

Living Without a Car: A Canada-France Comparative Outlook

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**Laboratoire de
sociologie urbaine**

To grandma *Cécile*,
who never had her driver's licence but
made me realize from my childhood all
the freedom that her CTCUQ bus pass
offered her.

And to the three loved ones who left for
another world during this thesis work

Papa Robert
Aunt Claudette
Godfather Claude

À *Grand-Cécile*,
qui n'a jamais eu de permis de conduire
mais qui m'a fait réaliser dès mon enfance
toute la liberté que lui offrait sa passe de
bus CTCUQ.

Et aux trois êtres chers qui sont partis
pour un autre monde pendant ce travail de
thèse

Papa Robert
Tante Claudette
Parrain Claude

Abstract

This research explores the links between social exclusion, car dependence and public policies for members of non-motorized households who are potentially socially excluded. It is at the crossroads of urban sociology, public policy and transport geography. Comparing urban areas in North America and Europe, it comprises two case studies: Quebec City in Canada and Strasbourg in France.

Using a mixed methods approach, I combine qualitative and quantitative research tools to examine how the interactions of various policies, levels of car dependence, urban planning and land use affect mobility-related social exclusion with special attention to gender-based differences.

The analysis is based on official origin-destination survey data from both urban areas, semi-directed interviews within non-motorized households and with public servants, and policy documents.

I find that the factors causing non-motorized households to feel socially excluded are similar on both sides of the Atlantic. Mobility-related social exclusion can be associated with the fact of having to find an alternative to the car in order to reach certain destinations. Relying on the bus is often experienced as inconvenient, linked to long waiting times, having to leave early during evening outings and making detours instead of using a direct route. Such feelings made many of the study participants feel excluded.

Participants who felt socially excluded commonly mentioned feeling left out of the political process and not listened to during public consultations. Some participants also felt excluded for not having a driver's licence, especially in France. Non-

Résumé

La recherche explore les liens entre exclusion sociale, dépendance automobile et politiques publiques pour les ménages non motorisés potentiellement socialement exclus. Au carrefour de la sociologie urbaine, de la politique publique et de la géographie des transports, elle compare des régions en Amérique du Nord et en Europe, avec deux études de cas : Québec au Canada et Strasbourg en France.

Combinant des outils qualitatifs et quantitatifs (méthode mixte), j'examine les interactions de diverses politiques, la dépendance automobile, l'urbanisme et l'aménagement affectant l'exclusion sociale liée à la mobilité. J'accorde une attention particulière aux différences de genre.

L'analyse est basée sur les données officielles d'enquêtes origine-destination, d'entretiens semi-directifs avec des ménages non motorisés et des fonctionnaires ainsi que des documents de politiques publiques.

La plupart des facteurs causant l'exclusion sociale sont les mêmes des deux côtés de l'Atlantique. L'exclusion sociale liée à la mobilité peut être associée au fait de devoir trouver une alternative à la voiture, afin d'atteindre des destinations plutôt inaccessibles. Devoir s'appuyer sur le bus avec tous ses inconvénients ; attendre longtemps, partir tôt lors de sorties en soirée et faire de nombreux détours au lieu d'utiliser un itinéraire direct participent au sentiment d'exclusion.

Les participants socialement exclus ont également mentionné se sentir laissés à l'écart du processus politique et de consultations publiques. Certains, surtout en France, se sentent également exclus car ils n'ont pas de permis de conduire. Les participants ont aussi

motorized households revealed that aggressive behaviour by motorists or their refusal to share the road with alternative mobility users were a further factor leading to social exclusion. Finally, judgmental comments by others who literally could not understand how they could live without a car – or who thought they didn't have one because of drunk driving or poverty – was also associated with social exclusion in our sample.

The study participants often felt that owning a car had negative repercussions on their independence, as it comes with financial burdens of including car payments, vehicle repairs and maintenance. They reported feeling liberated from such burdens, as well as from logistical grievances like finding a parking spot or moving the car during snow removal, thus presenting a point of view not often explored in the literature.

The public servants considered that some of the population was car-dependent, which made the implementation of restrictive measures on the car challenging. When discussing policy solutions, the main challenge brought up by civil servants were urban sprawl and political aspects related to urban planning.

The policies in place to address transport and social exclusion contained three distinct sets of discourses. They either discussed social aspects, legal aspects, or mobility and land planning aspects. Each order of government had its own different focus, but car dependence *per se* was almost completely absent from policy documents, and most causes of mobility-related social exclusion were not addressed.

Keywords: car dependence, transport policy, social exclusion, non-motorized households, lexicometry, discourse analysis

révélé que l'agressivité de certains automobilistes et leur refus de partager la route avec les utilisateurs de mobilité alternative étaient facteur d'exclusion sociale. Enfin, le jugement d'autrui qui, ne comprenant pas comment on peut vivre sans voiture, ou pensant qu'ils n'avaient pas de voiture à cause d'une conduite en état d'ivresse ou qu'ils étaient trop pauvres pour s'en payer une, entraîne également une exclusion sociale.

Les participants de ménages non motorisés ont souvent estimé que la possession d'une voiture avait une répercussion négative sur leur indépendance, car la voiture vient avec des charges financières, des réparations et des frais d'entretien réguliers. Ils se sont révélés libérés de ces fardeaux ainsi que des contraintes logistiques comme la recherche d'un lieu de stationnement, le déplacement de la voiture pendant le déneigement, présentant un point de vue rarement exploré dans la littérature.

Les fonctionnaires considèrent qu'une partie de la population dépend de la voiture, rendant difficile la mise en œuvre de mesures restrictives. Les principaux défis soulevés par les fonctionnaires sont l'étalement urbain et les aspects politiques liés à l'urbanisme.

Les politiques mises en place pour traiter les transports et l'exclusion sociale comportent trois séries distinctes de discours. Elles abordent des aspects sociaux, la mobilité et l'aménagement du territoire ou des aspects légaux. Chaque ordre de gouvernement fait également preuve d'un accent différent, mais la dépendance automobile en soi reste presque absente des politiques publiques et la plupart des facteurs d'exclusion sociale liée à la mobilité ne sont pas directement pris en charge.

Mot-clés : dépendance automobile, politiques publiques, exclusion sociale, ménages non motorisés, lexicométrie, analyse de discours

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List of Abbreviations

BRT	Bus rapid transit
CAD	Canadian dollar
CAQDAS	Computer Aided Qualitative Data Analysis Software
CHF	Swiss franc
CMQ	Agglomeration of Quebec City (Communauté urbaine de Québec)
DHA	Descending Hierarchical Analysis
DHC	Descending Hierarchical Classification
EUR	Euro
KM	Kilometre
M	Men
MH	Motorized Household
NMH	Non-Motorized Household
OD	Origin-Destination
OECD	Organisation for Economic Co-operation and Development
PDF	Portable Document Format
QPV	Priority Neighbourhood
TGV	High Speed Train
UK	United Kingdom
US	United States of America
W	Women

A scenic view of a European city street, likely Strasbourg, France. The image shows a row of colorful, multi-story buildings with red-tiled roofs and white window shutters. A modern tram is crossing a stone bridge over a river. The sky is clear and blue. A large white number '1' is overlaid on the left side of the image.

1 Introduction

“Given the interrelationship between living space and human behaviour, those who design buildings, neighbourhoods, public spaces and cities, ought to draw on the various disciplines which help us to understand people’s thought processes, symbolic language and ways of acting. It is not enough to seek the beauty of design. More precious still is the service we offer to another kind of beauty: people’s quality of life, their adaptation to the environment, encounter and mutual assistance. Here too, we see how important it is that urban planning always take into consideration the views of those who will live in these areas.”

Pope Francis (2015, p. 112)

1.1 General Introduction

Mobility is at the heart of our modern society (Urry, 2000), we are increasingly mobile and our cities are built on this pattern of increasing mobility (Amin & Thrift, 2002, p. 43). However, our high level of mobility comes at a premium; the negative repercussions or externalities of mobility systems. The mobility based on the individual private car is an important contributor to greenhouse emissions for example (Sims et al., 2014). The nations still abiding by the Paris Agreement must redouble their efforts to reduce greenhouse gas emissions and a certain part of the population is already making progress in that direction, as is the case with non-motorized households. However, as Lucas et al. (2016, p. 2) recalls, non-motorized households must sometimes pay the price because of systemic injustices hampering their efforts.

This is compelling from a social and sustainable development point of view; by not possessing a private car, these households are already living a lifestyle more sustainable from a mobility perspective by relying on less carbon intensive transport modes. I find that, they rely more on walking and cycling than other households. They also use the car-sharing and public transit systems more than motorized households do. Tabbone (forthcoming) states that in France non-motorized households (NMH) use less energy in general than motorized households (MH)¹. When calculating the energy usage of households only when at home, in order to exclude any mobility related energy savings, NMH were found to use on average 9% less energy than their motorized counterparts. Interestingly, the number of households that do not own any car has been increasing in many European cities. In Geneva and Lausanne for example, as Fabbo et al. (2014, p. 31) state the number of non-motorized households has been rapidly increasing in the last few years and they indicate that it's not only by constraint anymore, but also by choice.

Nonetheless, a large majority of households in Western cities still rely exclusively on the car for their mobility (Jones, 2011, p. 43). From the point of view of car dependence, car use has become indispensable for many individuals to be able to deploy ever more complex activity programs (Dupuy, 1999a; Newman & Kenworthy, 1989). Research carried out on the subject commences from the observation that everyday life has become more complex and that there is an increased spatio-temporal tension in the programs of activities. This situation explains the growth of car use, even in urban areas, because this mode of transport is the one that offers the highest number of combinations of activities in time and space. It should be noted that this is all the more so as the temporal coverage of public transport services is generally incomplete, making it difficult to deploy complex activity programs based solely

¹ Based on a sample statistically representative of the entire population of France in 2013.

on the use of that mode of transport. Other authors insist that the use of modes of transport belongs to the universe of symbolism. The car benefits from a very positive dominant image associated with freedom in space-time, which is tainted only by pollution and accidents (Kaufmann, 2000; Pervanchon, Khoudour, & Delmas, 1991). This is not the case for public transit, which is admittedly environmentally friendly, but also restrictive in usage (restricted to lines and time tables) and overloaded (Berge, 1994) offering poor “sensitive” quality. These images are more than just an expression of the supply quality, but also and above all a reflection of a social experience of modes of transport, an experience influenced by the internalization of values such as individuation, flexibility or property, and through the lens of which the social structure, the distinction practises and individual preferences are expressed.

This research centres on the question of the roles and impacts of car dependence, public policies and the architecture of the city on mobility-related social exclusion. The comparison of two different regions, one in the North American context and one on the European continent is the main mode of analysis and understanding in order to draw conclusions. While these agglomerations of comparable sizes have embarked on policy paths aimed at causing car modal shift to public transit, they are quite different in terms of culture, transport policies, urban planning and the use of modes of transport. This is what motivates the interest of their comparison.

An examination of the logic of actions underlying the modal practices of non-motorized households in both urban agglomerations studied will make it possible to measure the impact of culture, urban transit policies and the use of modes of transport on these logics. Moreover, in the field of transport policies, the inertia of institutional systems raises certain questions of spatial and temporal order. Indeed, the distribution of decision-making competences at the different institutional levels, the territorialization of these levels and their interlinkages influence the strategies of actors (Newman & Thornley, 1996; Wiel, 1999). Transport policy, which is a spatial object *par excellence*, necessarily involves at some point the definition of the perimeter of intervention. The extent of the territory on which a decision is taken affects the content of that decision. This trivial assertion takes on a particular resonance in the field of transport, in which an overall policy can only be developed at the level of the living area.

My approach revolves around cities and their surrounding urban areas; I compare the transport and social exclusion policies that apply to them, but also their land planning and the perception of their population. The question of the international comparison of cities arises. For example, Goldberg (1986) argues that there are important differences between

Canadian and US cities in proposing to deconstruct the myth of the North American city. But Moore (2014) criticizes this generalization at the national level and proposes instead to compare the cities as unique cases and not the national aggregations of the typical Canadian city and typical American city because even within countries there are cultural and political differences that need to be taken into account. I consider the cities of my fieldwork specific cases as opposed to representative cases of their national entity. This makes my results non-generalizable nationally.

The spatial differentiation within an urban space constitutes contextual and structural elements that can influence the possibilities for action in the field of transport policy and spatial planning. The location of urban functions (housing, jobs, amenities in general) and its degree of specialization will act quite directly on the demand for travel, both in terms of the spatialization of the travel loops, the distances travelled and the modes of transport use (Newman & Kenworthy, 1989). Even within the same national context, these local variables have important consequence on this type of policy. The social differentiation internal to an urban agglomeration, that is to say the strength and the geography of social segregation, are also of a nature to orient the field of possibility of public action (Orfeuil, 2004). For example, a concentration of poor people in suburban neighbourhoods raises the issue of access to the city differently than a situation where the same population is mostly located in the city centre.

Human densities will determine the degree of high volume mobility flows thus defining a field of possible transport policy. A diffuse population structure does not make it possible, in particular, to develop collective transport networks for reasons of profitability (Bavoux, Beaucire, Chapelon, & Zembri, 2005). I note that throughout the developed countries, household car ownership increased sharply over the last 40 years (Jones, 2008). The development of the car system combined with a high rate of car ownership and organization of society around the car can lead to so-called car dependence. In his seminal book Gabriel Dupuy (1999a) presents car dependence as a social and spatial phenomenon created by three effects (club, fleet, and network). In such a car-oriented society, for a household, not owning a car can lead to social exclusion (McCray & Brais, 2007; Schönfelder & Axhausen, 2003) and to transportation inequity (Jouffe, Caubel, Fol, & Motte-Baumvol, 2015).

It appears that transport policies are increasingly abandoning or deprioritizing objectives specifically targeted at NMH in order to set priority on lowering overall greenhouse gas emissions by persuading more motorists to effect a modal shift away from the car, resulting in policies that minimize the specific requirements of NMH who already ascribe to a less

carbon-intensive mobility (Grengs, 2005; Kaufmann, Jemelin, Pflieger, & Pattaroni, 2008; Le Breton, 1999; Manaugh, 2013; Van Egmond, Nijkamp, & Vindigni, 2003).

1.2 Objectives, Methods and Case Studies

This research explores the links between social exclusion, car dependence and transport policy for non-motorized households who are to various degrees excluded from car mobility and are also potentially socially excluded. I aim to explore the role and impact that car dependence, public policies and the architecture of cities might have on mobility-related social exclusion. My research is at the crossroads of urban sociology, public policy and transport geography. Comparing urban areas in North America and Europe, it comprises two case studies: the urban area of Quebec City (Canada) known as the *Région de la capitale nationale* and Strasbourg (France) known as the *Eurométropole*. As stated by Leung et al. (2017), it can be useful to study a small number of cities while using a more qualitative approach; the authors suggest deliberately taking cities that present contrasted situations which is the case for these two cities on different continents.

This doctoral dissertation research lies at the intersection of multiple objects: car dependence, social exclusion, gendered mobility differences and public policy; and explores the relationships between them in the contemporary Western urban context by using the research instruments of multiple disciplines (urban sociology, public policy and transport geography). To better understand the public policy response in the face of car dependence, especially for non-motorized households, I analyze and compare the situation of non-motorized households and their potential mobility-related social exclusion in both urban areas with emphasis on gender-based differences. The research uses a mixed-method approach combining quantitative and qualitative data to generate new data that can reveal compelling insight using a comparative approach.

The qualitative instruments are semi-directed interviews with 57 non-motorized households and 10 municipal public servants and policy document analysis via qualitative discourse analysis software Atlas.ti. The non-motorized households were recruited using various methods (Facebook, web, signs, snowball) and composed two heterogeneous but comparable samples (in Canada and in France) comprised of different age groups, revenue levels and types of households (couples, single parents, families and single individuals). The quantitative instruments are lexicometric discourse analysis of the policy documents and

semi-directed interview material performed using the IRaMuTeQ² software as well as statistical analysis of raw data from Origin-Destination surveys generated with SPSS. The Origin-Destination survey data was acquired for the four urban areas from governmental sources as these studies are regularly performed for state statistical purposes.

In order to acquire the initial data, two field work research trips have been accomplished; one in Quebec City and one in Strasbourg. In both cases, a one-month stay was required in order to observe the terrain, experience the area without a car, witness the transport system and recruit and meet with approximately thirty non-motorized households for semi-directed interviews at their homes. The household interview focussed on their mobility behaviours, the specific mobility or urban planning challenges they face, their expectations of public policy and their potential mobility-related social exclusion. Once the interview material was transcribed it was analyzed using traditional discourse analysis³ from a qualitative point of view and lexicometric analysis⁴ from a quantitative point of view.

Following that, policy and urban planning documents from both urban areas were also analyzed in the same fashion. The results of this analysis were used to guide the preparation of the interview protocol for public servants and was presented at multiple scientific conferences (Villeneuve, 2016a; Villeneuve & Kaufmann, 2016; Villeneuve & Pattaroni, 2016). For each urban area, a second visit was conducted for one week in order to realize five semi-directed interviews with local public servants in related transport policy and urban planning capacity. These interviews focussed on the perception of policy makers on mobility-related social exclusion and evidence-based policy making. Preliminary results of this phase of the research were presented at the Swiss Mobility Conference in 2016 (Villeneuve, 2016b) and generated interest in the research community by their novelty as well as confirmation of results obtained via other methods. Origin-Destination raw data was acquired and the statistical analysis on a gendered basis of this survey data was completed.

Following the lexicometric analysis of the French language material, the graphical representations of the analysis had to be translated into English to be included in this dissertation. This was followed by a final holistic comparison between the two urban areas investigated by combining the quantitative and qualitative analysis.

² open-source discourse analysis software using the method known as ALCESTE (co-occurring lexemes analysis in simple statements of a text) developed by Reinert (1983, 1990, 2000).

³ For research using a similar methodology see: (Darcy, 1999; Marston, 2004; Salskov-Iversen, 1997; Skillington, 1998).

⁴ For research using a similar methodology see: (Beauguitte, Richard, & Guérin-Pace, 2015; Carpentier, 2007; Marchand & Ratinaud, 2012).

This research is relevant for the sciences of the city and questions of equity in society as urban dwellers face what amounts to a compulsion to be mobile and members of non-motorized households face a real transport disadvantage. In the words of my thesis director Prof Vincent Kaufmann (2002, p. 101):

[...] it would appear that the phenomena of connexity, reversibility and ubiquity, often considered in current literature as signs that our societies are becoming more fluid, are instead a mandatory step towards attaining social insertion. These forms of mobility are increasingly necessary to be able to juggle the different aspects of social life; made possible by technology, they truly freed people from certain constraints of daily life, but have created other restrictions.

