Other options

10. Weather as a factor (When the weather is bad/good, I usually change the way I commute) *

Mark only one oval.

- Yes
- No

11. Duration of most repeated commute (approx. number of minutes; one way) *

12. Length of most repeated commute (approx. number of kilometres; one way) *

13. Bikesharing network: I have used Helsinki's public shared bikes *

Mark only one oval.

- Yes
- No

14. Bikesharing network: I am a frequent user (at least once a week, on average, in good weather conditions) of Helsinki's public shared bikes *

Mark only one oval.

- Yes
- No

15. MaaS: I have tried the Whim app *

Mark only one oval.

- Yes
 No

16. MaaS: I am a frequent user of the Whim app *

Mark only one oval.

- Yes
 No

17. Overall (including all areas and modes), I would rate public transportation in Helsinki (as a metropolitan area) as: *

Mark only one oval.

- Excellent
 Good
 Average
 Poor
 Very poor

18. Overall (infrastructure, perceived safety, etc.), I would rate cycling in Helsinki (as a metropolitan area) as: *

Mark only one oval.

- Excellent
 Good
 Average
 Poor
 Very poor

ATTITUDES TOWARDS MOBILITY

University students and mobility

19. The most relevant factors (maximum of 3) for choosing my mobility options are: *

Tick all that apply.

- Price
 Saving time
 Environmental sustainability
 Health
 Convenience/comfort
 Weather conditions
 Lack of other alternatives
 Other factors

20. If I was offered good (not expensive, reliable...) multi-modal alternatives (public transit, bikesharing, carsharing, car rental...), I would prefer: *

Mark only one oval.

- To own a car anyway
 Not to own a car

21. I have the intention to buy a car in the future: *

Mark only one oval.

- Yes
 No
 I already own one

22. In my opinion, in general, living without a private car in Helsinki: *

Mark only one oval.

- Is only viable for city centre residents
 Is only viable for inner-city residents
 Is viable for inner-city and suburban (Espoo, Vantaa, etc.) residents
 Is not viable

23. For me, showing a certain status through mobility (for example, through driving a luxury car): *

Mark only one oval.

- Is a very relevant factor
- Is a considerably relevant factor
- Is a slightly relevant factor
- Is not a relevant factor

24. When choosing how I move around, for me, health-related issues (active modes, etc.): *

Mark only one oval.

- Are a very relevant factor
- Are a considerably relevant factor
- Are a slightly relevant factor
- Are not a relevant factor

25. Ideally, I would like Helsinki to become (multiple compatible options): *

Tick all that apply.

- A more walkable city
- A city with less cars
- A city with a bigger share of electric cars
- A city introducing autonomous vehicles
- A city with better public transit
- A city with better cycling infrastructure
- A city with new alternatives for mobility (shared e-bikes and e-scooters, etc.)
- A city designed more for cars
- None of the above

26. I would be willing to pay higher fares or taxes for Helsinki to become (multiple compatible options): *

Tick all that apply.

- A more walkable city
- A city with less cars
- A city with a bigger share of electric cars
- A city introducing autonomous vehicles
- A city with better public transit
- A city with better cycling infrastructure
- A city with new alternatives for mobility (shared e-bikes and e-scooters, etc.)
- A city designed more for cars
- None of the above

UNIVERSITY STUDENTS AND MOBILITY

PROFILE QUESTIONS

*Required

1. Gender *

Mark only one oval.

- Female
- Male
- Other
- Prefer not to say

2. Age *

3. City/town of origin *

Mark only one oval.

- Toronto
- Other municipality in the GTHA (Greater Toronto and Hamilton Area)
- Other Canadian municipality
- Foreign country

4. City/town of current residence *

Mark only one oval.

- Toronto
- Other municipality in the GTHA (Greater Toronto and Hamilton Area)
- Other municipalities

5. Type of studies *

Mark only one oval.

- Undergraduate
- Master's
- PhD
- Others

6. Year of program *

Mark only one oval.

- 1
- 2
- 3
- 4
- 5
- Other

7. University of Toronto campus

Mark only one oval.

- Saint George (UTSG)
- Scarborough (UTSC)
- Mississauga (UTM)

8. In possession of driving license *

Mark only one oval.

- Yes
- No

9. Car owner *

Mark only one oval.