Additionally, the research is scientifically relevant since it attempts to respond to gaps identified by other researchers. With the current trend of the growing importance of sustainable mobility research and policy development, the social aspect of sustainable mobility is often the least developed (Boussauw & Vanoutrive, 2017; Jeon, Amekudzi, & Guensler, 2013; Rahman & van Grol, 2005). Furthermore, as Baeten (2000) indicates: “[t]ransport inequalities, transport exclusion and transport poverty are social issues in transport planning which have been highly neglected and underestimated”. My research project aims to further the knowledge on these important social aspects of sustainable mobility. Additionally, as Mattioli (2014) stated, there are too few studies investigating the mobility of non-motorized households and I intend to fill part of this gap using a comparative perspective between Europe and North America.

My methodology is at the forefront of experiments in hybridization of different methods for the study of mobility and is recognized as such by the French language mobility research community. Therefore, a summary description of my initial results and an in-depth rendition of the methodology will be featured in a chapter of a forthcoming book on hybridization of new methods for mobility research (Villeneuve, forthcoming). Through combining quantitative and qualitative research methods I hope to achieve a better understanding of public policies addressing the specific mobility requirements of non-motorized households as well as the links between social exclusion related to mobility and car dependence. By exploring the connection between car-dependence and social exclusion, I also intend to enable policy makers to make greater informed choices when crafting urban mobility and land planning policies by referring to scientific evidence, some of which form this thesis project.

1.3 Structure of the Dissertation

The dissertation is divided into seven chapters. After this introductory chapter, chapter 2 aims to present the main themes, theory and concepts used in the research. The chapter is divided into three sections representing the three disciplines intervening in the research. The first theme refers to urban and mobility studies. In this section, I discuss the definition of a city, the role of urban sociology, various transdisciplinary aspects of urban sociology, the role that space and gender play in urban and mobility studies and I explore the various aspects of mobility as perceived from this disciplinary point of view. The second part of the chapter presents the various aspects of transport geography and transport studies that bear on my research question. This includes the key concepts of car dependence, non-motorized households and social exclusion. Finally, the third section present various public policy concepts such as policy analysis frameworks, public policy comparison and evidence-based policy.

Even though I ran the research from an inductive perspective, in order to facilitate understanding the questioning and organize the communication of the findings, chapter 3 presents the various research questions and hypotheses that can summarize the project.

In chapter 4 I discuss the methodology used to perform the various steps of the research. I start by presenting the general research plan, followed by a presentation of the two urban areas as well as the method and reasoning behind my selection. The chapter then presents how the NMH panel was recruited and the various methods used for data gathering and analysis from a qualitative and quantitative perspective. The chapter concludes with a discussion on the epistemological reflections around the issues I faced during the project.

The next two chapters are dedicated to the presentation and discussion of the results for each objective. In chapter 5, I present the analysis to understand car dependence in the two urban areas. I start with the perception of car dependence from the perspective of NMH and civil servants. I then discuss car dependence from the perspective of territorial accessibility. This is followed by a discussion of the public policy perspective on car dependence and an analysis of the mobility patterns of the two urban areas.

In chapter 6, I present the analysis which further advances our understanding of NMH. I first discuss the reasons why these households do not own a car and if it is by choice or constraint. This is followed by an in-depth look at their daily mobility. . Subsequently, I present the analysis of mobility-related social exclusion that some of these households face. Following this, I discuss my findings on NMH's expectations from public authorities and

their vision for a utopian world for NMH. I then present a comparison of the demographic data from OD survey comparing motorized and non-motorized households. The chapter ends with a discussion on the policy aspects that relate specifically to NMH or social exclusion.

In the last chapter, I conclude by reintroducing each sub research question presented in chapter 3 and discussing the answers provided by the analysis. I examine the challenges encountered and formulate policy recommendations based on the findings. I complete the chapter by discussing the unique contributions of this dissertation and next steps to further the research.



Literature Review

“If an alien was to hover a few hundred yards above the planet it could be forgiven for thinking that cars were the dominant life-form, and that human beings were a kind of ambulatory fuel cell: Injected when the car wished to move off, and ejected when they were spent.”

Heathcote Williams (1991)

In this section, I present the main theoretical and conceptual contributions that I solicit to define my object of research and to formulate hypotheses subsequent to the initial field work. I will present the concepts straddling several domains, beginning with notions borrowed from Urban Studies, how it has become interested in studying mobility and the theoretical tools with which it analyzes such urban mobility. This urban mobility influenced, or not, by public policy happens over space; urban space. To understand this, I also refer to the theoretical tools of the geography of inequality and geography of transport to characterize this space and understand its effect on urban mobility. However, I am far from only focusing on urban mobility, I am also interested in understanding how public policy interferes or enhance it for certain populations. Hence, I will present additional information examining the theoretical foundations and concepts borrowed from Public Policy approaches on which are useful to conceptualize the research. Before going any further, I should note a peculiarity of this review of literature, while crossing disciplinary boundaries, it also crosses language boundaries. Inasmuch, I present the literature from English and French-speaking authors.

2.1 Urban and mobility studies

Since 2009, more than half the world's population is now urban, living in cities, a first in history (Stébé & Marchal, 2010, p. 3) and a reminder of the increased the relevance of urban sociology. While often focussed on the world's largest cities, urban sociology must now apply equal emphasis, if not greater on small and medium cities where most of the urban growth will now happen (ibid., p. 4). My study areas of Quebec City and Strasbourg are classified as such. Is urban sociology a sociology of the city or a sociology in the city? According to Stébé & Marchal (ibid., p. 14) it can be both. They affirm that “[s]ociology in the city allows us to grasp the complexity of urban life, the entanglement of individual trajectories and spaces, the multiplicity of actors who preside, in one way or another, to the production of the city and urbanity⁵” (ibid., p. 15). Regarding sociology of the city, it:

[...] recalls in this sense that the truth of the city does not reside entirely in the city itself. Other dimensions (political, economic, social), both inherent and external to the urban world, undoubtedly have an impact on the world of cities. This is why the city can be defined as a point of articulation between local logics and global dynamics. It is the place where the processes that transcend it materialize and are realized (idem).

There are many issues on which urban sociology has to educate us. I only bring to bear a few of these; its analysis of mobility and its focus on spatial and gender questions. Mobility

⁵ Own translation.

is an important concept for contemporary urban sociology. Kaufmann (2014, p. 1) even calls it a “[...] ‘total’ social phenomenon and, therefore, that the analysis of mobility teaches us about the composition of and changes in a society”. He uses the sense of ‘total’ social phenomenon in the sense of Marcel Mauss (1923); in other words mobility is “[...] a lens through which may be read all of the social relationships of a given society” (Kaufmann, 2014, p. 1).

According to Joye & Schuler (2007, p. 259) inequalities and how urban transformation’s influence on inequality plays a central role in urban sociology’s outlook on cities. They state that: “[i]t is precisely in this inequality / territorial link that a fundamental stake in urban sociology is constituted which, unlike other fields of sociology, cannot ignore the spatial dimension” (ibid., p. 260).

From my background in policy analysis, I also have a natural interest in taking into account, not only the pure sociologist questions but also relevant urban policies and according to Blanc (2007, p. 317) linking this line of questioning with more urban sociology related question is common and dates back to the Chicago school:

In urban sociology, the question of local power and its democratic control is part of a long tradition. It is a dimension that has been very present in the work of the Chicago School and which remains so in Anglo-Saxon urban sociology.

2.1.1 What Is a City?

But what makes a city? I present a diverse set of definitions in this section as various authors give a variety of definitions based on their specific outlook, I present a diverse set of definitions in this section. According to Stébé & Marchal (ibid., p. 5), a city is:

A place populated by individuals who make a living from anything except working on the land, it is an ‘artificial place’ where a concentration of individuals is at work, exchanging goods and ideas and producing things that are not food. The grouping of these people and activities and task specialization and the supremacy of the built environment over the natural environment are at the bedrock of the city⁶.

For Kaufmann (2011, p. 3), the city and its urban environment are: “[...] the confluence of actors’ mobility capacities and a space’s receptiveness to their projects” and he considers, “mobility as the principal cause of urbanness (or non-urbanness)” (idem).

⁶ Own translation.

For Marx, the city is the space where social struggles can lead to the liberation of the most deprived; It makes it possible to emancipate oneself “from the stupidity of the rural life” (Stébé & Marchal, 2010, p. 17). For Marx and Engels, the city is a society since it concentrates in one place population, instruments of production, capital, needs and the possibility of enjoyment (Lefebvre, 1972/1978, p. 46).

For some authors, space is a defining part of the city⁷. Sennett (2002, p. 39) defines the city as:

A human settlement in which strangers are likely to meet. For this definition to hold true, the settlement has to have a large, heterogeneous population; the population has to be packed together rather densely; market exchanges among the population must make this dense, diverse mass interact.

Canadian urban sociologist Peter McGahan (1986, p. 1) defined the city as “[...] relatively large, dense, permanent settlements in which the majority of residents do not produce their own food”. Lévy (1999, p. 199) defines the city as a

[...] spatial situation characterized by the concentration of a society in a place so as to maximize the intensity and diversity of social interactions, or if we say, in a still more compact way, that the city is a geo-type of societal substance based on coexistence [...]

However, for some authors the city is too narrow a concept nowadays for urban sociologists and as an example, Bassand & Brulhardt (1981/2010, p. 192) suggest focussing instead on “urban areas”:

Due to spatial transformations in advanced industrial societies, it is no longer possible to speak of cities and villages: the concept of urban area best accounts for this reality. An urban area corresponds to a vast array of areas of various sizes, specialized and hierarchical; in it industrial, commercial, administrative, residential, recreational and agricultural areas adjoin each other. The whole is punctuated with large one-purpose facilities: supermarkets, airports, large cultural facilities, train stations, etc. This system is usually organized around one or two centres, which are often the old industrial and pre-industrial ones⁸.

⁷ I further explore this fact in section 2.1.4

⁸ Own translation.

The authors also state the importance of spatial mobility as part of the system⁹. For them,

*such a system cannot function without a very fluid and flexible spatial mobility between these multiple zones. [...] Moreover, the social, economic and political participation of the actors in the urban region is dependent on their spatial mobility. But research shows that this aptitude is unevenly distributed*¹⁰ (ibid., p. 193).

This important claim of uneven distribution of spatial mobility is at the heart of my research project as I subsequently attempt to shed some light on the differences in daily mobility between motorized and non-motorized households as well as between women and men.

2.1.2 The Role of Urban Sociology

Now that I have presented ways to define the city, I would like to discuss the role attributed to urban sociology in the scientific literature, in the hopes that the thesis fulfills in some measure, a number of these roles and inscribes itself in the urban sociology discipline (among others) I believe this is a significant discussion. One common point is that urban sociology takes into account the spatial aspect of society in urban areas but as I present, it is unveiled that it also has a critical role; it matters to democracy and has a role in transdisciplinarity.

For McGahan (1986, p. 6) urban sociology is important because of the growing dominance of the urbanization process from a demographic and social perspective. He asserts that urban sociology “[...] attempts systematically to describe and analyze this phenomenon. It is therefore of central importance in achieving a more complete understanding of contemporary societies” (idem). Citing Bourne (1982) he adds that “this discipline studies the urban community as an integrated sociospatial system. That is, a primary task is to examine the interrelation of the city’s social and ecological organization - how social and spatial structures reflect and influence each other” (ibid., p. 8).

For Stébé & Marchal (2010, p. 11), urban sociology has to understand the interactions between the “crystallized” city (built environment and institutions) and the mobile “living” one which inhabits the other but can also go beyond its boundaries, taking into account that “[s]pace receives the imprint of society as much as the reverse”¹¹. As I attempt to do in this thesis, they claim that urban sociology should be apprehended from the point of view of those who live it from within, captured from empirical research carried out among the

⁹ A point that I develop further in section 2.1.6.1.

¹⁰ Own translation, emphasis in the original.

¹¹ Own translation.

inhabitants (ibid., p. 12). Stébé & Marchal suggest observing the everyday life of urban denizens but to also pay attention to what is constraining them (In my case, car dependence):

The observation of the rhythms of the ordinary urban dweller, and more generally of their practices and uses, makes it possible to better grasp both the diversity and the similarities in the ways of living, thinking and living in the city. It also reveals the importance of never forgetting the dimensions and the objective constraints that intervene in one way or another in the lives of urbanites¹² (ibid., p. 119).

Bassand goes in the same direction and states that it is necessary to give priority to the analysis of the inhabitants who increasingly intend to become active actors in their environment, we must be careful to bring out the diversity of urban territories and the complexity of the urban reality (Jaccoud & Kaufmann, 2010, p. 5). Sassen (2005, p. 354) affirms that urban sociology can help understand major social dynamics: “[...] the complex city or city-region becomes a heuristic zone: it actually can produce knowledge about, and make legible, some of the major transformations and dynamics shaping society”.

For Le Galès (2005, p. 351) urban sociology looks at the same issues as sociology but on a different scale: “[a]s a sociologist, the question ‘how individuals and groups are part of and make society’ remains a fundamental question in terms both of segregation and inequalities, and of insertion or integration. It makes sense to ask it at the urban level.”

2.1.2.1 A Critical Role for Urban Sociology

However urban sociology can also play a critical role at the urban level. For example, Kaufmann & Montulet (2008, p. 37) assigns the critical version of urban sociology a role of denunciation of mobility injustice: “[t]he new critical sociology aims to denounce the exploitation of the immobile by the mobile, the latter ensuring their mobility at the expense of the former”. May & Perry (May & Perry, 2005, p. 343) state that urban sociologists can help resolve important urban issues when they play a critical role: “sociologists positioned themselves as prominent critics and reformists of urban society, intimately connected with the identification and resolution of endemic problems and social issues”. Sassen (2005, p. 352) writes similar arguments when he says that because “major trends under way today instantiate in cities and thereby make cities a lens for producing critical knowledge not only about the urban condition but also about major social, economic and cultural refigurings in our societies”. She also adds that “[...] the city is once again emerging as a strategic site for understanding some of the major new trends reconfiguring the social order, and hence

¹² Own translation.

potentially for producing critical knowledge not just about cities but about the larger social condition” (ibid., p. 353).

2.1.2.2 *Urban Sociology and Democracy*

An interesting point for a policy analyst, some authors also comment that urban sociology can play a role in democracy by improving our knowledge of urban governance. For example, Blanc (Blanc, 2007, p. 331) states that it:

[...] can be useful for the development of local democracy and can help citizens to be citizens. Even if sociologists do not produce democracy, they can make a difference. They can help local authorities and inhabitants to invent more democratic forms of government, without replacing them.

In his essay on the future of urban sociology, French urban sociologist and policy analyst Patrick Le Galès (2005, p. 348) invites urban sociologists to investigate issues of democracy: “[...] there are many ways to speak about and reflect upon the urban world and it would be problematic not to be engaged in public and policy debates in one way or another” (Le Galès, 2005, p. 348).

2.1.3 *Transdisciplinarity in Urban Sociology*

According to various authors, urban sociology also has a role to play in the growing transdisciplinarity movement. May & Perry (2005, p. 343) affirms that the urban has already become a transdisciplinary object of research:

The study of urban phenomena is no longer the province of any one discipline in a complex socio-economic climate marked by reshifting notions of scale between the global and the local, increasing emphasis on interconnectivity, networks, infrastructures and flows and concern with interdependence and sustainability.

As Bassand, Kauffman & Joye (2007a, p. 6) state for many reasons, transdisciplinarity has become crucial to study urban phenomena:

[...] the scientific disciplines interested in the urban multiplied with consequently the fact that the transdisciplinarity has become indispensable. To write and to understand the urban phenomenon supposes to hold in the same perspective, its material and intangible, human and non-human, structural and procedural dimensions (Bassand et al., 2007a, p. 6).

Le Galès (2005, p. 348) sees a future urban sociology being more comparative and hybridizing which I attempt to do with my research: “[a] wider view of the field suggests that the future of urban sociology lies in the development of research in different corners

of the world, the hybridization of intellectual traditions and the development of comparative work”.

2.1.4 Space and the City

Space is a constituent of the city as perceived by Lefebvre (1974/2000), this not only includes the physical space, but also the mental representations of space and what he calls “social space”. He uses Marxist theory to analyze the production of space in modern capitalist society. Lefebvre (1974/2011, p. 9) is critical of capitalism and its role in the production of the city and through this work he aspires to warn us of the important but sly contribution of capitalism in the production of our space: “[...] capital and capitalism ‘influence’ practical matters relating to space, from the construction of buildings to the distribution of investments and the worldwide division of labour”. By comparing four different urban areas, I am indeed comparing four different productions of social spaces. The social space is important, according to the author, because “every society—and hence every mode of production with its subvariants [...] - produces a space, its own space” (ibid., p. 31). This space is not a simple fiction, an idea, it is encompassing: “[...] it envelops produced things, it includes their relationships in their coexistence and simultaneity¹³” (Lefebvre, 1974/2000, p. 88). It is the space of “social practice” (ibid., p. 21). This social space also governs our actions: “[e]ffect of past actions, it allows actions, suggests or prohibits them¹⁴” (ibid., p. 88).

According to Lefebvre, in order to understand the production of space, we must understand three concepts. Spatial practice:

The spatial practice of a society secretes that society’s space; it propounds and presupposes it, in a dialectical interaction; it produces it slowly and surely as it masters and appropriates it. From the analytic standpoint, the spatial practice of a society is revealed through the deciphering of its space (Lefebvre, 1974/2011, p. 38).

The representations of space: “[...] conceptualized space, the space of scientists, planners, urbanists, technocratic subdividers and social engineers, as of a certain type of artist with a scientific bent - all of whom identify what is lived and what is perceived with what is conceived” (idem). And the representational spaces:

¹³ Own translation.

¹⁴ Own translation.

[...] space as directly *lived* through its associated images and symbols, and hence the space of 'inhabitants' and 'users', but also of some artists and perhaps of those, such as a few writers and philosophers, who *describe* and aspire not to do more than describe. This is the dominated – and hence passively experienced – space which the imagination seeks to change and appropriate. It overlays physical space, making symbolic use of its objects (ibid., p. 39).

For urban geographer Jacques Lévy (1999, p. 195), the city is basically and entirely a spatial concept. According to him, urban realities cannot be effectively approached unless their spatiality is placed at the centre of their study; the fact that cities' existence and their arrangement participates in the management of distance by societies. He also criticizes social sciences (including geography) for not initially having at their disposal sufficient theoretical tools taking into account explicitly matters of spatiality thus failing to capture the fundamentally spatial nature of urban areas (ibid., p. 198).