- Yes
- No, but I have free-use of a household member's car
- No

MOBILITY HABITS

University students and mobility

10. Usual way/s of commuting in good weather conditions *

Tick all that apply.

- Personal bike
- Personal mobility vehicle (e-bike, e-scooter, etc.)
- Shared bike
- Motorcycle
- Bus
- Streetcar
- Subway
- Commuter rail
- Single occupancy vehicle (private car)
- Carpooling (private car)
- Walking
- Other options

11. Usual way/s of commuting in bad weather conditions *

Tick all that apply.

- Personal bike
- Personal mobility vehicle (e-bike, e-scooter, etc.)
- Shared bike
- Motorcycle
- Bus
- Streetcar
- Subway
- Commuter rail
- Single occupancy vehicle (private car)
- Carpooling (private car)
- Walking
- Other options

12. Weather as a factor (When the weather is bad/good, I usually change the way I commute) *

Mark only one oval.

- Yes
- No

13. Duration of most repeated commute (approx. number of minutes; one way) *

14. Length of most repeated commute (approx. number of kilometres; one way) *

15. Bikesharing network: I have used the Toronto public shared bikes *

Mark only one oval.

- Yes
- No

16. Bikesharing network: I am a frequent user (at least once a week, on average, in good weather conditions) of the Toronto public shared bikes *

Mark only one oval.

- Yes
- No

17. Ride-sharing: I have shared rides with strangers through services like Uber(Express)Pool *

Mark only one oval.

- Yes
- No

18. Ride-sharing: I am a frequent user (at least once a week, on average) of ride-sharing services like Uber(Express)Pool *

Mark only one oval.

- Yes
 No

19. Overall (including all areas and modes), I would rate public transit in the GTHA (Greater Toronto and Hamilton Area) as: *

Mark only one oval.

- Excellent
 Good
 Average
 Poor
 Very poor

20. Overall (infrastructure, perceived safety, etc.), I would rate cycling in the GTHA (Greater Toronto and Hamilton Area) as: *

Mark only one oval.

- Excellent
 Good
 Average
 Poor
 Very poor

ATTITUDES TOWARDS MOBILITY

University students and mobility

21. The most relevant factors (maximum of 3) for choosing my mobility options are: *

Tick all that apply.

- Price
 Saving time
 Environmental sustainability
 Health
 Convenience/comfort
 Weather conditions
 Lack of other alternatives
 Other factors

22. If I was offered good (not expensive, reliable...) multi-modal alternatives (public transit, bikesharing, carsharing, car rental...), I would prefer: *

Mark only one oval.

- To own a car anyway
 Not to own a car

23. I have the intention to buy a car in the future: *

Mark only one oval.

- Yes
 No
 I already own one

24. In my opinion, in general, living without a private car in Toronto: *

Mark only one oval.

- Is only viable for downtown residents
 Is only viable for inner-city (downtown, midtown, etc.) residents
 Is viable for inner-city and suburban (Scarborough, North York, etc.) residents
 Is not viable

25. For me, showing a certain status through mobility (for example, through driving a luxury car): *

Mark only one oval.

- Is a very relevant factor
 Is a considerably relevant factor
 Is a slightly relevant factor
 Is not a relevant factor

26. When choosing how I move around, for me, health-related issues (active modes, etc.): *

Mark only one oval.

- Are a very relevant factor
- Are a considerably relevant factor
- Are a slightly relevant factor
- Are not a relevant factor

27. Ideally, I would like Toronto to become (multiple compatible options): *

Tick all that apply.

- A more walkable city
- A city with less cars
- A city with a bigger share of electric cars
- A city introducing autonomous vehicles
- A city with better public transit
- A city with better cycling infrastructure
- A city with new alternatives for mobility (shared e-bikes and e-scooters, etc.)
- A city designed more for cars
- None of the above

28. I would be willing to pay higher fares or taxes for Toronto to become (multiple compatible options): *

Tick all that apply.

- A more walkable city
- A city with less cars
- A city with a bigger share of electric cars
- A city introducing autonomous vehicles
- A city with better public transit
- A city with better cycling infrastructure
- A city with new alternatives for mobility (shared e-bikes and e-scooters, etc.)
- A city designed more for cars
- None of the above

ONLINE SURVEY: STUDENTS FROM THE PUBLIC UNIVERSITY OF NAVARRA (SPANISH*)

* AN EQUIVALENT VERSION IN BASQUE LANGUAGE WAS ALSO MADE AVAILABLE TO THE STUDENTS

ESTUDIANTES UNIVERSITARIOS Y MOVILIDAD

PREGUNTAS DE PERFIL

*Required

1. Género *

Mark only one oval.

- Hombre
- Mujer
- Otros
- Prefiero no contestar

2. Edad *

3. Zona de residencia *

Mark only one oval.

- Pamplona (ciudad)
- Otro municipio en Pamplona Área Metropolitana (Zizur, Noáin...)
- Otro municipio fuera de Pamplona Área Metropolitana

4. Tipo de estudios (cursando...) *

Mark only one oval.

- Grado
- Master
- Otros

5. Campus de la UPNA *

Mark only one oval.

- Arrosadía
- Ciencias de la Salud
- Tudela
- Otros

6. Tengo carnet de conducir *

Mark only one oval.

- Sí
- No

7. Tengo un coche en propiedad *

Mark only one oval.

- Sí
- No, pero suelo tener acceso a un coche del hogar
- No

HÁBITOS DE MOVILIDAD

Estudiantes universitarios y movilidad

8. Manera habitual de ir a la universidad si hace buen tiempo *

Tick all that apply.

- Bici propia
- Vehículo personal eléctrico (bici eléctrica, patinete eléctrico, etc.)
- Moto
- Autobús
- Coche privado (sin acompañantes)
- Coche privado (compartiendo trayecto)
- Caminando
- Otras opciones

9. Manera habitual de ir a la universidad si hace mal tiempo *

Tick all that apply.

- Bici propia
- Vehículo personal eléctrico (bici eléctrica, patinete eléctrico, etc.)
- Moto
- Autobús
- Coche privado (sin acompañantes)
- Coche privado (compartiendo trayecto)
- Caminando
- Otras opciones

10. El tiempo como factor (cuando hace bueno o malo suelo cambiar mi forma de moverme) *

Mark only one oval.

- Sí
- No

11. Duración de mi desplazamiento habitual (número aprox. de minutos; sólo ida) *

12. Distancia de mi desplazamiento habitual (número aprox. de kilómetros; sólo ida) *

13. En general, valoraría el transporte público en Pamplona Área Metropolitana como: *

Mark only one oval.

- Excelente
- Bueno
- Intermedio
- Malo
- Muy malo

14. En general, valoraría moverse en bici (infraestructuras, seguridad, etc.) por Pamplona Área Metropolitana como: *

Mark only one oval.

- Excelente
- Bueno
- Intermedio
- Malo
- Muy malo

15. En general, valoraría moverse caminando (seguridad, infraestructuras, etc.) por Pamplona Área Metropolitana como: *

Mark only one oval.

- Excelente
- Bueno
- Intermedio
- Malo
- Muy malo

ACTITUDES HACIA LA MOVILIDAD

Estudiantes universitarios y movilidad

16. Los principales factores (marcar máximo 3) al elegir cómo me muevo son: *

Tick all that apply.

- Precio
- Ahorro de tiempo
- Sostenibilidad medioambiental
- Salud
- Comodidad/Confort
- Condiciones meteorológicas
- Falta de alternativas
- Otros factores

17. Si me ofreciesen una buena red (barata, fiable, extensa...) de alternativas multi-modales (transporte público, bicis y bicis eléctricas de alquiler, carsharing...), preferiría: *

Mark only one oval.

- Tener un coche en propiedad de todas maneras
- Evitar tener un coche en propiedad

18. Tengo la intención de comprar un coche en el futuro: *

Mark only one oval.

- Sí
- No
- Ya tengo uno

19. En general, vivir sin tener coche en Pamplona Área Metropolitana: *

Mark only one oval.

- Es viable sólo para quienes viven en las zonas más céntricas
- Es viable sólo para quienes viven en la ciudad de Pamplona
- Es viable para todos, incluyendo también los municipios suburbanos (Zizur, Noáin...)
- No es viable

20. Para mí, mostrar un cierto estatus social a través de un coche (por ejemplo, un coche de lujo) es: *

Mark only one oval.

- Un factor muy relevante
- Un factor considerablemente relevante
- Un factor algo relevante
- No es, para nada, un factor relevante

21. Cuando elijo cómo moverme, lo relacionado con la salud (modos activos como caminar, ir en bici...) es: *

Mark only one oval.