2.1.5 Gender and the City

Gender seems to make a difference in the way we perceive, live and participate in the city. According to Ledwith, Woods & Darke (2000, p. 3) women's interest are not integrated in the policy-making process, including the transportation sector and they have been mostly absent from the urban policy and planning schemes (Boys et al., 1984, p. 3; Hamilton & Jenkins, 1992). According to Boys (1984, p. 53) women's mobility is more local than man's therefore more limited and closer to home. According to Coleman (2000, p. 83) "despite the importance of women, as over half the population, and their increasing mobility, women's travel behaviour and transport needs are not fully understood or properly provided for in our cities". Coleman (ibid., p. 85, 90-93) provides many examples of women's specific transportation needs. She also calls for further research in order to better inform policy looking specifically at women's travel behaviour and most choice (ibid., 96).

Another important gender-specific urban phenomenon is that place can be gendered because of its various concentrations of men and women. Different neighbourhoods can show important variances. For example, there is a larger concentration of female-headed households in social housing neighbourhoods (Woods, 2000, p. 53). Urry (2008a, p. 13), citing others, adds more examples and states that this can have dissimilar effects for men versus women:

In particular, places, we now know, are “gendered”. Men and women can have different relations to the “city”, which is often dominated by male interests and by the predominant forms of representation, such as monuments, commemorative buildings, and historic sites, that record male activities. We also know just how important urban design is for the safe dwelling and mobility of women, especially in those places dominated by automobility (Ardener, 1993; Wilson, 1991; Wolff, 1995; Sheller & Urry, 2000).

As Vandersmissen (2007, p. 47) states, mobility has become an issue in achieving gender equality, with a growing interest from feminist geographers in the analysis of work-residence mobility as a result of the division of the space between private sphere and public sphere. In my thesis, I also approach gender-based differences in mobility in numerous ways and take gender based effects into account when analyzing public policies. In the following section I describe what is entailed by mobility.

According to Docherty, Giuliano & Houston (2008, p. 93) often times transport system caters more to men’s needs than women’s needs:

Many city transport systems might provide good radial access between city centre and suburbs, thus meeting the needs of men, but they cater (much) less well for shorter and non-radial trips that women are more likely to make as part of their complex mix of work, childcare and other activities (Watson, 1999).

2.1.6 Mobility

The transport networks shape and crisscross the territory of cities and urban areas. Whether it is highways, boulevards, metros or trams, the junction points of the transport “lines” form the nodes of a network around which the city unfolds. These networks participate in the production of space not only by their visible effects on the territory and the real space, but also by their repercussions in the social space by enabling spatial mobility. As stated by Amin & Thrift (2002, p. 43) more than ever before, modern cities are built on an increasing mobility. Going even further for Kellerman (2006, p. 145) perceive cities as systems of mobility. Long ignored by researchers, mobility is increasingly incorporated into research. From what is commonly referred to as the “mobility turn”, mobility is increasingly being given focus in research programs such as urban studies, architecture and geography (Jensen, 2010, p. 389). According to John Urry (2007a, p. 7), for research, mobility can take at least four different meanings: a property of people or objects that move or can move, a moving mob that is difficult to frame, a vertical meaning to symbolize ascending or descending social mobility and finally a horizontal meaning to signify migratory movement (permanent or not). For Kaufmann (2011, p. 24), the use of the term “mobility” is not new is social

sciences, it actually goes back to the Chicago school in the 1920s with the works of Sorokin¹⁵. Kaufmann (2011, p. 11) defines mobility simply as “change is therefore at the very heart of urban reality: the city and the urban are themselves mobility” but that also depends on who is using the term:

When a geographer uses the word ‘mobility’ the goal is to evoke the idea of *movement through space*, unlike the traffic engineer, for whom mobility means *transportation flows*, or the sociologist, for whom mobility’ refers to a *change in social position or role*¹⁶ (ibid., p. 23).

In this section I discuss the concepts of spatial mobility, the broader use of the term of mobility and motility in urban sociology and finally a particular look at a specific type of mobility important to this research, automobility. One important point to make at the beginning of this section is that, as Scheiner & Kasper (2003, p. 320) remind us, “[...] mobility is a two-sided term. On the one hand, it identifies social and spatial mobility; on the other side it indicates short-term (travel) and long-term mobility (housing mobility, choice of location).”

2.1.6.1 Spatial Mobility

For Lefebvre (1974/2011, p. 191), space is an integral part of the urban system, urban dwellers define their activity space through their mobility, their movement through space: “[s]pace appears as a realm of objectivity, yet it exists in a social sense only for activity—for (and by virtue of) walking or riding on horseback, or travelling by car, boat, train, plane, or some other means.” Lefebvre also evokes transport networks when he presents the representation of space. For in everyday life, space is represented in reference to these networks, maps, plans, transport lines (ibid., p. 233), hence the importance of spatial mobility.

As previously discussed, there are many types of mobility, since mobility is a polysemic notion. Urban sociologist Bassand & Brulhardt focus on one kind of mobility, spatial mobility. According to Bassand & Brulhardt (1980, p. 11) spatial mobility is not a phenomenon peculiar to contemporary societies. For them, one only has to look at the works of history and ethnography to realize that most primitive human groups survived only by at least two types of spatial mobility: on the one hand, daily peregrinations of part of the group in search of plants, minerals and animals essential to their daily life; on the other hand, repetitive seasonal migratory movements of the entire group to escape unfavourable climatic, socio-economic or political conditions. They give the concept of spatial mobility a broad meaning: “[...] any movement in the physical (or geographical)

¹⁵ See (Sorokin, 1927)

¹⁶ Emphasis in the original.

space of the actors (individual and collective) of a society, regardless of the duration and distance of travel, the means used, the causes and their consequences” (ibid., p. 19). For them, the concept is still valid and important in today’s society:

spatial mobility is [...] one of the fundamental modes by which a society works [...] The issue of spatial mobility is considerable, because by controlling the spatial mobility of a society, one controls - at least in part - its operation and evolution¹⁷ (Bassand & Brulhardt, 1981/2010, p. 190).

Spatial mobility is often realized as part of our daily mobility, an aspect that I investigate in this research by looking at many aspects of spatial mobility from a daily mobility perspective as Scheiner & Kasper (2003, p. 324) indicates: “[c]entral aspects of daily mobility are type, quantity and timing of activities, choice of destinations and spatial orientation (activity spaces), realised distances, and modal choice”. This includes movement, but, as they state, it also includes not so physical forms of mobility:

[...] spatial mobility is often used as a synonym for physical motion, but it includes the use of media as well (“virtual mobility”), through both individualised use (internet, email, interactive CD-ROM, fax, BTX, phone y) and classical mass media (TV, radio, newspaper, journals). These differentiations are of great relevance for analysis of lifestyles and mobility (ibid., p. 320).

Hislop & Axtell (2007, p. 49) also reiterate this and indicate that these non-physical forms of spatial mobility are increasingly more important:

[...] a number of contemporary social, economic and technological changes have the potential to increase the spatial mobility of workers, ‘liberating’ them from the physical constraints of having to work at fixed locations. Thus, the increasingly globalised nature of multinational corporations, combined with the evolution of laptop computers, mobile phones and internet-based means of communication, mean that spatial mobility for workers is potentially both more necessary and more possible.

Kakihara & Sørensen (2001, p. 34), in order to incorporate the full spectrum of mobility related human interactions one also has to include in spatial mobility the movements of “things”: “[...] spatial mobility refers not only to extensive movement of people; it also signifies the global flux of objects, symbols, and space itself, and as such evokes complex patterns of human interaction.” Although I find this interesting, my research only focuses on the spatial mobility of people, looking at how it can play a role in a potential form of

¹⁷ Own translation.

social exclusion. Nutley & Thomas (1995, p. 24) state that spatial mobility by representing certain types of lifestyle can be a good indicator of social integration (or not):

SPATIAL MOBILITY PATTERNS are important and very interesting indicators of lifestyles, access to and participation in a wide range of economic and social activities, degree of integration in society, and standard of living. They may also indicate problems suffered by some groups relative to the experience of the wider community. Mobility in the spatial or geographical sense means making journeys, on foot or by some mode of transport, in order to acquire goods or services or to take part in activities which are a necessary part of everyday life [... c]urrent social values assume that spatial mobility is a desirable commodity, and that high levels of travel indicate relatively high incomes and consumption and a greater range of business and social contacts, which in their turn are assumed to be beneficial¹⁸.

2.1.6.2 *Mobility's Role in Urban Sociology*

Since mobility can be representative of lifestyle and social integration, it stands as a significant object of study for urban sociology. According to Bassand et al. (2007a, p. 10), mobility is not only an significant concern for urban sociology but it also refers to the question of social exclusion:

For example, mobility raises the issue of social segregation in the city in a new way. As a consequence, segregation is constructed less exclusively in static terms of places and more in dynamic terms of spatial and temporal accessibility. In other words, the problem of access refers to the switch from space to the network. A question becomes central: do the processes of social segregation result from the offer and the individual strategies of the actors, the access to this offer or of the ability to appropriate the potentials available in effect, of habitus? More generally, are these considerations integral to social exclusion?

According to Sheller (2014, p. 790) research in urban sociology can benefit from using mobilities concepts for many of its intended research objects particularly since it allows for research “[...] critically addressing normative issues of mobility justice (such as movements for sustainable mobility and mobility rights) and mobility capabilities (such as the demands of social movements for rights of access to the city and transportation justice)”. Many of these themes are central to this thesis. Furthermore, since I also look directly at mobility behaviour, as Nutley & Thomas (1995, p. 25) actual mobility behaviour can also enable urban sociology research to the detect social issues:

¹⁸ Emphasis in original

Differences in trip rates can be used to indicate relative advantage or disadvantage among population sub-groups. It is commonly inferred by outside observers that relatively low numbers of journeys per household or per person mean that problems or hardship exist, in that a basic minimum level of mobility is indispensable for an acceptable standard of living.

For Bassand, Kaufmann & Joye (2007b, p. 406) mobility represents today a central concept when discussing the urban; not only because space is built on movements as well as on presence, but also because it is a determining social resource. For that reason, they consider urban forms and technical networks as an indispensable object of study for urban sociology (idem). For them, the mobility of actors is at the heart of the dynamics of the urban phenomenon and constitutes a powerful analyzer of its substance, it is fundamentally because co-presence remains the basic foundation of sociability and social integration, despite the considerable growth of remote communication techniques (ibid., p. 407).

According to Kaufmann (2002, p. 36), the notion of mobility has a notable role in urban sociology in that it changes the angle of research by shifting the centre of attention of the researcher: “[t]he notion of mobility focuses the researcher’s attention on movement in space-time rather than on the actor [... yet,] actors are central in the mobility process”.

Kaufmann (2007, p. 171) later affirms that mobility should also be investigated because of its role in new forms urban mutations currently taking place:

[t]he city no longer opposes the rural as an enclosed territory, but becomes rootstock, is freed from its borders under the impetus of the speed potentials provided by the systems of transport and telecommunications. The resulting change is deep and affects many other areas than the city. In particular, they render inoperative many of the concepts of classical sociology, which are precisely based on an areolar design of space-time that does not integrate mobility.

Kaufmann (2011, p. 19) explains the importance of mobility in the urban sociology analysis by linking the various speeds and different centralities, morphologies and lifestyles that mix in the city: “[t]oday’s variety makes areolar congruity between lifestyles, functional centralities and morphologies impossible as actors have such a wide choice available to them in terms of speed. This makes putting mobility at the core of urban thoughts all the more crucial.”

He calls upon us to use an inclusive definition of mobility in order to understand urban phenomena:

[...] understanding urban dynamics today means taking a rich and substantive approach to the concept of mobility—one that incorporates its social *and* spatial dimensions, thereby allowing us to definitively gather the pieces of the puzzle that research, over its history, has forgotten about or scattered, and reassemble them (ibid., p. 20).

For Lord, Negron-Poblete & Torres (2015, p. 1) note that people are mobile, for pleasure but also by obligation, hence the interest here of investigating the possible inequities or inequalities with the different injunctions to mobility. Since the “mobility turn”, mobility has become an important concept not only in urban sociology but for several fields of research, such as urban studies, architecture and geography, adding movements to an analysis that was previously rather static (Jensen, 2010, p. 389). Kaufmann explains that mobility is now embedded in every aspect of our lives:

The mobility turn is at the heart of global change and touches every aspect of political, social and economic life. Practically speaking it has resulted in the unprecedented growth of transportation and telecommunications flows and thus the chronic congestion of highway, railway and airport infrastructures (Kaufmann, 2011, p. 35).

Finally, like Stébé & Marchal (2010, p. 118) I consider that the right to urban mobility is among other significant rights at the centre of the urban issues and mobility research allows urban sociology to investigate those issues and hopefully further improve them.

2.1.6.3 *Motility*

As Kaufmann (2002, p. 36) recalls the technological aspects of urban mobility have experienced a continued improvement with the emphasis on the speed of movement that is made possible due to these technical improvements of the transport systems. However, this is where the concept of motility intervenes, useful to differentiate the mobility potentials from the effective mobility from a sociological point of view, as potential speed does not necessarily mean actual speed:

The speed potential permitted by the technology of transport system is often seen as an instrument for offering people mobility, as a means to make them mobile. It is imperative that this confusion between the speed potential offered by transport technology and the unquestioned attribution of strategies to individuals and to people’s mobility be abandoned if we are to study spatial mobility from a sociological point of view. Only by integrating the intentions of people and the reasons which make them mobile or which, on the contrary leave them immobile will we succeed in attaining this goal (ibid., p. 37).

I will now present the motility, which represents the mobility potential. In order to take into account the individual differences between actual mobility and potential mobility,

some researchers use the theoretical concept of motility (for example: Bonnet, Collet, & Maurines, 2006; Kaufmann, Bergman, & Joye, 2004; Kesselring, 2006). Kaufmann (2002) develops the concept of motility and exploits it as a theoretical tool in several studies in order to explore the extent to which the speed potentials generated by transport systems can be considered as vectors of social change.

In 1992, Remy and Voyé (1992, p. 73) were already exploring the problem of the actors' appropriation of mobility potential, without, however, referring to motility. Their concept of "mobility capacity" is very similar to that of motility:

[since] mobility capacity is a prerequisite for participation in the urban environment. A problem arises insofar as this capacity does not belong equally to everyone: alongside differences in age and health, mobility capacity is closely linked to the financial capacity of individuals, and perhaps even more so to a certain cultural capacity that develops or limits the requirements of a concrete and stable spatial roots¹⁹.

In a similar way Lévy (1999, p. 212) considers mobility as part of an individual's potential and includes virtual mobility in an approach analogous to mobility capacity:

[...] system of potential movements, more or less actualized, which will be called virtualities. This virtuality can be classified into three categories. Mobility is made possible because there is an offer of mobility, the accessibility. Mobility is effective because its operators possess mobility skills. Mobility becomes meaningful because, as a mastery of space, it is part of the social capital of individuals. As a possibility, mobility constitutes the background map of the city. It can be approached through accessibility, that is, the supply of mobility.

Kaufmann (2002, p. 37 emphasis in the original) defines motility as follows: "[...] the capacity of a person to be mobile, or more precisely, as the **way in which an individual appropriates what is possible in the domain of mobility and puts this potential to use for his or her activities**²⁰". Unlike previous studies, Kaufmann notes the differences between the achieved mobility and the potential mobility and asserts that these two notions are not necessarily parallel: "[m]obility does not necessarily increase just because there is a greater potential for mobility thanks to faster transport and new information and communication technology [...]" (ibid. p. 14). He adds for example that "[h]aving Internet at home potentially allows access to a universe of information and opens up a world of possibilities. However, this potential is not necessarily used" (idem).

¹⁹ Own translation.

²⁰ Emphasis in the original.

There are consequently several factors that tend to determine motility. Urry (2007a, p. 38) presents some: “[m]otility determinants include physical aptitude, aspirations, accessibility to transportation and communication, space-time constraints, knowledge, licenses and so on. These determinants of motility can be categorized in terms of ‘access’, ‘skills’ and ‘appropriation”, structured in terms of various system logics.” Finally, it should be noted that motility allows individuals to realize their own aspirations and as such, according to Kaufmann (2002, p. 44), it can be considered as a form of capital: “motility is at the service of people’s aspirations, their projects and their lifestyles, and constitutes a ‘mobilisable’ capital for their realisation and their combination”.

Finally, Kaufmann (2007, p. 179) reminds us of the proper use and important differences between mobility and motility as he discusses that it is indeed important not to confuse the potentiality with the movement itself, for example between the personal disposition and uses of an automobile. To avoid any ambiguity, he reserves the term mobility for motion and that of motility to the potential of motion. Motility can be defined as the actor’s ability to be mobile, spatially or virtually.

2.1.6.4 *Automobility*

The automobile system of mobility or the car system is often referred to as automobility. Featherstone (2004, p. 1) presents to etymology of the word automobility and its initial reference to autonomous direction without the need for a rail as well as mobility without the need for horses pulling the carriage:

The term automobility works off the combination of autonomy, and mobility. In its broadest sense we can think of many automobilities–modes of autonomous, self-directed movement. The auto in the term automobile initially referred to a self-propelled vehicle (a carriage without a horse). The autonomy was not just through the motor, but the capacity for independent motorized self-steering movement freed from the confines of a rail track. The promise here is for self-steering autonomy and capacity to search out the open road or off-road, encapsulated in vehicles which afford not only speed and mobility, but act as comforting protected and enclosed private spaces, increasingly a platform for communications media, that can be enjoyed alone or in the company of significant others.

As Sheller and Urry (2000, p. 738) state, automobility is now a defining feature of the modern city and that urban studies and sociology should study this phenomenon and its effect on social life. They criticize urban research up to the 2000s: “[...] sociology’s view of urban life has failed to consider the overwhelming impact of the automobile in transforming the time-space scapes of the modern urban/suburban dweller” and aim to remedy the

situation by proposing the concept of automobility (idem). While arguing that: “[...] mobility is as constitutive of modernity as is urbanity, that civil societies of the West are societies of ‘automobility’ and that automobility should be examined” (idem). They identify six defining features that combine to create automobility:

1. Automobility starts with the car itself: the “[...] *manufactured object* produced by the leading industrial sectors and the iconic firms within twentieth-century capitalism (Ford, GM, Rolls-Royce, Mercedes, Toyota, VW and so on)²¹” (idem).
2. This manufactured object is a very important part of households’ budget, considering it to be “[t]he major item of *individual consumption* after housing which (1) provides status to its owner/user through the sign-values with which it is associated (such as speed, home, safety, sexual desire, career success, freedom, family, masculinity, genetic breeding); (2) it is easily anthropomorphized by being given names, having rebellious features, being seen to age and so on; and (3) generates massive amounts of crime (theft, speeding, drunk driving, dangerous driving) and disproportionately preoccupies each country’s criminal justice system²²” (idem).
3. Automobility is a whole system, forming “[a]n extraordinarily powerful *machinic complex* constituted through the car’s technical and social interlinkages with other industries²³” (idem). These include the petroleum and car accessories industries but also motels and suburban construction industry for example (idem).
4. It is the most important form of urban transport and dominates all other modes (ibid., p. 739)
5. It is a major component of popular culture and “sustains major discourses of what constitutes the good life, what is necessary for an appropriate citizenship of mobility” (idem).
6. The quantity of resources, space and power consumed by the building of the cars, roads and the car-only environments make automobility the largest consumer of our environmental resources (idem).

Some authors also recognize the political aspects of automobility. Böhm, Jones, Land & Paterson (2006, p. 3) focus on the need to theoretically develop the social and political sides of automobility as they consider it is an organizing part of modernity: “[i]t is a set of political institutions and practices that seek to organize, accelerate and shape the spatial movements and impacts of automobiles, whilst simultaneously regulating their many consequences”. They also denote its political side: “[...] there is a crucial importance in recognizing that

²¹ Emphasis in the original.

²² Emphasis in the original.

²³ Emphasis in the original.

automobility is fundamentally political—that it entails patterns of power relations and visions of a collective ‘good life’ which are at the same time highly contestable and contested” (ibid., p. 4). Furness (2010, p. 5) finds that the United States has grown into a “full-blown car culture” and he recalls the many political parts throughout US history, beginning at the end of the 19th century. For him this transformation involved building the complex road system, car lobby to governments, residential zoning, the silencing of critics while subsidizing auto makers and underfunding public transit (idem). He goes as far as affirming that the strength of automobility in that country is in part due to the fact that car driving is construed as a feature of “American-ness”: “[...] a de facto expression of citizenship in the United States and a means by which one becomes part of the national ‘imagined community’” (ibid., p. 7). He adds that:

Driving, and more specifically the act of driving to and from work, is not only an integral part of American life, it is one of the most ritualized tasks performed by the largest number of US citizens each day: roughly 120 million commute by car, including 105 million who drive alone (idem).

Culver (2016, p. 707) also describes political aspects of automobility in the US context: “[t]he essentialization of automobility thus significantly impacts the politics of mobility in the US. On the one hand, it obscures the coercion to drive, as well as the fact that mobility itself is a site of political struggle.” He also describes a side effect of automobility that can be a factor in social exclusion: “[...] it renders non-automobile modes of transport as deviant by contrast with the norm, which means that non-motorists are marginalized in struggles over mobility” (idem).

Collin-Lange (2014, p. 188) makes a connection between automobility and motility:

[...] automobility should be understood as stages in which one’s individual motility is maximized—where one can be ‘automobile’—according to the structural, personal and cultural context in which this individual finds himself or herself. Each of these stages is centred on one particular mobile technology, individuals can switch between them, each giving individuals access to certain spaces.

Kellerman (2006, p. 90) summarizes all the attributes of automobility from a personal, societal and spatial perspective in a table that I reproduce below:

Individuals	Society	Space
Speed	Personal physical mobility as a democratic right	Major and growing land use
Flexibility in movement	Culture of personal physical mobility	Suburbanization of dwellings
Personal autonomy and individualism	Lower levels of localism	Segregation
Power	Status symbol	Dispersion of services
Pleasure		Dispersed social contacts
Coercion by laws and regulations		Dispersed location of production
Strict routine time organization		Placelessness
Reorganization of the daily lives		Environmental problems (pollution, noise)
Dependence on maintenance professionals, and the oil industry		
Expended lived space		

Table 2:1 Spheres and Aspects of Automobility²⁴

Automobility is an important factor to take into account in urban studies because of the various forms of physical mobility, it stands out as one that undoubtedly has had profound repercussions on cities and as such has had many critics. For example, Canadian-American urbanist Jane Jacobs (1965, p. 338) denounces some of those repercussions in describing some troubling aspects of automobility:

Today everyone who values cities is disturbed by automobiles. Traffic arteries, along with parking lots, gas stations and drive-ins, are powerful and insistent instruments of city destruction. To accommodate them, city streets are broken down into loose sprawls, incoherent and vacuous for anyone afoot, downtowns and other neighborhoods that are marvels of close-grained intricacy and compact mutual support are casually disemboweled. Landmarks are crumbled or are so sundered from their context and City life as to become irrelevant trivialities. City character is blurred until everyplace becomes more like every other place, all adding up to Noplace [sic]. And in the areas most defeated, uses that cannot stand functionally alone— shopping malls, or residences, or places of public assembly, or centers of work— are severed from one another. (Jacobs, 1965, p. 338)

Jacques Lévy (1999, p. 18) calls it a danger, reminding us that cities are fragile geographical configurations and that as Georges Pompidou said, adapting them to the car could cause catastrophes because the very advantages of the cars are also its dangers. According to him automobility goes against many defining features of the city:

²⁴ Source : (Kellerman, 2006, p. 90).

If you remove density from the city, you prevent it from being fully urban, since you at least partially renounce copresence. Diversity is also impacted by the need to travel longer distances to link different activities or populations. The choice of automobility therefore tends to introduce the logic of the gap at the very heart of its opposite as the city (idem).

John Urry (2000, p. 193) considers it a risk for social exclusion and describes some of the changes led by the rise of automobility:

Automobility then constitutes a civil society of roaming herds of hybridised 'car drivers' who enter the public realm in their mobility, dwelling-within-their-cars, and excluding those without cars or without the 'licence' to drive such cars. And such a civil society of automobility transforms public spaces into public roads, in which to a significant extent the hybrids of pedestrians and cyclists are no longer part of that public.

For Sheller & Urry (2000, p. 745) automobility is a dominating force whose weight compels motorists and non-motorists to organize their lives through time and space. Later on, Urry (2006, p. 20) called automobility a "[...] Frankenstein-created monster, extending the individual into realms of freedom and flexibility whereby inhabiting the car can be positively viewed, but also constraining car 'users' to live their lives in spatially stretched and time-compressed ways" (Urry, 2006, p. 20). He considers automobility constraining because it "[...] coerces people to juggle fragments of time in order to assemble complex, fragile and contingent patterns of social life, patterns that constitute self-created narratives of the reflexive self" (idem). According to Packer (2008, p. 44) automobility does not only offer a new level of freedom:

Automobility and the freedom it promises need also to be understood as an obligation. The systems of automobility in the United States and other highly industrialized countries very often nearly demand that one must drive a car [... and] is a means for keeping other interconnected economic and social systems running smoothly, including systems of social inequality.

Kaufmann (2007, p. 177) differs and states that:

[...] while a majority of the population prefers the use of the private car to other means of transport, this aspiration is not generalized. Thus, the affirmation of the inevitability of urban development organized around large road infrastructures, although held by many researchers, is highly questionable.

2.2 Transport Geography/Studies

I will now turn to the second discipline in my thesis; transport geography, a sub-discipline of human geography. According to Goetz, Ralston, Stutz & Leinbach (2003, p. 221), simply put, “[t]ransportation geography is the study of the spatial aspects of transportation”. Shaw, Knowles & Docherty (2008a, p. 4) add that:

It develops because people and goods have to get places. People are rarely located in the same place as the things they want or need, and transport systems are, they are meant manifestations of people's desire to access goods, services and each other.

They identify two major areas of focus for Transport Geography, 1) the actual geography of the transportation systems themselves (idem) and 2) the impact of transport (ibid., p. 5). For them, transport represents an important interest in geography:

A core interest of many geographers is explaining the location of phenomenon overtime and across space, and transport is one of the most powerful factor affecting and explaining to distribution of social and economic activity (Hoyle & Knowles, 1998; White, 1977) (idem).

2.2.1 The Role of Transport Geography

According to Docherty, Giuliano & Houston (2008, p. 83) transport plays a critical role in the constant process of city building and renewal and it's from this perspective that it holds the interest of transport geographers. Transport is also interrelated with mobility and plays a role in accessibility:

The provision transport infrastructure is clearly necessary for efficient operation of the urban economy, given spatial separation of activities and households. The transport infrastructure, together with the resources available to individuals, determines each individual's level of mobility (the capability for physical movement); the spatial arrangement of activities in households determines accessibility (the availability of employment, education, social, and cultural opportunities). Mobility and accessibility are closely related: the more accessible the urban environment, the fewer mobility resources are required to carry out daily activities. The more mobility resources are available, the greater one's level of accessibility becomes (*ibid.*, p. 84).

Preston & O'Connor (2008, p. 229) state that one of the main roles for transport geography is to map the patterns of mobility and accessibility as well as the associated consequences such as time, cost or congestion. There is a certain interplay between transport policy and geography. According to Shaw et al. (2008b, p. 63) transport geography can help highlight changes to economic, social and environmental geography brought on by transport policy changes.

2.2.2 Interdisciplinarity in Transport Geography

Transport geography being interdisciplinary in its research objects, approaches and methods (Goetz, Vowles, & Tierney, 2009; Hall, 2010; Kwan & Schwanen, 2016; Schwanen, 2016), many of the theoretical frameworks and research objects of transport geography are also common to urban sociology and were covered in those sections. For example, see section 2.1.4 on Space and the City (p. 18), section 2.2.5 on Social Exclusion (p. 59) or section 2.2.3 on Car Dependence (p. 34). Nonetheless, in this section, I will cover three topics that are more geographical in nature, accessibility, spatial justice and spatial mismatch.

According to Preston & O'Connor (2008, p. 236) citing Williams (1981), transport geography has been interdisciplinary for a long time. They add that recently this has become more significant:

[...] transport geography is repositioning itself in a genuinely inter disciplinary framework so that it can best unpack the complex, multi-scalar shifts in mobility and accessibility that have emerged. The growing focus on sustainability, that needs to apply various disciplinary lenses to fully understand its implications in the emergence of innovations such as the new mobilities paradigm means that these interdisciplinary links will only deepen over time (Preston & O'Connor, 2008, p. 236).

In their chapter, Preston & O'Connor include a graphic depicting the interconnection between transport geography and other scientific disciplines that I reproduced in Figure 2.1:

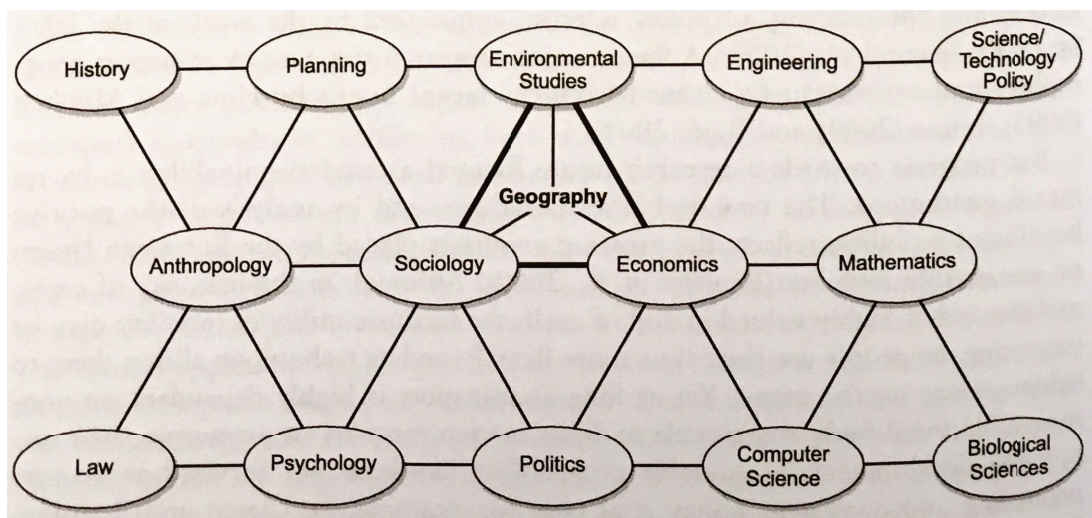


Figure 2.1: An Interdisciplinarity Framework for Transport Geography
Source: (Preston & O'Connor, 2008, p. 236)

2.2.3 Car Dependence

In developed countries everywhere, household car ownership has increased sharply in the last 40 years (Jones, 2008). The phenomenon is well documented in Canada (Vandersmissen, Thériault, & Villeneuve, 2004) as well as in France (Collet, 2007; Dupuy, 2000; Gallez & Madre, 1993; Petev & Coulangeon, 2012). It is also documented in the United Kingdom (Jones, 2011; Romilly, Song, & Liu, 2001) and the United States of America (Jones, 2008; Seiler, 2008). The two countries I am interested in are in the top ranks with a motorization rate of 676 cars per 1000 inhabitants in Canada and 574 in France²⁵ (Jones, 2008).

This high rate of car ownership and the organization of society around the automobile can lead to what some writers have called car dependence. In this section, I explore the literature describing car dependence and the multiple ways to perceive it; first by presenting the vision that car dependence is a cycle. I then present the writers who see it as a combination

²⁵ 784 vehicles per 1000 inhabitants in the United States and 511 in the United Kingdom.

of individual and social phenomena. Thereafter, I reveal the vision that car dependence is measured from the individual's perceptions and feelings. I then present car dependence as a series of habits and behaviours followed by the addiction's point of view and finally, I portray the vision that it is a combination of people and territory.

2.2.3.1 *A Cycle of Car Dependence Based on the Car System*

The first way that I would characterize car dependence is that of a vicious cycle. In his seminal book Gabriel Dupuy (1999a) presents car dependence as a social and spatial phenomenon. Dupuy (ibid., p. 147) portrays the spatial aspect as a dynamic process:

[... Car dependence] extends its grip on a space stretched and expanded by the evolution of a motor system that continues to expand. Today, the concept of car dependence expresses this tension. On the one hand, the automobile is acquisition or promise which few would give up, especially not those who experience the most difficulties to insert in space and in time their personal, family, work lives²⁶.

But the phenomenon is not restricted to cities alone, it rather extends to all the national territories: Dupuy (ibid., p. 115) considers that "car dependence does not originate in cities (or in the countryside), but in the development of an automobile system which does not respect the limits"²⁷.

Originally for the author, this is a form of vicious circle (see Figure 2:2) that tends to strengthen itself: "car dependence arises from circular mechanisms due to multiple interactions within the automotive system, interactions of which the agents gain an increasing advantage as long as they are part of it, that the system functions and develops itself"²⁸ (idem). But this growth in accessibility provided by the automobile has negative effects, hence the vicious circle: "[w]hen the automobile system expands, increasing accessibility for motorists, accessibility outside the automotive system tends to decrease. The result, in principle and by definition, is an even greater increase in dependence"²⁹ (ibid., p. 50). This fact of decrease in other accessibility related to the increase of car accessibility is important for Dupuy's concept of car dependence:

²⁶ Own translation.

²⁷ Own translation.

²⁸ Own translation.

²⁹ Own translation.

Dependence must be seen as a negative externality which is extra-sectorial from the point of view of the automobile sector, but nevertheless closely tied to the automobile system. The dependence externality affects those who cannot enter the automobile system or who are obliged to leave it (Dupuy, 1999b, p. 12).

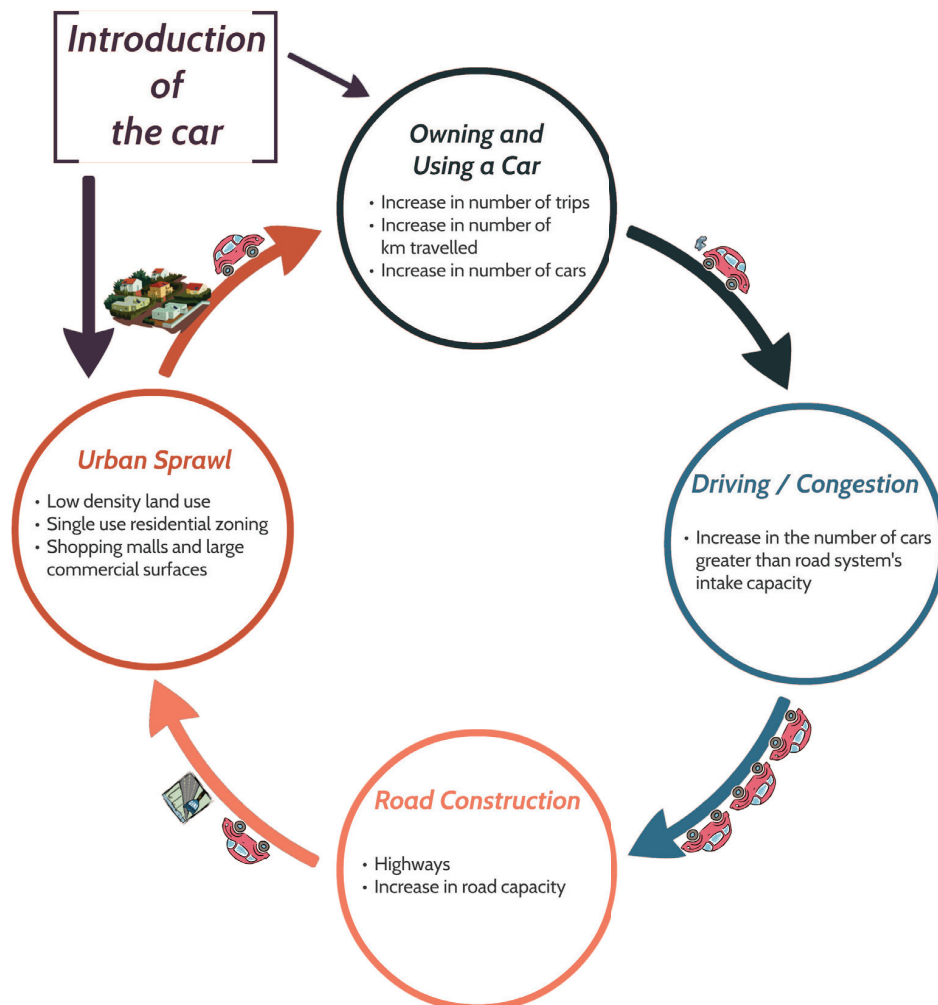


Figure 2:2 Vicious Circle of Car Dependence
Adapted from Vivre en ville (2012) - own translation.

French urban sociologist Henri Lefebvre, does not specifically describe car dependence, but he describes a vicious cycle of car use on the development of urban space and I include his definition of the phenomena in this part of the literature review:

Owners of private cars have a space at their disposition that costs them very little personally, although society collectively pays a very high price for its maintenance. This arrangement causes the number of cars (and car-owners) to increase, which suits the car-manufacturers just fine, and strengthens their hand in their constant efforts to have this space expanded (Lefebvre, 1974/2011, p. 359).