- Un factor muy relevante
- Un factor considerablemente relevante
- Un factor algo relevante
- No es, para nada, un factor relevante

22. Idealmente, me gustaría que Pamplona fuese (múltiples respuestas compatibles): *

Tick all that apply.

- Una ciudad más hecha para caminar
- Una ciudad con menos coches
- Una ciudad con más coches eléctricos
- Una ciudad que introduzca coches autónomos
- Una ciudad con un transporte público mejor
- Una ciudad con mejores infraestructuras para la bici
- Una ciudad que fomente las nuevas alternativas (bicis y patinetes eléctricos...)
- Una ciudad más hecha para el coche
- Ninguna de las anteriores

23. Aceptaría pagar más impuestos (si vivo o viviese allí) para que se invirtiesen en que Pamplona fuese (múltiples respuestas compatibles): *

Tick all that apply.

- Una ciudad más hecha para caminar
- Una ciudad con menos coches
- Una ciudad con más coches eléctricos
- Una ciudad que introduzca coches autónomos
- Una ciudad con un transporte público mejor
- Una ciudad con mejores infraestructuras para la bici
- Una ciudad que fomente nuevas alternativas (bicis y patinetes eléctricos...)
- Una ciudad más hecha para el coche
- Ninguna de las anteriores

ONLINE SURVEY: WORKERS FROM A LOCAL COMPANY

MOBILITY HABITS

1 · From Mondays to Thursdays, I usually start working at around:

(--:--)

2 · On Fridays, I usually start working at around:

(--:--)

3 · From Mondays to Thursdays, I usually leave work at around:

(--:--)

4 · On Fridays, I usually leave work at around:

(--:--)

5 · My usual daily home/work commute takes me approximately ... minutes (one way)

(---)

6 · My usual daily home/work commute covers approximately ... kilometres (one way)

(---)

7 · During a normal week, I go to work (number of days; for example: 3 solo car driving, 2 bike):

	1	2	3	4	5	0
Driving (solo car driving)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Sharing a car	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
By motorbike/scooter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
By bike/e-bike	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
By bus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

8 · During a normal week, I leave work (number of days):

	1	2	3	4	5	0
Driving (solo car driving)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Sharing a car	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
By motorbike/scooter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
By bike/e-bike	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
By bus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

9 · My main motivation for choosing the way in which I commute is:

(One answer: saving money, saving time, convenience (comfort), lack of viable alternatives, activities before and/or after work, weather, sustainability, healthy habits, others)

10 · Other factors that are quite important to me when choosing the way in which I commute are:

(Several answers accepted: saving money; saving time; convenience (comfort); lack of viable alternatives; activities before and/or after work; weather; sustainability; healthy habits; others)

11 · When the weather is fine:

(One answer: I tend to change my mobility patterns (I go to work more often on foot, by bike, etc.); I do not usually change my mobility patterns)

"SOLO CAR DRIVING" AND PREDISPOSITION TO CHANGE

12 · (Unless this is not the case) As a frequent (half or more of the times) solo car driver for commuting, I believe that:

(One answer: I have no alternatives; I have alternatives, but they are less appealing)

13 · It would help me to avoid solo car driving if (none and several answers also admitted):

(I found compatible colleagues for sharing cars; public transport was improved, the cycling network was improved, the pedestrian paths were improved, other factors, I would not take changing into consideration)

14 · The traffic congestion in this business hub is for me:

(A relatively severe annoyance; a relatively mild annoyance; not an annoyance)

15 · Parking in this business hub is for me:

(A relatively severe annoyance; a relatively mild annoyance; not an annoyance)

16 · My perceived wellbeing when commuting in the following way is:

	Minimum wellbeing										Maximum wellbeing	Not affected
	1	2	3	4	5	6	7	8	9	10		
Solo car driving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Sharing a car	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Motorbike/scooter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Bike/e-bike	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Bus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

17 · I think that, due to the type of work I have, teleworking and avoiding commuting would:

(Be viable on a daily basis; be often viable; be viable only for specific occasions; not be viable)

18 · If I was offered the chance to telework when it is viable (excluding those who answered not viable):

(I would prefer to telework; I would prefer to go to the office; I would hesitate/It would depend on the day)

19 · If a website/app/service for sharing cars among workers was created:

(I would be interested in using it; I would not be interested)