Like Dupuy he refers to a magic circle of development of the car system which turns vicious because it works against society in favour of capital. From a Marxist analysis perspective, Lefebvre is particularly interested in the role of the petroleum industry couple and the automotive industry who consume a lot of space. He introduces the concept of “asphalt’s magic circle”: “building of highways benefits both the oil companies and the automobile manufacturers: every additional mile of highway translates into increased car sales, which in turn increase petrol consumption” (ibid., p. 374). This tandem consumes a lot of space while producing new spaces. This production of “car” space is carried out in concert with the State, which naturally acts in conformity with the objectives of capital (ibid., p. 375). Nonetheless, this new space is the product of a vicious circle that works to the benefit of the dominant economic interests denounced by Lefebvre (idem). In addition, Lefebvre asserts that the various networks (roads, paths, telephone lines, railways) that overlap the natural physical place stratify in order to form the social space thus acquiring an existence beyond their materiality (ibid., p. 403).

Perl & Pucher (1995, p. 262) describes a similar vicious cycle when comparing public transit system challenges between Canadian and American cities. Although the authors do not name this cycle car dependence they decry the same phenomena. Whereas they highlight the important difference of the positive role played by public transit in Canada versus the USA: “[...] effective public transit as one of the factors working in favour of Canadian cities. Contrasts with the United States, where public transit decline has paralleled urban decay, highlight Canadian transit's role as a contributor to the health of Canada’s cities”. The authors also note that they are detecting the first signs of car dependence cycle: “[...] we detect symptoms of declining [public transit] performance which threaten public finance, environmental quality, and a host of other factors that contribute to Canada’s high quality of urban life” (idem). Nothing that as a result of decreasing public transit performance automobility is gaining ground: “[...] Canada’s urban mobility is being reoriented towards the automobile by default” (idem). The authors also state that not only does the car now have an accessibility and performance advantage but also a price advantage (ibid., p. 269). Likewise, they put forth a pessimistic prognosis and dire warning which remains true twenty years later: “unless the last decade’s trend toward low-density, dispersed land use can be

reversed, the automobile will become the sole urban transport option for more and more Canadians” (ibid., p. 279).

Mattioli (2013, p. 5) also talks of a cycle that is self-reinforcing and has profound consequences in restructuring our society:

[...] car dependence: it is a dynamic, unrelenting and self-reinforcing macro-social process with systemic properties, resulting in continually increasing levels of car ownership and use (in terms of distance covered), that strongly resists any deliberate attempt to induce change, despite increasing awareness of its negative externalities. It acts mainly through the restructuring of society, in the direction of spatial and temporal structures that tend to require car use for the access to services and opportunities. Accordingly, car dependence entails a fundamental equity dimension, because it tends to progressively widen the gap between the benefits of the automobile system for car users and the situation of non-car users, which in turn is a crucial driver of its spiraling dynamic.

For many authors, urban sprawl is not only a consequence but an important component of the cycle of car dependence. For example, Urry (2006, p. 26) citing O’Connell (1998) presents a cycle that restructure our urban spatial environment through a pathology called ‘auto sprawl’: “[...] ‘auto sprawl syndrome’ in which cars make urban suburbanization/sprawl possible and in so doing force those living in such areas dependent upon the use of cars.” Moavenzadeh & Markow (2007, p. 97) also describe a cycle in which public policies play a major role in car dependence and urban sprawl: “[s]prawl is the result of policies favoring low-density development, which in turn encourages automobile dependency and consequently additional land for roads and parking. Urban sprawl increases a number of economic and environmental costs, as well as future transportation costs.” Banister et al. (2000, p. 56) present car dependence as a multifaceted problem involving economic, social and individual factors which work together to increase car journey distance and car dependence while generating scattered land-use patterns and reduced investment in alternative mobility modes.

For Lidskog, Elander & Brundin (2003, p. 225) citing Freund & Martin (1993, p. 20), sprawl plays an important part in the “[...] overriding dominance of the car”. According to them, “we face a vicious circle: car transport makes urban sprawl possible and urban sprawl makes suburbanites auto-dependent” (idem). Similarly, for Jones (2011, p. 44) the cycle goes on car dependence induces car dependence because once the vast majority of households are motorized and car dependence has reached a high level it encourages the creation of residential, commercial and public sectors developments in areas that are only reachable by

car which considerably reduces access for non-motorized households. This reduced access to other modes grants an important advantage to the car and to motorists:

For an individual household, acquiring a car not only makes travel for existing purposes faster and more convenient; it also gives household members a much greater range of destination choices, both over time and space, and can lead to new forms of activity/travel patterns that are strongly car-based. As a consequence, over time a car reliant lifestyle is established, but often still with considerable scope for using non-car modes and destinations, if required or preferred, in the short term (Jones, 2009, p. 6).

As can be seen in Figure 2:3 Jones (2011, p. 54) describes a similar cycle where

[...] increases in individual household car ownership are mainly triggered by rising incomes (carrots), perhaps associated with a new employment opportunity, and to declining accessibility to land uses by non-car modes (sticks), due either to new development sites having poor non-car access or to a decline in public transport provision.

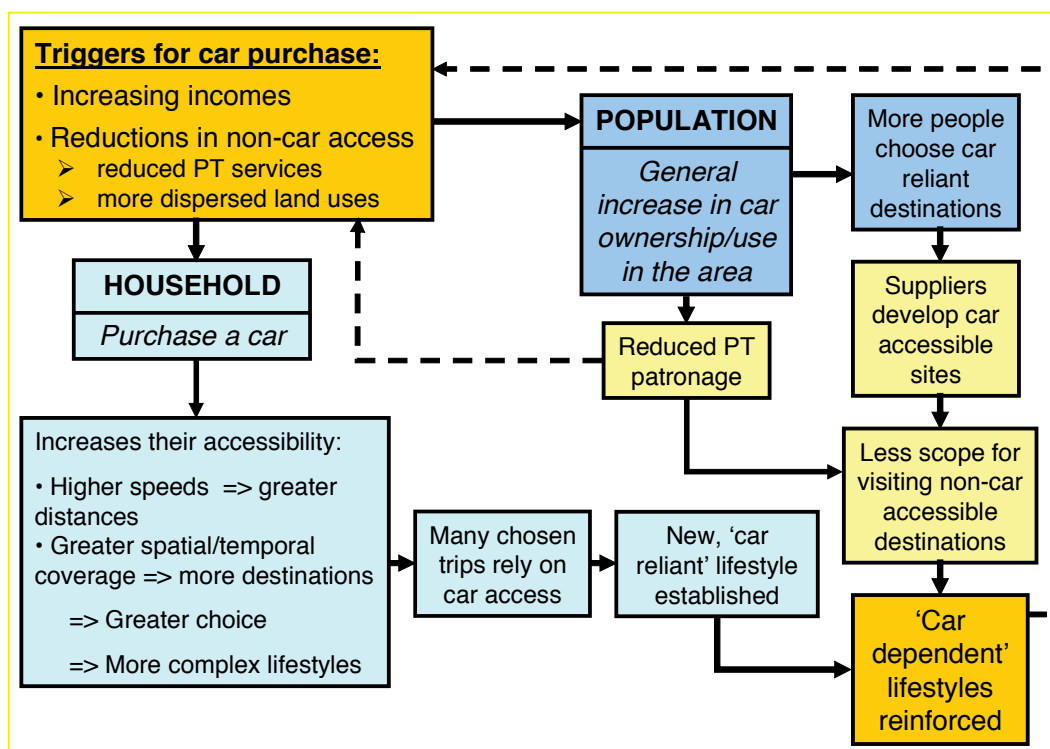


Figure 2:3 Dynamics of Car Dependence
Source: (Jones, 2009, p. 6).

Lucas & Jones (2009, p. 16) describe a similar cycle which possess a 'ratchet effect' where reduced alternative modal offer caused by peoples' increased reliance on individual cars locks them in the use of their individual cars:

Car reliance and dependence tend to grow over time. There is a 'ratchet effect', in which people start substituting cars for trips where there are modal alternatives, but they become locked into car use as these transport alternatives are cut back due to reduced levels of use, and people become attracted to other, car-based, destinations.

They also claim that, not only are public transport services reduced as a result, but destinations are also relocated in a dynamic process:

Car dependence is a dynamic process, which builds up over time, both as a result of people becoming personally used to a car-based lifestyle, and as a result of the supply responses in terms of reductions in public transport provision and relocation of amenities to out-of-town sites, that have been made as a result of the large scale increases in car availability and use across the population (Lucas & Jones, 2009, p. 123).

Lucas & Le Vine (2009, p. 11) add citing Kuhm (1997) that car dependence is a "[...] spiral and self-organised process, whereby the car becomes a structural prerequisite for the organisation of everyday life, while at the same time the variety of forms of everyday action becomes the structural prerequisite for the expansion of the car". For Motte-Baumvol (2007a, p. 901) the process around the higher performance of the car versus other modes can lead to some social problems:

A process in which the superior performance of the passenger car compared to other modes tends to give it a growing and hegemonic place. This process, which varies in intensity over time and across territories, could lead to a form of exclusion for households unable to motorize or struggle to take full advantage of the possibilities offered by the private car (Motte, 2006)³⁰.

Although this car dependence cycle has been ongoing for the last few decades, in their latest book, Newman and Kenworthy (2015, p. xiv) suggest that the cycle is coming to an end and predict the extinction of car dependence:

³⁰ Own translation.

Already we are seeing that some parts of cities—the old walking and transit city areas—are having a revival as they have become the site of all the knowledge-economy jobs that require highly efficient land use and highly intensive modes servicing them: rail, bikes, and walking. Those areas of the city where cars predominate tend to have an economy that is mostly oriented to consumption rather than to creative, innovative jobs and services; it is to the latter realm that young people are flocking to live, work, and play. With such economic drivers in place, the end of automobile dependence is not likely to reverse (*idem*).

2.2.3.2 *An Individual and Social Phenomenon*

After having presented the many authors for whom car dependence is a cycle linking the higher performance of the car over other modes and the further degradation of the alternative modes, I now present authors for whom car dependence is an individual and social phenomena.

Jones (2011, p. 59) truly describe this combination of individual and social phenomena: “[c]ar dependence is a process, both for the individual and for society as a whole: it can be influenced, but this will take time”. While car dependence is a cycle for Dupuy, he also considers it a social phenomenon. As such, he cites one of the first authors to mention it when speaking of the American society: “[...a] civilization completely dependent on cars’ (Kunstler, 1993, p. 86)” (Dupuy, 1999a, p. 7). Dupuy sees the car as a prosthesis to face “the painful reality of our social space-time” (*ibid.*, p. 8)³¹. Moreover, he also looks at the situation of those who do not own a car and suffer the prejudice of an exclusive system. For example, “[w]hen the number of motorists increases, buses lose customers, bus networks shrink, service level frequencies decrease, thereby reducing the level of accessibility. Perverse effects appear. In less frequented vehicles or transport places, insecurity increases, discouraging those who have alternative choices” (*ibid.*, p. 50).

Commenges (2015, p. 11) calls for a way to take into account individual practices when measuring car dependence. He presents a model illustrating that car dependence is understood by looking at data from both the aggregate and individual levels with four configurations at the different intersections of low and strong dependence (see Table 2:2) (*idem*). At the intersection of weak individual and weak aggregate car dependence lies what he calls “demotorization”: a pattern of decline in motorization and motor traffic in conjunction with the disappearance of exclusive motorists (*idem*). Decoupling refers to two configurations where individual and aggregate car dependence are at opposite ends of the spectrum: a configuration with high car dependence at the aggregate level but in which the

³¹ Own translation.

individual practices would be very volatile, the same individuals using a wide variety of means of transport (idem). A configuration with low car dependence at the aggregate level (stagnation or decrease in car ownership and traffic) but highly dependent at the individual level, with captive individuals of this mode over time (idem). Finally, he describes a configuration in which there is an increase in motorization, kilometres travelled by individual vehicles and kilometres of road infrastructure constructed, and an increase in “exclusive motorists” which he calls the radical monopoly (idem).

	Aggregate	Weak dependence	Strong dependence
Individual			
Weak dependence		Demotorization	Decoupling
Strong dependence		Decoupling	Radical monopoly

Table 2:2 Types of Car Dependence

Adapted from Commenges (2015, p. 11), own translation.

For Gray, Farrington, Shaw, Martin & Roberts (2001, p. 116) “[a]s well as being encouraged by advertisers and market makers, car dependence at the social/institutional level has been facilitated by bankers and credit companies”. Lucas & Le Vine (2009, p. 41) also mention that car dependence is integral to our economy and society: “we live in a car-dependent society where many of our daily economic and social activities would be impossible without the car and it is within the context of this ‘whole system’ that individual car use behaviours needs to be understood”.

For Farrington, Gray, Martin & Roberts (1998) car dependence is part of our society’s main ideology: “a powerful discourse based on a shared cultural understanding about the importance of cars has developed, and the car-dependent society has evolved into a dominant social ideology, underpinning the way life is conceptualised, organised, structured and lived”. Halleux & Lambotte (2006, p. 23) talk about the dependence of our society upon car driving which is caused by “*désurbanisation*” and goes against the principles of sustainability. Motte-Baumvol (2007a, p. 899) depicts a “[...] society entirely submitted to the use of the automobile”³². For Soron (2009, p. 188), car dependence is rooted so firmly in our society our habits and our land use that it is hard to escape:

³² Own translation

Even those of us with severe misgivings towards auto-centric transportation may find it quite difficult to opt out of it, to the extent that we are immersed in social and material circumstances that presuppose, encourage and often enforce private car use.

Some authors also make the connection from individual to social level by linking car dependence with culture. For example, Lidskog et al. (2003, p. 223) attribute to the modern lifestyle: “people’s dependence on the car is a multifaceted phenomenon strongly related to modern culture and life style”. Pucher & Lefèvre (1996, p. 175) presents the central place of the car and car dependence in American culture:

Virtually every aspect of life in the USA - work, social activities, recreation, education and culture - is crucially dependent on the automobile. For most Americans, every other mode of urban transport is practically irrelevant, and life without the automobile is unimaginable.

Finally Jeekel (2013, p. 75) also takes into account social and individual behavioural aspects when he presents five situations of car dependence:

1. Car-dependent locations; making a trip to these locations is impossible or difficult without a car. For example; reaching a highway location without any public transport.
2. There are car-dependent activities; undertaking an activity is impossible or difficult without the use of a car. For example; parasailing, or in general, luggage-oriented leisure activities.
3. There are car-dependent times; travelling at these times without a car is difficult, impossible or even dangerous. For example; making a trip over longer distance at night.
4. There are car-dependent people; for them travelling without a car is impossible or difficult. For example; disabled people.
5. There are car-dependent societies; in some countries it is more difficult to live without a car than in others. Compare the United States with Denmark.

2.2.3.3 A Feeling About the Need for the Car

Some motorists denote their own car dependence, and it is possible to associate this feeling with some variables. For example, Næss (2006, p. 163) finds that distance from the city centre is an important correlating fact: “[...] interviewees living in the peripheral parts of Copenhagen Metropolitan Area feel dependent on car travel to a considerably higher extent than the interviewees living in the central parts of the urban region”.

Paradoxically, motorists do not necessarily perceive this as an addiction as Dupuy recalls (*ibid.*, p. 136) citing Phil Goodwin (RAC, 1995): “[f]or many, the word ‘dependency’ does not adequately describe their perception of how car use helps them to solve their constraints. Instead, they see the car as an instrument of independence...”³³.

Another way to look at car dependence is based on individual perceptions and behaviours. How would you feel at doing your daily routine without a car? What is your willingness to forego the car? Car dependence can also be measured by seeing how individuals require or not the car for some trips. Cullinane & Cullinane (2003, p. 133) asked respondents how essential their car is in order to measure the perceived necessity of the car. In their study of individuals in Hong Kong for example, they found that this measure “was not significantly related to gender, household income, area of residence, number of adults in the household or the absence or presence of children in the household” (*idem*).

In their own study of car-dependent people, Lucas & Jones (2009, p. 92) remind us of the importance of psychological aspects:

Our review found that the more psychological benefits of car-based travel are often down-played in the literature on reducing car dependence, but they nevertheless play an important role in the public’s continued reliance on the car. This is evidenced by the focus group discussions and other case study material.

There might even be a point where the ‘need’ for a car is so essential that it takes precedence over other needs as reported by Lucas, Grosvenor & Simpson (2001, p. 37): “[t]he focus groups established that some households would forgo other basic amenities in order to maintain their car ownership and use”.

In their study of car dependence in Scotland Gray et al. (2001, p. 123) used respondent’s feeling towards the need for a car to measure car dependence by asking if they agreed to the statement: “[t]he car is an essential part of my lifestyle: I simply couldn’t live without it”. As claimed by them, (*ibid.*, p. 116) car dependence can be a real or a perceived need:

³³ Own translation.

[...] car dependence may contain two elements: the absolute need for a car to maintain mobility when no other option is available (for example, disabled people or rural populations); and the perception of reliance on a car, without actively considering the alternative.

I also noted that the 'need' for the car can also influence public policy as revealed by Fol, Dupuy & Coutard (2007, p. 807): "[i]ncreased car dependence in all three countries has acted as a catalyst in the emergence of such programs by forcing the actors in the field to concede the 'universal need for cars' in a relatively spontaneous manner".

According to Stokes (2013, p. 362), the young generation has developed contrasting habits than the previous ones and might stand a chance in reducing car dependence:

If the trend towards less car use by younger people is related to societal and long-term social trends, we could be seeing the end of the 'love affair with the car' and car use per person will gradually fall off as 'generation Y' reach middle age and replace the current generation of highly car-dependent users.

Finally, some authors take a more statistical approach to measuring the 'need' for a car as is the case for Zhang (2006, p. 312) which defines and measures car dependence as "[...] the probability that driving is the only element in a traveler's feasible choice set of travel modes".

2.2.3.4 Habits and Behaviours – A Car Dependent Lifestyle

In the opinion of some authors car dependence is more in the realm of habits and behaviours than essential needs. Dargay (2001, p. 813) estimates that such habits are so engrained that they resist changes in income levels, for example: "[...] households have become accustomed to owning cars and the convenience that they afford. Such car dependency is not easily reversed, so there is a tendency to maintain car ownership in spite of falling income."

For Goodwin (1995, p. 152) car dependence is not a state but rather a process, and he links dependence with the feeling of the car as a necessity. He also considers that the process of car dependence operates at the individual and social level:

Individually, people increase the use made of cars, tend to rely on them more, and over time pay less and less attention to other alternatives which are open to them. Socially, changes take place in land use and the provision of services which make car use more necessary, and alternatives less attractive. Thus at the time of first purchase, the car may be seen as a luxury. However, once bought, it encourages changes in behaviour and circumstances which in effect turn it into a necessity (*idem*).

In a similar way Gray et al. (2001, p. 116) found in their empirical study of Scotland's rural areas that car dependence grows on you as a habit does:

The study suggested that it was not the case that people suddenly became car-dependent after obtaining a vehicle for the first time. In contrast, lifestyle and car use evolves together, so that more and more aspects of life revolve around, and become dependent on, the car as people get older.

For Hu, behaviours also matter and the distance travelled by car reveals car dependence: “[t]he other important variable describing automobile dependence is the passenger kilometres travelled per person in private passenger vehicles” (Hu, 2003, p. 190). Kenworthy & Laube (1996, p. 290) also believe this measure to be important:

ANNUAL CAR KMS AND PASSENGER KMS PER CAPITA. These factors measure in the most direct way, the degree to which a city is dependent on the automobile. The first factor is a primary measure, whereas the second is used with transit passenger kms to calculate an important overview factor, the relative proportion of travel in a city undertaken by transit³⁴.

Some authors relate car dependence to lifestyle. For example, Lucas & Le Vine (2009, p. 13):

[...] a huge number of individuals and households in the UK do appear to have highly car dependent lifestyles; i.e. without their cars they would be severely disabled in carrying out their everyday activities such as getting to work, school or college, going shopping, carrying out their leisure pursuits or socialising with friends and family. In other words, lack of a car would seriously undermine their quality of life.

The type of activities and the time at which they are undertaken that become associated with a lifestyle also contribute to car dependence. For example, Jeekel (2013, p. 31) affirms that:

³⁴ Emphasis in the original

In general with growing distances car dependence for leisure activities rises. Car dependence is higher when luggage is involved, and car dependence is higher in the evenings, because of the scheduling of public transport and anxiety about being out late in public spaces.

2.2.3.5 *Addiction to the Car*

While many authors link behaviour habits and needs with the development and growth of car dependence, some authors perceive and analyze car dependence from the point of view of addiction. For example, Wickham, Lohan, Javela and Battalini (2002) present an interesting definition of car dependence using the addiction metaphor:

Car (use) dependence can be understood through the metaphor of drug dependency (addiction). Heroin or even nicotine addiction is in part a matter of (rational) choice. I choose to shoot up, I choose to smoke a cigarette. But as I continue to do this, my body (utility function) changes, it becomes restructured, it needs the drug (addictive good), it cannot do without it. Furthermore, the 'need' (addictive good marginal utility) escalates—the body (optimal bundle of goods) requires more and more of the drug (addictive goods)... the same applies to car (use) dependency.

Héran (2001) compares the private automobile to a drug:

Yet, like a drug, the automobile would now create an irrepressible and guilty "dependence" among its users. Furthermore, the expression seems rather excessive. But on reflection, it is indeed a dependence, not a psychological one (although some say it), but practical: in order to carry out many journeys in an agglomeration, the individual motorized vehicle has become today the only possible recourse³⁵.

Finally, I would like to present this stark remark from Arnond & Settle (2000, p. 10) in the activist magazine *Car busters* which represent car dependent motorists as drug addicts that can't be easily be swayed away from their addiction but have to be weaned off carefully:

³⁵ Own translation.

New bike lanes. Free local buses. High petrol prices. Special train offers. Car-free zones. Some places have tried everything to make car use as unpleasant as possible while at the same time providing alternatives that are easily accessible. Yet drivers are still out there, putting themselves into traffic jams, honking, shouting, cursing their metal boxes and fellow drivers. Why? Some researchers suggest that no stick-and-carrot tactics will bring about big changes for one simple reason: car drivers are addicts. [...] humans experience a rush of power and lust flowing through them every time the drive, every time they are in control of a large technical machine like your car. The car thus takes on a different meaning, no longer just a means of travel, but a surrogate satisfaction. [...] nevertheless, they act like heroin junkies—possibly willing to quit, but too hooked on their cars to be able to.

2.2.3.6 *Of People and Territory*

Accessibility, a variable related to the territory and land planning is often part of the many definitions of car dependence. For many authors, car dependence is both an individual and a territorial issue and in this section I present these authors. One of the first to make the connection between the territorial adaptation and the car and its negative social impacts for those without access to it are Schaeffer & Sclar (1975, p. 103):

[i]t is our contention that the urban crises which manifests themselves in so many different ways of at least one common root. This is the increasing reliance on the automobile. In every urban area the automobile has become the only means of transportation by which every part of the region can be reached. In addition, metropolitan activity and land-use patterns have become so dispersed that neither the automobile nor any public transit system can furnish the mobility required by every individual to function with reasonable ease in the activities their respective social, economic and physical well-being demands. Wherever the automobile is *the* mode of travel, there access to transportation is distributed very unevenly among individuals. This is probably the greatest social fold of the automobile, though little has been said or written about the long-term consequences of this uneven in access. The uneven access to transportation is also the most vital new factor which the automobile introduced into urban society. Before automobile, access to transportation was very evenly distributed.

More recently, Lucas & Jones (2009, p. 118) describe car dependence as an individual process related to personal benefits in which the driver withdraws from his addiction. For Collet (2008), the private car represents a pledge of freedom and independence for individuals, it provides access to various goods and services. This perceived independence is a paradox, since the car makes individuals dependent on the automotive system:

The automobile, it turned out, was only apparently auto-mobile. We might become ever more independent of one another with private automobiles, but only by becoming more dependent on the whole [...] the purchase of an automobile is a gesture of submission to the transportation machine [...] (Sachs, 1992, p. 208).

In their extensive book on the question of automobile dependence in cities Newman and Kenworthy (1989) do not define their interpretation of car dependence. However, upon reading the study, I can conclude that for them it is based on territorial organization of agglomerations, which, through the dispersion of services on the territory, eventually forces people to depend on the automobile for the vast majority of their trips in relation to the distances separating the different places. For the authors, car dependency is a global phenomenon that they studied in more than thirty cities. Newman and Kenworthy specify in a book published 10 years later what they hear and it is clear that the car dependence is, in their opinion, linked to the territorial organization of what they call the 'Automobile City':

With the availability of cars, it was not necessary for developers to provide more than basic power and water services since people could make the transportation linkages themselves. As this 'ungluing' process set in, the phenomenon of automobile dependence became a feature of urban life. Use of an automobile became not so much a choice but a necessity in the Auto City. And as automobile dependence became dominant, the Auto City began to lose much of its traditional community support processes (Newman & Kenworthy, 1999, p. 31).

For Halleux & Lambotte (2006, p. 28)³⁶ by establishing a 'car city' that requires the speed of this mode we increase our reliance on the car: "[i]ndeed, is it not a spatial organization that can not function without the speed allowed by driving, and therefore without the possibility of a cheap oil?"

Land use planning and low densities are parts and parcel of car dependence. For example, Giuliano & Narayan (2005, p. 111) state that: car dependence is "[...] linked to the growth of dispersed, low-density patterns of urban development". Coutard et al. (2002, p. 170) link car dependence to the dispersion of housing and public amenities especially affecting poorer households:

³⁶ Own translation.

Car dependence results precisely from this majority influence on the poor populations. The trend of rising motorisation and multi-car households is reflected in a decline in urban density: housing, equipment and jobs are on the whole more distant from one another than they were. Public transit struggles to follow this trend and accessibility tends to deteriorate for non-motorists³⁷.

For Lucas et al. (2001, p. 6) development patterns are in cause:

Dispersed development patterns also exacerbate the problem of car dependency for those with cars (thus perpetuating the problem of pollution) and inaccessibility for those without them, as it is virtually impossible to operate efficient public transport services in areas of low density.

For Næss (2006, p. 6) car dependence is “[...] built-in in the location of urban facilities” while according to Goodwin & Van Dende (2013, p. 248) “[...] the level of car dependency [is] higher in low-density areas”. Accordingly, Soron (2009, p. 188) states that the car has won over other modes because of land use patterns: “[...] the underlying problem of automobile dependency is best understood as a practical imperative in locations where the car has edged out alternative forms of transportation as viable options for meeting people’s varied and interconnected transportation and survival needs”.

³⁷ Own translation.

In their study of the importance of the car in British society Lucas & Jones (2009) found for example that the rate of drivers license possession for adults changed according to territorial variables, such as town size, as shown in Figure 2:4 or accessibility of public transit as shown in Figure 2:5.

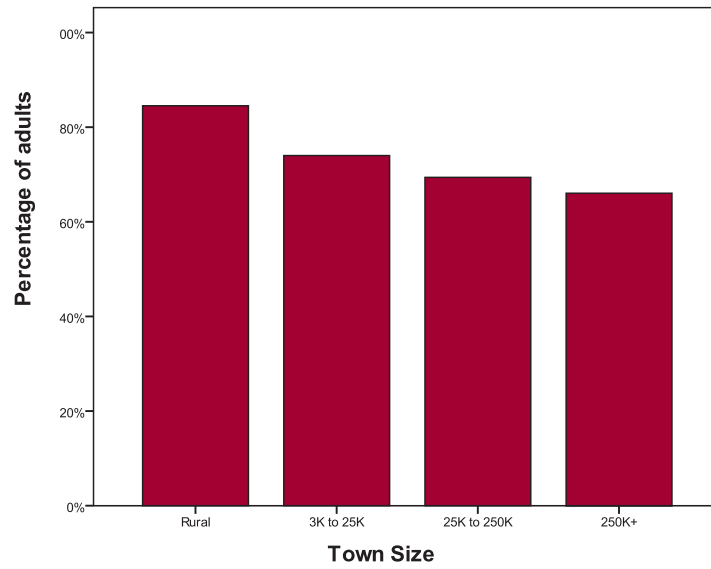


Figure 2:4 Percentages of Adults with Driver License Per Town Size in the UK.
Source : (Lucas & Jones, 2009, p. 30).

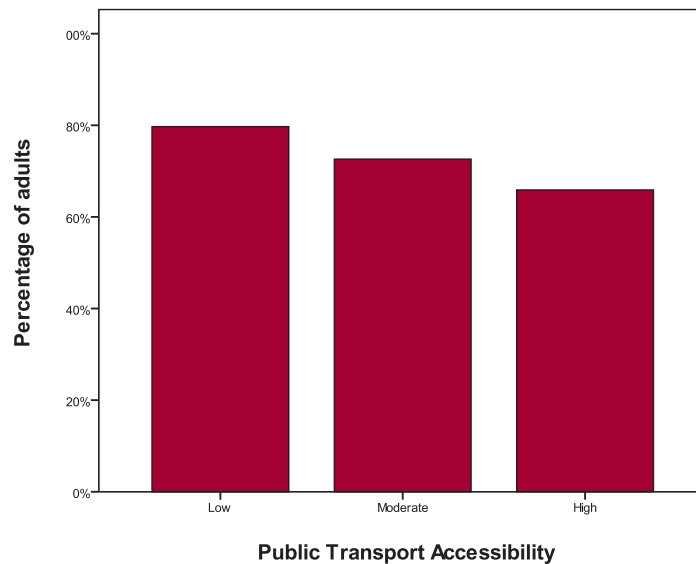


Figure 2:5 Percentages of Adults with Driver License Per Transit Accessibility in the UK.
Source : (Lucas & Jones, 2009, p. 30).

In a similar way, regarding rural areas, Gray et al. (2001, p. 114) find that: “[i]ncreasingly, accessibility is dependent on the mobility afforded by cars, with rural households becoming more reliant on their vehicles to access goods, services, recreation facilities, employment and further education”.

Newman (2003, p. 26) affirms that car dependence and density of urbanization are inversely correlated and also recalls the importance that land use planning priorities play in car dependence:

[...] we defined car dependence as building a city with the assumption and priorities that most people will drive cars. We suggested that this was reflected in gross densities under 30 people per hectare and transport infrastructure dominated by roads. Very low densities mean few options for walking, bicycling or public transport due to the sheer distances involved unless a very long time is taken to make the trip. [...] Car-dependence can thus be generalized in terms of a thirty-minute average journey to work: situations where a thirty minute average journey to work is *attainable only by car*³⁸.

Litman (1999, p. 1) defines car dependence as “high levels of per capita automobile travel, automobile oriented land use patterns, and reduced transport alternatives”. He also provides a list of characteristics linked to car dependence and compares them with a more balanced transportation system as shown in Table 2:3.

Factor	Automobile Dependency	Balanced Transportation
Motor vehicle ownership	High per capita motor vehicle ownership.	Medium per capita motor vehicle ownership.
Vehicle use	High per capita motor vehicle use.	Medium per capita motor vehicle use.
Land use density	Low.	Medium.
Land use mix	Single-use development patterns.	Mixed-use development patterns.
Land for transport	Large amount for roads and parking.	Medium amount devoted to roads and parking.
Road design	Road designs favouring automobile traffic.	Road designs balancing modes.
Street scale	Large scale streets and blocks.	Small to medium streets and blocks.
Traffic speeds	Maximum traffic speeds.	Lower traffic speeds.
Walking	Mainly in private malls.	On public streets.
Signage	Large scale, for high-speed traffic.	Medium scale, for lower-speed traffic.
Parking	Generous, free, rigid requirements.	Modest, some priced, flexible requirements.
Site design	Parking paramount, in front of buildings.	Parking sometimes behind buildings.

Table 2:3 Factors of Car Dependence³⁹

Vrain (2003, p. 100) considers both territorial and psychological individual's sources of car dependence:

³⁸ Emphasis in the original.

³⁹ Source : (Litman, 1999, p. 1).

The intensive use of [the car] reinforces the dependencies of all kinds towards it. If these are primarily the result of structural data - urban sprawl, transport infrastructures favouring roads, functionalism, etc. - they also relate to psychosocial factors, in particular behaviours whose prevalence appears more and more deeply sated, as is illustrated by the spread of a true cult of the automobile within a large fraction of the younger generations.

For Motte-Baumvol (2007a, p. 901) it also has both a territorial and individual dimensions:

[t]he first of these dimensions is territorial. It stems from the fact that the difference in performance between modes, which is the basis of automobile dependence, varies greatly between territories [...] The second dimension is an individual dimension. People are unequal to the automobile. And indeed, if the “bonus” offered by the automobile system is highly attractive, some populations do not have the means to access it, mainly for financial reasons.

For Halleux & Lambotte (2006, p. 26), it is by altering the perception of territory including distances and travel time that the car establishes dependence from a territorial perspective. For Sachs (1992, p. 193) our territorial organization revolves around the automobile and the whole society makes its location choices around this mode of transport. This territorial organization ultimately results in a requirement to own a car, becoming an equity issue for those who cannot or refuse to own a car.

Fol et al. (2007, p. 804) states that the problem is often made even worse for poor households since they often live in areas less well served by public transport with sparse facilities. Coutard, Dupuy & Fol make a similar assessment (2004, p. 144): “[...] car dependence burdens the poor with heavy costs that undoubtedly undermine their ability to cope with other basic expenses (e.g. food) [...]”.

For McIntosh, Trubka, Kenworthy & Newman (2014, p. 106) public investment as part of urban planning has an important role as it can reduce car dependence with investment in public transit service kilometres and increase it with investments in road infrastructure. Kenworthy & Laube (1996, p. 304) had already made a statement along the same line in an earlier publication:

The article demonstrates significant statistical relationships between the key transport and land use variables: urban density is a key explanatory variable in auto and transit use as well as the relative role of transit (auto use increasing and transit decreasing with decreasing density). Road provision, parking, and non-motorized mode use are all also strongly associated with the pattern of auto-dependence across cities.

As shown in Figure 2:6, Newman & Kenworthy (2006, p. 37) have associated the intensity of car use and by correlation car dependence with activity intensity: “The link between urban intensity and automobile dependence has been confirmed repeatedly [...]”. Each dot on the figure represents a city.

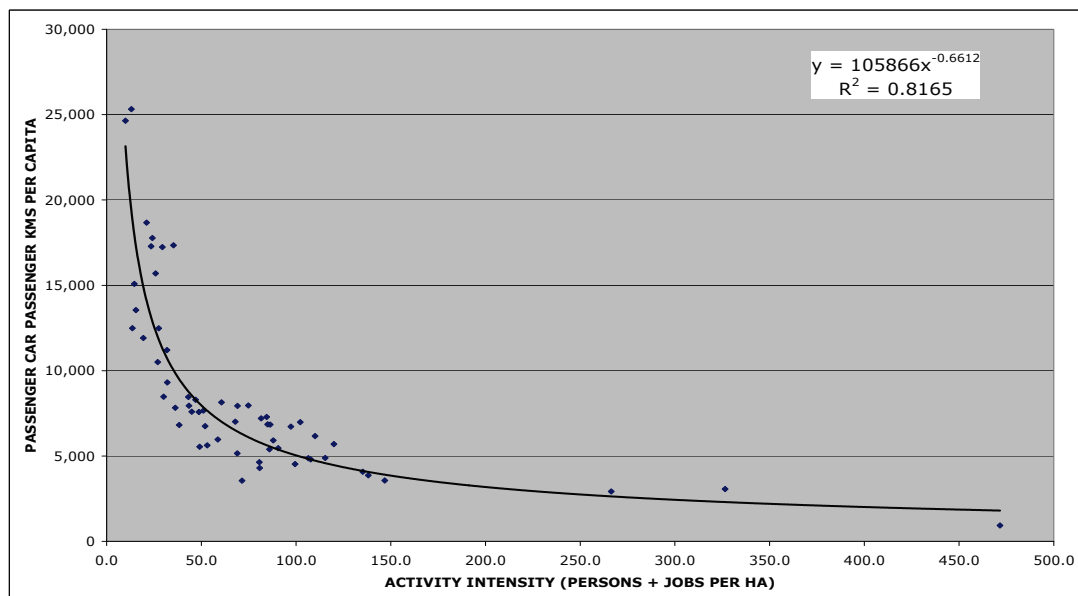


Figure 2:6 Activity Intensity versus Passenger Car Use in 58 Higher-Income Cities, 1995
Source: (Newman & Kenworthy, 2006, p. 36).

Hani (2010, p. 158) who studies shopping related mobility estimates that a decrease in the number of small retail shops can only increase the dependence on the individuals on their car with: the suburbs and the city centre being most affected by the extent of the decline, both on the surface used by small retail shops and in their numbers. According to him, this commercial dysfunction hampers sustainable purchasing mobility and reinforces the car dependence of households in their shopping related trips (ibid., p. 188).

For Filion, Bunting & Warriner (1999), car dependence is related to car ownership at the individual level but also the land use and territorial setup. In their study of the Kitchener-Waterloo agglomeration in Canada they reveal that through the organization of the land and location of services and the transport system: “[i]ndividuals who can avail themselves

of a car enjoy what amounts to something close to blanket accessibility within the agglomeration” (ibid., p. 1325).