20 · (Unless this is not the case) I would not be interested in using it, mainly because:

(I already share/have company; I prefer to travel alone; I have things to do before/after; Sharing a car is not viable for me; I usually cycle, walk or take the bus; other reasons)

21 · (Unless this is not the case) If we had a parking spot reserved for us, I would try to find at least two colleagues with who to share a car and I think that this would be viable (Tick the box if you agree):

22 · If a bikesharing service was created in this business hub, I would probably:

(Use it daily or often; use it occasionally; not use it)

23 · Adding e-bikes to this service would probably mean for me:

(An increase in its use; no change)

24 · If charging points were set, I would take the option of buying an e-bike into consideration (Tick the box if you agree)

25 · If charging points were set, I would take the option of buying an electric car into consideration (Tick the box if you agree)

26 · If I was offered the option to buy more sustainable vehicles collectively for lowering their prices, I would consider buying for going to work at least occasionally (none and several answers also admitted):

(A bike; a bike electric conversion kit; an e-bike; a 125cc scooter (car driving license, Euro6 emission standards))

27 · Those who avoid solo car driving for their home/work mobility should be rewarded:

(With draws offering bikes, free bus tickets for a year, etc.; with rewards on the days in which they do so (free meals, more flexible timetables, etc.); with other types of rewards; should not be rewarded)

28 · On top of the subsidies for the public transport, it would be a good idea to pay those who commute by bike a little extra money (per distance covered; kms) (Tick the box if you agree):

29 · If the company set more flexible timetables, I would commute by bus/public transport more often (Tick the box if you agree):

30 · Regarding the sustainability of my mobility patterns, I believe that I am a ... person:

(Very/quite informed; sufficiently informed; poorly informed; uninformed)

31 · In what refers to awareness on tailpipe emissions, use of space, etc. the company should do a greater effort to inform us (Tick the box if you agree):

32 · This business hub (comprising some companies that are devoted to developing renewal sources of energy) would have a better image if our mobility was more sustainable (Tick the box if you agree):

PROFILE QUESTIONS:

Place of residence (If it is Pamplona-Iruña, write your area´s name):

...

Male/Female (M/F):

-

Age:

--

Completed education (basic studies, baccalaureate, vocational training, university degree):

...

Position in the company (employee, middle-manager, high executive):

...

Workplace (Sarriguren / City council / Gedesa / Others):

...

Comments / suggestions:

SURVEY ON RURAL MOBILITY (BIURRUN)

PROFILE QUESTIONS (ANONYMOUS)

First residence: Biurrun Age (only adults over 18): Gender:

Second residence in Pamplona-Iruña or in another municipality; own home or family home to which you have access (Yes or Not; if Yes, write the name of the municipality):

Educational level: Basic / Baccaureate / Vocational training / University

Employment status (type of work or studies, pensioner, etc.):

In possession of driving license (Yes / No): Car owner (Yes / No):

Number of household members: Number of household cars*:

** Do not add motorbikes. Only add vans, pick-ups... if used as if they were cars (do not add them if used for work or other purpose).*

MOBILITY HABITS

- Normally, I work (or study, etc.) in:
Biurrun / The Pamplona Metropolitan Area/ Other areas in Navarra / Elsewhere
- In a normal week, I spend/live in Biurrun: days (out of 7 days)
- In a normal day (Monday to Friday), I drive around kilometres.
- In a normal day (Monday to Friday), I drive around minutes.
- In a normal week, I travel by car as a passenger:
Daily / Often / Occasionally / Never
- In a normal week, I share rides with other rural residents:
Daily / Often / Occasionally / Never
- The changes in Pamplona-Iruña (the implementation of the “Amabilización” Plan):
Haven’t affected me / Have meant that I now go less often / Have meant that I now go more often

PERCEPTIONS ON MOBILITY

- Living in Biurrun without at least one household car (or a similar vehicle) would be ...
 - Unviable
 - Possible, but hard
 - Viable

- I usually drive for (one answer, several answers or no answer admitted):
 - Going to work (or study)
 - Daily/weekly shopping
 - Leisure activities linked to sports, courses and activities, etc.
 - Leisure activities linked to going to restaurants and bars, to the cinema, etc.
 - Visiting relatives, meeting friends, etc.

- I believe that, if I lost my capacities to drive and had to stop driving (do not answer if you are not a driver):
 - I would stay in Biurrun and my quality of life would be similar
 - I would stay in Biurrun, but my quality of life would be lower
 - I would move to a place where cars are not needed so much (E.g. Pamplona-Iruña)

- I believe that, in 15 or 20 years, Biurrun will offer (school, shop, doctor's, etc.):
 - More services than nowadays
 - Less services than nowadays
 - Similar services

- Some innovations that I believe will be implemented in these villages are: (one answer, several answers or no answer admitted)
 - Electric cars
 - Autonomous cars (driverless)
 - On-demand mobility services (through mobile apps, such as Uber)

- If these changes took place (putting together the last two questions on services and on innovations in the field of mobility), living in Biurrun would be:
 - More dependent on private cars
 - Similar to nowadays
 - Less dependent on private cars

BRIEF COMMENT (OPTIONAL):

.....
.....

“IMAGE-BASED RATING EXERCISE”

Figure 55. Explanatory template

PROFILE QUESTIONS

TABLE:
 Scores from 1 (lowest) to 10 (highest)
 5'5 = average desirability/status
 0 = any status

IMAGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DESIRABILITY															
STATUS															

Source: Own elaboration

Figure 56. Preliminary example

0- Self-driving car

Scores from 1 (lowest) to 10 (highest)
 5'5 = average desirability/status
 0 = any status



Source: Image from ford-mobility.eu. Own elaboration

Sample of images:

Figure 57. Luxury car



Source: [porsche.com](https://www.porsche.com)

Figure 58. Average car (Europe)



Source: [moto123.com](https://www.moto123.com) (Philippe Champoux, Matthieu Lambert)

Figure 59. Average car (North America)



Source: [honda.ca](https://www.honda.ca)

Figure 60. Electric car



Source: motor.es

Figure 61. Bike



Source: Tobias Ackeborn/Getty Images

Figure 62. Bus



Source: Matteo Merzi/flickr

Figure 63. SUV



Source: nissan.es

Figure 64. Bikesharing



Source: [HSL \(kaupunkipyorat.hsl.fi\)](http://HSL(kaupunkipyorat.hsl.fi))

Figure 65. Train



Source: guias-viajar.com

Figure 66. App-based mobility services



Source: transportadvancement.com

Figure 67. E-bike



Source: *The Telegraph* (Philip Haynes)

Figure 68. E-scooter



Source: *Diario de Navarra* (Jesús Caso)

Figure 69. City motorbike/scooter



Source: yamaha-motor.eu

Figure 70. Walking



Source: sustrans.org.uk

Figure 71. Metro



Source: sustrans.org.uk

Figure 72. Tramway



Source: tamper.fi

Figure 73. Pick-up truck (North America)



Source: ford.com

Statistical descriptors: Averages and standard deviations

- 1- City motorbike/scooter
- 2- Metro
- 3- E-bike
- 4- Tramway
- 5- E-scooter
- 6- Luxury car
- 7- SUV
- 8- BIKE
- 9- Electric car
- 10- Train
- 11- Bikesharing
- 12- Bus
- 13- Average car
- 14- App-based mobility services
- 15- Walking
- 16- Pick-up truck (North America only)

STUDENTS FROM THE UNIVERSITY OF HELSINKI

DESIRABILITY:

	1- City motor	2- Metro	3- E-bike	4- Tramway	5- E-scooter	6- Luxury car	7- SUV	8- Bike
AVERAGES:	3,56	7,07	6,54	6,94	4,2	5,15	4,55	7,38
STAND. DEVI.:	1,98	2,22	2,44	2,16	2,70	3,01	2,78	2,00

	9- Electric car	10- Train	11- Bikes	12- Bus	13- Average	14- Apps	15- Walkir
AVERAGES:	6,82	7,08	6,46	6,44	5,1	5,93	7,52
STAND. DEVI.:	2,34	1,97	2,08	2,17	2,34	2,55	2,40

STATUS:

	1- City motor	2- Metro	3- E-bike	4- Tramway	5- E-scooter	6- Luxury car	7- SUV	8- Bike
AVERAGES:	3,88	5,74	6,13	6,03	4,77	7,36	6,29	6,30
STAND. DEVI.:	2,04	3,10	2,61	3,10	2,72	3,15	2,78	3,26
NEUTRAL (0):	7,26%	21,77%	7,26%	21,77%	6,45%	1,61%	3,23%	24,19%