2.2.3.7 Dupuy’s Three Effects Combining to Create Car Dependence

In his systemic analysis, Dupuy (1999a) considers that the automotive dependence of our societies comes from the addition of three successive effects that accumulate to create this dependence: club, park and network effects. Dupuy (ibid., p. 13) refers to the automotive system as presented by Hall (1988). This system includes:

A mass production system that has made the automobile within the reach of the average household;

A set of service centres which, coupled with mass production and standardization, make it possible to maintain the mass motorization at a high level of performance;

A set of uniform codes, traffic checks, driving schools, etc. ;

A network of paved roads and fast highways;

Around this network, another network of equipment, motels, fast food, and other similar places intended specifically for the motorist (Dupuy, 1999a, p. 13)⁴⁰.

In this section I briefly present each of the three effects of the car system, which leads to car dependence according to Dupuy.

2.2.3.7.1 Club Effect

Dupuy (ibid., p. 14) considers that the possession of a car can be compared to being part of a club. It brings advantages to ‘members’, but also, the power of its number confers more and more benefits to car owners:

[...] the increase in the number of motorists in the system, assimilated to a kind of club, produces positive effects, beneficial for the members of the club. Increasing the size of the system improves the range of services available to everyone within the system⁴¹.

⁴⁰ Own translation.

⁴¹ Own translation.

These advantages, which grow with numbers, part of the vicious circle that we described above, always encourages more people to buy a car:

because of the positive effects, entry into the automotive system translates, beyond the individual utility of the acquired and used good, by a kind of bonus collective in origin. There is therefore a growing incentive for those who are not in yet to join the club⁴² (*idem*).

But, as important as the benefits to members, this “club effect” negatively affects those who are not part of it or are forced to leave it:

Some suffer the consequences of the radical monopoly, others lose the bonus that comes from participating in the club. In both cases, we can speak of prejudice. Real or potential, the damage increases at the same time as the system develops⁴³ (*ibid.*, 15).

2.2.3.7.2 Fleet Effect

For Dupuy, the fleet effect can be summarized as an improvement in the service offering, which goes hand in hand with the increase in the number of motor vehicles (*ibid.*, p. 36). For example, he demonstrated that the increase in the number of vehicles in a given region is proportional to the increase in car sale and service locations. The same applies to other services related to the automobile system such as parking spaces (*ibid.*, p. 37). The greater the number of motorists in a given city, the greater the number of services that are developed based on their specific needs, sometimes forgetting that there are still people who do not own a car. Consider, for example, free parking near shops and drive-through services so prevalent in North America.

2.2.3.7.3 Network Effect

The network effect comes down to the fact that investment in a network grows proportionally to traffic. According to Dupuy (*ibid.*, 38) “[t]he greater the traffic on a road network, the greater are the resources invested to improve it⁴⁴”. This can be explained, for example, by the public funding of the network, which often comes from special taxes levied on fuel sales (*idem*). These increasing investments generally improve the performance of the network and make it possible to go faster and faster (*idem*). This increase in possible speeds for motorists makes it possible to increase their accessibility to the territory, enabling them to travel longer distances over a given period of time⁴⁵ (*ibid.*, p. 40).

⁴² Own translation.

⁴³ Own translation

⁴⁴ Own translation

⁴⁵ Although one can easily counter that the denser the circulation, the slower the speeds, and refute this effect, to which Dupuy (1999a, p. 38) replies: “[t]he more intense the traffic, the more the new entrant risks encountering congestion, the more its speed can deteriorate. However, the evolution of the speeds on the

2.2.4 Non-Motorized Households (NMH)

Several population groups are affected by the dependence on the automobile that afflicts in different ways those who are “members of the club” and who own a car and those who do not. According to Fol et al. (2007, p. 803) with a growing car dependence context, non-motorized household’s mobility, the “club effect” described by Dupuy (1995, 1999a) has been strengthened along with a decline in the amount and heterogeneity of destination one can reach in territories that are “organized with regard to the supremacy of the car”. Much research has shown that mobility plays a central role in economic activity, but also for the social and urban integration of all (Kaufmann, 2002; Urry, 2008b). The world we live in has become a mobile world in which the pressure to be mobile and flexible has increased over the years (Boltanski & Chiapello, 1999; Sheller & Urry, 2006). In a society that some call of general mobility, mobility constitutes a new social norm (Massot & Orfeuil, 2008). But, not all are equal with respect to the standard of mobility. Mobility of people is strongly correlated with financial, physical, organizational, spatial and temporal inequalities (Urry, 2007b).

As I have already stated, industrialized societies have a high rate of motorisation and mobility plays an important role. In this respect, the automobile represents a form of sesame giving access to freedom and mobility (Urry, 2000, p. 59). But not all households are motorized. Although the proportion of non-motorized households is decreasing, for example in France from 28% in 1982 to 17% in 2008, this proportion does not evenly occur in all social strata (Petev & Coulangeon, 2012, p. 98). As recalled by Vandersmissen et al. (2004, p. 490) citing Koutsopoulos and Schmidt (1986), this condition is more significant for certain subgroups of the population; namely, seniors, youth, the poor and the disabled.

Dupuy (1999a, p. 49) suggests that in order to measure car dependence, one should be interested in those who do not own a car in order to compare their situations with those who have one (or more). Several studies have examined the situation of this social group (Grengs, 2001, 2010; Koutsopoulos & C. G. Schmidt, 1986; Mattioli, 2014; Motte, 2006; Petev & Coulangeon, 2012; Wells & Thill, 2012). Halleux and Lambotte (2006, p. 27) point out that not everyone has access to cars and it remains inaccessible for many potential reasons like the available financial resources, health problems, lack of driving licenses, etc. For Motte-Baumvol (2007a, p. 54) whether or not a household owns a car makes an important difference: in terms of mobility and accessibility. For example, he denotes several

network shows that if this effect exists, it is very limited and localized. In any case, it remains low in relation to the positive network effect [...]” (own translation).

differences between the two groups of households (motorized and non-motorized): reduced number of trips, lesser distance travelled, in spite of a rather similar travel time that for him clearly indicates the impossibility for persons belonging to a non-motorized household of having a mobility similar to that of persons living in a household with a car, especially in the cities most dependent on the automobile (*ibid.*, p. 56). Several research indicates that owning or not owning a car often greatly affects the mobility of people (Chevalier, 2002; Dupuy, 1999a; Power, 2001). According to Rajé (2007, p. 60), “the ultimate difference in experience of the transport system is determined by whether the individual [...] has access to a car or not”. Banister (2002) describes the lack of access to a car as a problem for the concerned individuals in a car-driven society.

Of course, limited access to the car is not the sole experience of NMH, members of some “low-car” ownership households also express this limited access to the car, when the household contains more drivers than cars (Delbosc & Currie, 2012, p. 8). For instance, Vandersmissen et al. (2004, p. 501) found that in households with more drivers than cars in Quebec City, constrained trips (e.g. going to work or to school) were more likely to be performed via other modes while discretionary trips were postponed until the car became available again, showing the necessity of multiple adjustments to the mobility in those low-car households. The authors also found important gender differences in who had effective access to the car in such households. They found, for example, that men had three times more access to the car than women in such households (*ibid.*, p. 504). While comparing poor households with or without a car, Jouffe et al. (2015) found that car owning poor households were using strategies very similar to poor NMH in order to reduce their reliance on the car and the direct usage costs (gasoline and parking) or using it.

Previously, research tended to study what was referred to captive users of public transport, “transit captives” or “transit dependents” instead of the more inclusive concept of non-motorized households. In the US context, research generally perceived only motorists considering others as users of public transport, without including other modes of transport. Vandersmissen defines transit captives as “[...] individuals without car access”. While I use the term non-motorized households because it is more inclusive of new forms of alternative mobility, the literature on transit dependents is still interesting in defining my object of enquiry. For example, Bochner & Stuart (1978, p. 563) highlighted the existence of a population of non-motorized people who are classified as “transit dependents”, such as young people, low-income, elderly and/or disabled persons. For these non-motorized households, the availability of public transportation in the vicinity provides crucial access to employment, education, medical care and other necessities (Garrett & Taylor, 1999: 13).

The lack of access to an automobile can be caused by various reasons that are classified by Le Breton (2002, p. 126) into four categories:

- Economic (those who do not have the financial resources to own - or use - a car or a scooter);
- Legal (those who cannot drive for legal reasons, for example minors);
- Physical (persons with impairments preventing them from driving);
- Social (those who do not have access to an automobile for social reasons, for example women in certain cultural contexts).

While dependence on the car and the increase in motorization have traditionally been considered a rule of thumb (Dupuy, 1999a), some researchers have also noted the existence of a large non-motorized population such as seniors, youth and women (Orfeuill, 2000). But all these non-motorized households are not necessarily “transit dependent” as Motte-Baumvol (2007b) shows that some non-motorized households in the suburbs of Paris have developed alternative transport systems, based on solidarity and local resources.

In the US context, some authors have pointed out that “captive users” are a large group of people who are often excluded from access to employment opportunities, access to retail options and overall participation in society (Jiao & Dillivan, 2013). Garrett and Taylor (1999) point out that in the United States, public transport users are on average much poorer than the general population with a disproportionate number of older adults and people with disabilities. For this population, the quality of public transit becomes essential for access to employment, education, medical care and others (Garrett & Taylor, 1999, p. 13). At the same time, several studies have established direct links between the accessibility and availability of good quality public transport services and the improvement of the living conditions of captive users (Blumenberg, 2002; Cervero, Sandoval, & Landis, 2002; Currie et al., 2010; Holzer, Quigley, & Raphael, 2003; Ong, 2002).

I prefer to use the term non-motorized households over transit dependents or transit captives not only because it is more inclusive of other alternatives to the car than public transit but also because, as Marston (2004, p. 81) explains it does not frame the people in question in a passive mode of being captive or dependent. The term non-motorized households is more axiologically neutral since it is neither passive nor active but simply an attribute of the household.

2.2.5 Social Exclusion

Having presented the concepts of mobility, car dependence and non-motorized households, I come to the notion of social exclusion, which relate to the three concepts and in a way

allow me to combine them. Social exclusion which is a phenomenon linked to the unequal participation of individuals in society. At the beginning of the 2000s, this concept gained importance in both politics and research in Great Britain (Lyons, 2003, p. 339). My thesis focuses more specifically on the role that mobility and transport play in social exclusion. In this section I begin by presenting the more general notion of social exclusion and then focus on the role that mobility can play in feeling excluded.

Social exclusion is a concept that serves both to describe and to decry, and which is used in political discourse, by associative groups and by the community of social scientists (Gagnon & Saillant, 2009; Lucas, 2004). Gagnon & Saillant (2009, p. 2) define social exclusion as:

an intolerable situation or an unfair condition, the sidelining of individuals and private groups of their rights, security, access to certain goods and full participation in society; [recalling] the existence of borders and divisions in a society that claims to abolish them [...]⁴⁶.

For them, the concept is useful for designating phenomena of exclusion along a spatial axis, but is also significant in the phenomena of impoverishment and marginalization of large segments of the population due to social and economic phenomena such as unemployment and immigration (ibid., p. 7). In order to clarify, the authors give several examples of situations of social exclusion:

[...] the 'stranger' with strange manners and suspicious intentions; The beggar, renamed 'homeless', deprived of what makes an individual a citizen or simply a person: a roof, an occupation, a future; The offender in the French suburbs whose socialization is a failure and a challenge; The poor of the shanty towns of the countries of the global south, driven back to the margins of the city⁴⁷ (ibid., p. 4).

According to Kenyon et al. (2002, p. 209) by curtailing the participation of the individual, social exclusion has multiple negative consequences: "[...] not only in diminished material and non-material quality of life, but also in tempered life chances, choices and reduced citizenship". The phenomenon has several dimensions, and risk factors. Social exclusion is a problem for our democratic societies because it goes against social justice and social solidarity (Barry, 1998, p. 11). Furthermore, it conflicts with the principle of equal opportunities leading to unequal access to a quality education as well as employment and political expression (ibid., p. 12).

For Musterd & Ostendorf (1998, p. 2), social exclusion is a serious issue of inequity:

⁴⁶ Own translation.

⁴⁷ Own translation.

The excluded lose the opportunities, the means and finally the ability to participate in society, which is expressed by a lack of labour market participation, low school participation, a weak position in the housing market, limited political participation and restricted socio-cultural integration.

As claimed by McCray and Brais (2007, p. 398), social exclusion occurs when portions of the population are prevented from participating in activities that affect their quality of life. They warn that: this “isolation may be created by a lack of transportation, and/or housing policies that isolate the poor, elderly, and disabled from activities in space and time” (idem).

Abrams, Christian & Gordon (2008, p. 13) present social exclusion as a dynamic phenomenon that is socially, politically and materially relational and specific to a given social context. They explore the dynamic side of social exclusion by portraying multiple interactions between various components of society: “[o]n the one hand, social exclusion is created in society, with people excluded by the actions of others. On the other hand, people respond to social exclusion, or to the risk of social exclusion, in active ways” (idem).

According to Kenyon et al. (2002, p. 209), by excluding the participation of the individual, social exclusion has multiple negative consequences for the individual: “[...] resulting not only in diminished material and non-material quality of life, but also in tempered life chances, choices and reduced citizenship”. The phenomenon has several dimensions and risk factors.

2.2.5.1 The Multiple Factors of Social Exclusion

Kenyon et al. (2002, p. 210) propose 9 factors causing social exclusion, which I briefly summarize in Table 2:4. Their article has merit in presenting an important set of causes of social exclusion. The ninth and final factor presented by Kenyon et al. (idem) is mobility, concerning reduced access to transport or poor-quality services, which reduces the possibility of access to social networks, services and goods. It is on this particular aspect of social exclusion that our interest arises.

Dimension	Potentially exclusionary factors
Economic	Income poverty Unemployment
Societal	Lack of access to 'safety net' credit facilities Lack of access to technology Crime Family dynamics Poor education Inequality Lack of social rights Lack of access to appropriate health and social care
Social networks	Breakdown of formal and informal networks Loneliness Isolation Lack of information Social attitudes
Organized political (ability to influence decision-making at an organised level)	Disenfranchisement (low turnout/registration) Low participation in groups and organizations Denial of citizenship rights and freedoms Lack of representation Inability to participate in the exercise of authority
Personal political (ability to make decisions over own life)	Powerlessness Restricted choices
Personal	Impairment, Gender, Ethnicity, Religion, Culture, Sexuality, Class, Health Skill levels/educational achievement
Living space	Neighbourhood, including safety, crime Poor local environment Disunity of community Geographical isolation (accessibility) Local services, including transport, education
Temporal	Time poverty
Mobility	Poor or unavailable transport Reduced accessibility to social networks, facilities, goods and services

Table 2:4 Kenyon, Lyons & Rafferty's Factors of Social Exclusion

Source: (Kenyon, Lyons, & Rafferty, 2002, p. 210).

2.2.5.2 Mobility's Role in Social Exclusion

Having presented the various aspects acting as factors in social exclusion, Kenyon et al. present the mobility-related social exclusion. For them it is:

The process by which people are prevented from participating in the economic, political and social life of the community because of reduced accessibility to opportunities, services and social networks, due in whole or in part to insufficient mobility in a society and environment built around the assumption of high mobility (ibid., p. 210).

Here, I present several studies which have theoretically and empirically established the link between mobility and social exclusion.

For a long time, the literature on inequalities focused on classical distinctions such as age and sex, without considering mobility issues and, more generally, the role of space in understanding social inequalities (Mignot & Rosales-Montano, 2006; Sheller & Urry, 2006; Urry, 2007b). Mobility, or to be precise, the difference in the mobility capital, is therefore considered as a powerful factor of social discrimination, which redefines the included and

the excluded (Fol, 2009; Ohnmacht, Maksim, & Bergman, 2009; Rougé, 2009; Urry, 2008b). This is further reinforced by increasingly important functional specialization, leading to growing inequalities in access to urban (Caubel, 2006; Maksim, 2011; Wenglenski, 2004).

Schönfelder & Axhausen (2003, p. 273) make the link between social exclusion and mobility by claiming that the transport system can help strengthen social exclusion through exorbitant costs in time or money for vulnerable groups. According to them, adding the issue of transport to social exclusion allows to better take into account the spatial aspect of the exclusion related to activity areas (ibid., p. 274).

Cass, Shove, and Urry (2005) deplore the fact that the majority of the literature on social exclusion ignores the spatial and mobile aspect of the phenomenon. On the basis of data collected by the Social Exclusion Unit of the British Government, they recall the multiple problems that link mobility and social exclusion. They divide these problems into four dimensions: financial, physical, organizational and temporal.

While talking of the binary opposite of social exclusion, social inclusion, Mattioli (2013, p. 6) state that: “[...] as car dependence grows, the automobile becomes more and more necessary for social inclusion [...]”. To this effect, Soron (2009, p. 189) finds differences in mobility-related social exclusion when comparing Europe and North America:

Indeed, while remaining car-free in a dense, mixed-use European city with a varied transportation system is neither highly stigmatizing nor personally incapacitating, those without access to a car in a typical sprawling, auto-dependent North American city are likely to suffer from a loss in status that is rooted in radically curtailed access to a wide variety of social goods, amenities and opportunities.

Mattioli (2014, p. 382) also adds that

[...] car deprivation has, at least potentially, a negative impact on social inclusion and/or well-being, insofar as it may limit access to essential services, opportunities and networks. To be clear, this neither means that the lack of a car always corresponds to transport disadvantage nor that having access to a vehicle is an absolute defence against it.

According to Lucas (2004, p. 29), a lack of mobility places some individuals in a vicious circle of social exclusion by denying access to the possibility of employment and training, which prevents them from receiving an adequate salary and having the resources to participate in society.

Barry (1998, p. 21) presents the automobile as a factor of social exclusion, yet according to him, public transport has the opposite potential of social inclusion if it is of good quality and well distributed because it has the advantage of putting us “all in the same boat” thus allow the encounter of otherness. Lucas & Jones (2009, p. 130) make a direct link between car dependence and social exclusion, estimating that it can cause or compound social exclusion. Stanley et al. (2010) addressed the issue of social exclusion and mobility using data for the Victoria area of Australia (including the City of Melbourne). They found that those with the greatest risk factors for social exclusion were generally less mobile (fewer trips, smaller travel distance, fewer cars) (*ibid.*, p. 283). As a result, those with the greatest risk of social exclusion were more likely to never use public transport, but conversely, people they considered socially included used public transport more often on a weekly basis, which they conclude suggests that public transport supports social inclusion (*idem*). Upon further investigation, Stanley et al. (2011) demonstrated empirically the link between decreases in the risk of social exclusion and increased mobility of individuals in Melbourne. They also establish an indirect potential link between mobility and social capital: “[i]t is noteworthy that improving mobility itself may be one way to foster development of social capital, giving trip making potentially both direct and indirect roles in reducing risks of exclusion” (*ibid.*, p. 799).