	9- Electric car	10- Train	11- Bikes	12- Bus	13- Average	14- Apps	15- Walkir
AVERAGES:	7,38	5,96	5,81	5,44	5,45	6,07	6,65
STAND. DEVI.:	2,45	3,11	2,73	2,94	2,18	3,11	3,77
NEUTRAL (0):	4,03%	20,16%	12,90%	19,35%	4,84%	19,35%	32,26%

STUDENTS FROM THE UNIVERSITY OF TORONTO

DESIRABILITY:

	1- City motor	2- Metro	3- E-bike	4- Tramway	5- E-scooter	6- Luxury car	7- SUV	8- Bike
AVERAGES:	3,63	5,83	4,45	4,92	3,32	7,49	7,14	4,40
STAND. DEVI.:	2,60	2,45	2,06	2,42	2,33	2,46	2,25	2,55

	9- Electric car	10- Train	11- Bikes	12- Bus	13- Average	14- Apps	15- Walkir	16- Pick-up
AVERAGES:	7,34	5,82	3,74	4,74	6,75	5,83	5,89	5,02
STAND. DEVI.:	2,21	2,26	2,24	2,38	2,19	2,49	3,09	2,85

	1- City motor	2- Metro	3- E-bike	4- Tramway	5- E-scooter	6- Luxury car	7- SUV	8- Bike
AVERAGES SUBURBAN CAMPUS:	3,94	5,71	4,46	5,05	3,30	8,06	7,71	4,25
AVERAGES DOWNTOWN CAMPUS:	3,11	6,03	4,44	4,72	3,33	6,61	6,24	4,63

	9- Electric car	10- Train	11- Bikes	12- Bus	13- Average	14- Apps	15- Walkir	16- Pick-up
AVERAGES SUBURBAN CAMPUS:	7,87	5,64	3,27	5,01	7,34	5,75	5,37	5,68
AVERAGES DOWNTOWN CAMPUS:	6,54	6,08	4,49	4,33	5,86	5,94	6,73	4,08

STATUS:

	1- City motor	2- Metro	3- E-bike	4- Tramway	5- E-scooter	6- Luxury car	7- SUV	8- Bike
AVERAGES:	4,53	3,88	4,81	3,78	4,68	8,65	6,45	3,60
STAND. DEVI.:	2,50	2,47	2,62	2,31	2,50	1,70	2,25	2,24
NEUTRAL (0):	19,15%	45,74%	21,28%	38,30%	18,08%	1,06%	7,45%	28,72%

	9- Electric	10- Train	11- Bikesh	12- Bus	13- Average	14- Apps	15- Walkir	16- Pick-up
AVERAGES:	7,49	4,90	3,56	3,59	5,44	5,66	3,96	5,64
STAND. DEVI.:	2,72	2,78	2,26	2,37	1,99	2,9	2,25	2,46
NEUTRAL (0):	7,45%	27,66%	26,60%	40,42%	7,45%	21,28%	67,02%	7,45%

STUDENTS FROM THE PUBLIC UNIVERSITY OF NAVARRA (YOUNG GENERATION)

DESIRABILITY:

	1- City mo	2- Metro	3- E-bike	4- Tramwa	5- E-scoot	6- Luxury	7- SUV	8- Bike
AVERAGES:	5,31	5,78	5,99	5,94	4,70	6,69	7,10	6,51
STAND. DEVI.:	2,29	2,09	2,25	1,86	2,83	2,77	2,29	2,36

	9- Electric	10- Train	11- Bikesh	12- Bus	13- Average	14- Apps	15- Walkir
AVERAGES:	7,09	5,78	4,60	5,40	7,16	5,89	7,30
STAND. DEVI.:	2,20	2,05	2,46	2,42	1,76	2,59	2,42

STATUS:

	1- City mo	2- Metro	3- E-bike	4- Tramwa	5- E-scoot	6- Luxury	7- SUV	8- Bike
AVERAGES:	5,40	4,15	6,17	4,2	6,38	9,26	7,40	3,72
STAND. DEVI.:	2,69	2,38	2,17	2,36	2,16	1,12	1,84	2,23
NEUTRAL (0):	29,41%	45,38%	8,40%	47,06%	5,88%	0%	4,20%	54,62%

	9- Electric	10- Train	11- Bikesh	12- Bus	13- Average	14- Apps	15- Walkir
AVERAGES:	7,58	4,52	4,48	3,84	5,60	5,42	4,73
STAND. DEVI.:	1,33	2,49	2,45	2,23	2,04	2,92	1,68
NEUTRAL (0):	0,84%	32,77%	29,41%	41,18%	10,92%	29,41%	87,39%

STUDENTS FROM THE PUBLIC UNIVERSITY OF NAVARRA (OLDER GENERATION)

DESIRABILITY:

	1- City mo	2- Metro	3- E-bike	4- Tramwa	5- E-scoot	6- Luxury	7- SUV	8- Bike
AVERAGES:	4,31	6,96	7,07	7,19	3,66	4,30	5,88	6,54
STAND. DEVI.:	2,81	2,59	2,42	2,26	2,54	2,89	2,33	2,91

	9- Electric	10- Train	11- Bikesh	12- Bus	13- Average	14- Apps	15- Walkir
AVERAGES:	7,39	8,01	5,87	8,26	6,51	6,28	9,01
STAND. DEVI.:	2,11	1,78	3,14	1,64	1,93	2,32	1,71

STATUS:

	1- City mo	2- Metro	3- E-bike	4- Tramwa	5- E-scoot	6- Luxury	7- SUV	8- Bike
AVERAGES:	4,72	4,93	4,97	4,44	4,94	7,77	5,92	4,75
STAND. DEVI.:	2,69	2,12	2,90	2,26	2,97	3,80	2,68	2,60
NEUTRAL (0):	50%	75,71%	47,14%	70%	35,71%	17,14%	17,14%	60%

	9- Electric	10- Train	11- Bikesh	12- Bus	13- Average	14- Apps	15- Walkin
AVERAGES:	6,57	5,17	3,85	4,47	4,51	5,31	5,64
STAND. DEVI.:	3,30	2,74	2,31	2,11	2,41	3,16	2,47
NEUTRAL (0):	25,71%	62,86%	47,14%	74,29%	37,14%	40%	81,43%

Statistical descriptors: Chi square tests

The chi square tests determined that the relationships between the categorical variables were significant (asymptotic significance not greater than 0.05), except for a couple of cases (the app-based mobility services and the bicycle, in terms of desirability), if we put together the answers obtained in Helsinki, Toronto and Pamplona-Iruña (young generation).

Location * Desirability: City-motorbike

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	89,337 ^a	22	,000

Location * Desirability: Metro

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	100,630 ^a	24	,000

Location * Desirability: E-bike

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	49,907 ^a	22	,001

Location * Desirability: Tramway

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	172,339 ^a	26	,000

Location * Desirability: E-Scooter

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	94,982 ^a	22	,000

Location * Desirability: Luxury car

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	49,042 ^a	24	,002

Location * Desirability: SUV

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	101,580 ^a	24	,000

Location * Desirability: Bike

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	30,483 ^a	22	,107

Location * Desirability: Electric car

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	40,244 ^a	22	,010

Location * Desirability: Train

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	135,127 ^a	24	,000

Location * Desirability: Bikesharing

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	54,343 ^a	20	,000

Location * Desirability: Bus

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	35,004 ^a	20	,020

Location * Desirability: Average car

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	67,353 ^a	24	,000

Location * Desirability: Apps

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	33,880 ^a	22	,051

Location * Desirability: Walking

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	153,124 ^a	28	,000

Location * Status: City-motorbike

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	115,853 ^a	24	,000

Location * Status: Metro

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	62,617 ^a	22	,000

Location * Status: E-bike

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	141,229 ^a	24	,000

Location * Status: Tramway

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	85,843 ^a	24	,000

Location * Status: E-Scooter

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	194,455 ^a	24	,000

Location * Status: Luxury car

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	213,667 ^a	26	,000

Location * Status: SUV

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	204,660 ^a	26	,000

Location * Status: Bike

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	160,756 ^a	22	,000

Location * Status: Electric car

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	173,021 ^a	26	,000

Location * Status: Train

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	86,567 ^a	24	,000

Location * Status: Bikesharing

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	99,063 ^a	28	,000

Location * Status: Bus

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	98,850 ^a	24	,000

Location * Status: Average car

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	55,103 ^a	24	,000

Location * Status: Apps

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	107,972 ^a	26	,000

Location * Status: Walking

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	86,366 ^a	11	,000

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