Uteng (2009) examines the case of social exclusion of immigrant women of non-Western origin in Norway. Mobility plays an important role in shaping this exclusion. For example, the costs associated with acquiring a driver’s licence are such that immigrants are very often unable to obtain them, and as driving is essential to access the vast majority of jobs in the region that are often located outside the city of Oslo, this creates a vicious circle of exclusion (*ibid.*, p. 1066).

Several studies also link car ownership or lack thereof to social exclusion. I hereby present some of these studies. Comparing low-income households with or without a car in the Melbourne area, Currie et al. (2010) found that low-income households without a car had more indicators of social exclusion. Their analysis also shows that income and the number of trips have a significant influence on reducing the risks of social exclusion. In another context, Cebollada (2009) demonstrates social exclusion linked to a lack of access to employment that results from not owning a car in the Barcelona region. He presents the spatiality of the phenomenon by identifying the existence of three types of housing areas in the city: those that do not lead to exclusion, those that lead to exclusion and, finally, those leading to exclusion according to their mobility related risks to for access to employment (*ibid.*, p. 232).

In New Zealand, the share of mobility-related social exclusion is directly associated with the possession of a car. Rose et al. (2009) demonstrated that not owning a car is perceived as a factor of social exclusion. On the contrary, possession of a car is perceived as a factor of inclusion, as evidenced by the testimonies of low-income people interviewed by the authors of the study: “[t]here is a sort of a subtle status in society by having a car. You’re somebody who is successful or OK, and not having a car you’re perceived in a lower pecking order or something” (ibid., p. 196) or this comment from another participant:

There’s nothing worse than being the one that has to ask [other people for a ride] all the time and you can’t reciprocate... Often what happens is that you don’t ask and then you feel isolated and that gets more and more and more, because if you feel isolated then you can ask less and then you’re feeling more isolated, it’s a vicious circle (idem).

In this case, the authors demonstrate that having a car, without necessarily having the financial means to keep it in good condition, can have disastrous results for low-income populations; for example, prioritizing the purchase of gasoline over the purchase of food from the family budget or resorting to theft in order to pay the fine thus recovering a vehicle that has been impounded (ibid., p. 197).

In a Quebec study of low-income women who did not own a car, McCray and Brais (2007) also demonstrated the link between social exclusion and mobility problems and the spatial situation of the home. According to the participants in this study, the geography of the place of residence combined with an inadequate supply of public transit gives them the impression of being excluded from certain activities (ibid., p. 404). Moreover, the more the participants lived far from the city, the less mobile they were. They also expressed their frustration and perception of an injustice regarding the supply of public transport in their sectors as presented by this testimony gathered during their investigation: “It’s so obvious that they [the public transit authority] favor the regions where people have money, and in the sectors where people don’t have money, it’s as if they say to one another, ‘They’re scum; we can give them anything’” (idem).

By comparing the large Canadian cities with US cities, Litman demonstrated (2003, p. 15) that on the northern side of the border cities are more conducive to walking and that the use of public transport per capita is higher. However, he also relates to problems of social exclusion related to mobility and automobile dependence in certain sectors: “[l]ike the rest of North America, a growing portion of the Canadian population lives in automobile-dependent suburbs. In these areas social exclusion is associated with various combinations of poverty and inability to drive” (idem). Even if owning a car can reduce the risk of social

exclusion for an individual, it has potentially harmful consequences at the community level: “[a]lthough increased wealth and vehicle ownership tend to reduce social exclusion for individuals, such trends tend to increase automobile dependency and therefore social exclusion at the community level by making some groups relatively disadvantaged” (ibid., p. 8). Litman also states that the exorbitant costs for some exclusive automobile mobility may increase exclusion, for some it is out of reach while for others it will significantly reduce available resources to other factors to counter exclusion: health, nutrition, housing, education (ibid., p. 9).

2.2.6 Accessibility

Previously mentioned when discussing car dependence or mobility-related social exclusion for example, accessibility is a concept stemming from transport geography. According to Geurs & van Wee (2004, p. 128) it is also used in other disciplines like urban planning as well as in the policy-making process. For them (ibid., p. 128) “[...] accessibility measures are seen as indicators for the impact of land-use and transport developments and policy plans on the functioning of the society in general”. Dalvi & Martin (1976, p. 18) define accessibility as an indicator of “[...] the inherent characteristic (or advantage) of a place with respect to overcoming some form of spatially operating source of friction”. In other words, accessibility is described as the ease or lack thereof of reaching a particular point via the transport system.

As Dubois (2017) states, citing Farrington (2007, p. 320), accessibility has to take into account both people and place as, depending on the means of transport used by individuals and households, accessibility to opportunities will vary. Tabbone (forthcoming) citing (Dujardin, Labeeuw, Melin, Pirart, & Teller, 2010; Pattaroni, Thomas, & Kaufmann, 2009; Stock, 2007; Thomas, 2013) notices the importance of accessibility to the transportation network, as individuals manage their daily life according to the “handles” offered by the territory (tram stops, bus, density of roads, etc.).

In their thorough review of the accessibility literature, Geurs & van Wee (2004, p. 128) identify four key defining components of accessibility: land-use, transportation, temporal and individual. In Figure 2:7 they present what comprises each component and the different interactions between the components.

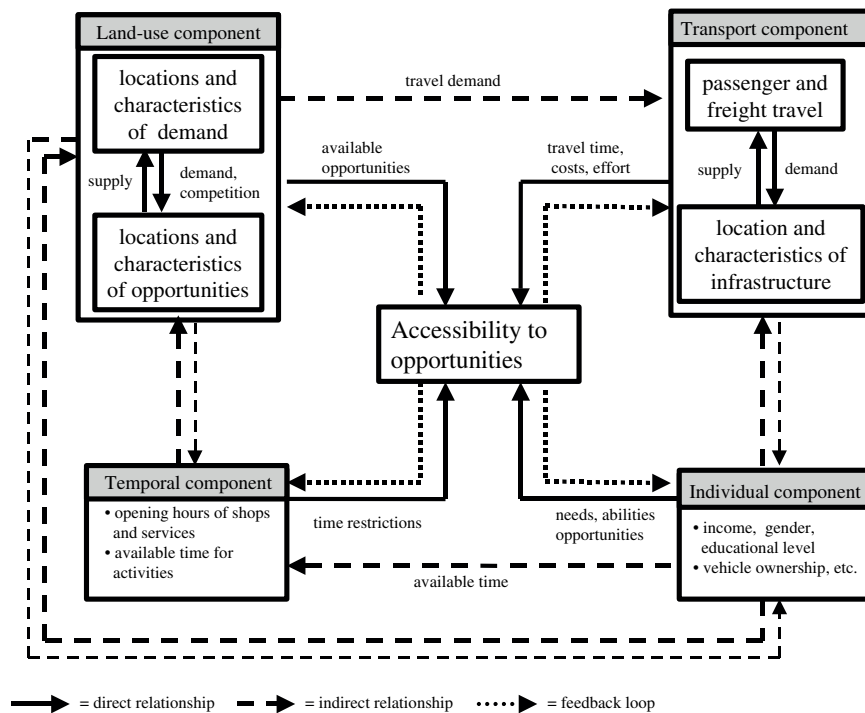


Figure 2:7 Relationships Between Components of Accessibility
 Source : (Geurs & van Wee, 2004, p. 129)

Considering whether accessibility is a right or a privilege, Bavoux, Beaucire, Chapelon, & Zembri (2005, p. 42) believe that while it was initially considered a privilege, in the Western world, accessibility tends to become progressively a fundamental right of every individual. They recall the link with social exclusion and affirm that not being able to access administrative, cultural and, more importantly, economic functions such as jobs, is a factor of exclusion (*idem*). They also state that regarding accessibility, possession of an automobile is a discriminating factor and leads to accessibility inequality both in terms of space and time (*idem*). While car dependence is often considered as a factor limiting the accessibility of non-motorized households, Farber & Paez (2011) empirically demonstrated in Canadian urban contexts that it is also limiting the accessibility of motorized households for discretionary trips.

Accessibility is consequently an important policy issue. According to Bavoux et al. (2005, p. 42), by influencing the organization and dynamics of territories and thus the location of

activities and people, accessibility has become a major issue in land planning policies. Concurring, Docherty et al. (2008, p. 97) state that focusing on improved accessibility as a key goal, transport policy can help solve an array of problems linked with mobility, especially automobility while keeping the social and economic benefits of mobility by “[...] encouraging land use patterns that make more activities available within a given area, and in so doing promote public transport solutions and non-motorized travel such as walking and cycling”. Finally, Shaw et al. (2008a, p. 7) affirm that it is also an important concept for transport geographers: “[a]mong British transport geographers (and others) one outcome was to renew interest in the concept of accessibility as a means of addressing mobility deprivation, especially in terms of its uneven distribution both spatially and structurally”.

Hine & Grieco (2003, p. 300), suggest that in order to better suit the accessibility need of transport disadvantaged groups, we need to rethink the meaning of accessibility by incorporating direct and indirect accessibility. They define direct accessibility as “[...] the ability of individuals to plan and undertake journeys by public or private modes subject to time budget and cost” and indirect accessibility as “the extent to which individuals or groups can rely on neighbours or other support networks to access goods and facilities on their behalf subject to time and financial budgets”.

2.2.7 Spatial Justice⁴⁸

Spatial justice and mobility are potent concepts in urban studies as well as social geography. Although spatial justice is not central to my thesis, there are many links between this theme and my research. I will briefly present the various links that may be established between the concept of spatial justice and my thesis research in order to pay particular attention to these questions.

Instead of treating the spatial or geographical aspect of cities as a mere background on which interesting things happen, like most social sciences, the spatial justice approach includes spatial aspects in the struggle for justice: “the spatiality of (in)justice (combining justice and injustice in one word) affects society and social life just as much as social processes shape the spatiality or specific geography of (in)justice” (Soja, 2010, p. 5). For Soja (ibid., p. 7) seeking spatial justice means “a demand for greater control over how the spaces in which we live are socially produced wherever we may be located [...]”.

⁴⁸ Portion of section 2.2.7 appeared in a paper presented at the 53rd International Making Cities Livable Conference on Caring for Our Common Home: Sustainable, Healthy, Just Cities & Settlements. See Villeneuve & Pattaroni (2016).

As discussed with accessibility, it appears that the spatial distribution of the provision of public transport services relative to the geographical distribution of places of residence and employment in the city is an element of justice and equity for transport disadvantaged populations, especially non-motorized households. Indeed, investments in transport infrastructure shape the territory and its uses. But are these investments made fairly? Do they respond to the specific needs of those who have no choice but to use public transport or other transport alternatives (e.g. bike, walk, ride share)? I believe these are issues related to space justice, especially when considering the question of the equal distribution of urban resources (Soja, 2009). The inclusion in space of public transport infrastructure plays a pivotal role for the territory. Questions of spatial justice thus appear with transport policy decisions. For example, would the introduction of a new tram linking an affluent suburb (where most homes have at least one vehicle) to the city centre with significant government investment be more justified than the introduction of a night bus connecting disadvantaged neighborhoods (where the proportion of households without a vehicle is greater) to an industrial employment sector? This type of question is not always taken into account by public transport policies.

The choices made by public organizations with regard to spatial planning and the establishment of public transport infrastructure therefore have an impact on spatial justice issues. The objectives set out in public policies may also bear significance for this issue. Indeed, several authors point out the disparity between the multiple objectives contained in these policies (Grengs, 2005; Le Breton, 1999; Manaugh, 2013). Policies tend to progressively pursue sustainable mobility objectives combining economic, environmental and social aspects. However, it seems that the economic and environmental aspects dominate the social aspects (Garrett & Taylor, 1999; Manaugh, 2013, p. 124). This primacy of economic aspects on social aspects is reminiscent of the problem of the right to the city of Lefebvre. Indeed, Lefebvre denounces that the territory is organized according to an economic logic to the detriment of the needs of the residents, as Purcell recalls (2014, p. 149):

He argues that capitalist industrialization imposes itself on the city by asserting the primacy of exchange value. It seeks to make everything in the city, including space itself, reducible to economic exchange, to a marketable commodity. It envisions the consumption of commodities to be the supreme activity. Central to this project is the property relation. Under capitalism the space of the city is carved up into isolated segments by the system of private property. The system is hegemonic, and property rights dominate all other claims to the space of the city. The production of space is thus driven by the needs of property owners.

The place left to objectives other than economic growth tends to be reduced. As Fainstein (2009, p. 3) points out, this economic growth is becoming more and more important in urban policies:

Now, the emphasis on economic competitiveness that tops every city's list of objectives causes planning to give priority to growth at the expense of all other values, providing additional evidence to the critics who see it as serving developer interests at the expense of everyone else.

Nonetheless, this growth does not benefit everyone in the same way and it is important to take into account the captive users of public transport in the equation. It is also a link with the problem of spatial justice that the managers of development must take into account according to Fainstein (2009, p. 12):

The creation of job opportunities through growth promotion without accompanying social and transportation services causes poor people to face unenviable choices between caring for family members, incurring difficult commutes, and gaining employment. Planning involves not only consideration of the financial impacts of a particular policy but also its effects on people's well-being.

This dominance of the economic objective is also revealed by the priority given to car access in the more general transport and spatial planning policies. Lefebvre (1974/2011) denounces the virtuous circle in favour of the automobile engendered by transport policies and the influence of the automobile sector in the economy. The inequitable development of the territory is also linked to the inequitable distribution of costs that favours those who own a car:

Owners of private cars have a space at their disposition that costs them very little personally, although society collectively pays a very high price for its maintenance. This arrangement causes the number of cars (and car owners) to increase, which suits the car-manufacturers just fine, and strengthens their hand in their constant efforts to have this space expanded (Lefebvre, 1974/2011, p. 186).

Therefore, the space allocated to the car is constantly growing, sometimes to the detriment of other types of development. But these investments only benefit those who own a car or are able to use one. I see this as a question of spatial justice and the choice of my research problem positions me critically against this phenomenon.

The question of the just distribution of the possibility to be mobile—what Vincent Kaufmann calls “motility” (Kaufmann et al., 2004) - appears as a central question for a just city. Deprived from the adequate means, the captive users illustrate one of the main forms of spatial injustice (Marcuse, 2009), the existence of a portion of the population given an unfair share of resources. Docherty et al. (Docherty et al., 2008, p. 85) concur and assess that “[...] both mobility and accessibility are important for social justice”.

The question of the just city is also a broader one, encompassing justice issues that go beyond the distributive dimension. Many unjust urban situations are linked to what Fraser (2001) calls recognition issues, where the question of justice is not about giving people a fair share of material resources but recognizing their choices and ways of life. This is essential to bringing about a “decent” society (Margalit, 1996) and avoiding not only the phenomena of marginalization but also that of social violence (Young, 2011).

The circumstances of carless individuals in a car-dependent environment stands out as a case study to analyze the complex entanglement of justice, policy and mobility in our cities. This is directly related to transport geography as Hine (2008, p. 49) stated, “[...] if equalities are goal of social justice, then achieving them is not just a structural problem of income, but also a geographical problem involving distance, movements and access”.

Hine (*ibid.*, p. 52) also deplores that while in principle governments take spatial justice into account, in practice it is relatively less so:

[...] local and national government that(implicitly) accept social justice as influencing normative policy goals for transport often do so with little thoughts of the consequences for policy choices in their implementation. In practice, while the goal of, for example, promoting modal shift is seen as creating travel choices, it may run counter to the desires and travel patterns of non-car owners if you concentrate resources on a few heavily used corridors to the detriment of a wider spatial network.

Hine (*ibid.*, p. 56) illustrates this issue by providing the example of the UK bus service privatization which has had negative repercussions from a spatial justice point of view:

Commercialization of local bus services has resulted in the developments of 'Metro'-style high-frequency corridors in urban areas, because these are seen as essential by operators for future business growth. A consequence of this trend has been a movement away from the provision of the socially unnecessary services which are often in or adjacent to areas with high proportions of public sector housing.

Spatial justice is very relevant today considering the splintered urbanization (Graham & Marvin, 2001) taking place. For example, MacLeod & Ward (2002, p. 154) warn of this growing relative to spatial justice that we should strive to reduce:

[...] the contemporary city—featuring the escalating extremes of wealth and poverty [...] coupled with an intensified fiscal austerity to meet the rigours of global competition—appears to be manifesting as an intensely uneven patchwork of utopian and dystopian spaces that are, to all intents and purposes, physically proximate but institutionally estranged.

2.2.8 Spatial Mismatch

Originating in the 1960s the concept of spatial mismatch was introduced by the Afro-American studies researcher John F. Kain (1968b). McLafferty & Preston (1996, p. 421) summarize the concept:

The spatial mismatch hypothesis describes the combined effects of residential segregation and economic restructuring on minorities' spatial access to employment opportunities. The central argument is that African American, and possibly Latino, inner-city residents have poorer spatial access to jobs and employment information because of their concentration in segregated residential areas with few nearby job opportunities.

A crucial aspect of spatial mismatch is that through recent urbanization, jobs have moved away from certain neighbourhoods, leaving their resident with difficulty in finding a job: "[a]dvocates of the spatial mismatch hypothesis argue that low-income residents have been left behind in urban areas, distant from suburban employment opportunities and without the resources to overcome this difficulty" (Blumenberg & Manville, 2004, p. 183).

According to Apparicio, Mathon, Séguin & Gagnon (2014, p. viii), there are two broad approaches used to validate or refute the spatial mismatch hypothesis: the comparison of spatial-distance or time-distance of commuting journeys and the calculation of measures of accessibility to employment opportunities. From the initial United-Statesian context amid racial segregation issues, the concept has been used in other contexts in Canada (Aubin-Beaulieu, Cloutier, & Shearmur, 2013; Bourne, 1989; Wong, 2012), France (Cavaco & Lesueur, 2004; Gaschet & Gaussier, 2010; Nicolas, Vanco, & Verry, 2012; Thisse & Zenou, 1995), the United Kingdom (Fieldhouse, 1999; Houston, 2005a; Patacchini & Zenou, 2005).

The concept has been the subject of various literature reviews (Apparicio et al., 2014; Holzer, 1991; Ihlanfeldt & Sjoquist, 1998; Kain, 1992; Preston & McLafferty, 1999) and is much debated. For example, Houston (2005b, p. 407), states that “[d]espite over 30 years of research on the spatial mismatch hypothesis, little consensus has emerged on the importance of spatial mismatch in explaining disadvantage in the labor market”. Houston (ibid., p. 411) adds that over the years the hypotheses have evolved and currently focus on “commuting; employment deconcentration; and, more recently, understanding the nature of specific spatial barriers to employment, such as the role of job search.”

2.3 Public Policy Approach/Perspective

After presenting all the concepts that I borrow from urban studies and geographical approaches, the last discipline that I would like to introduce separately is: Public Policy approaches, from the discipline of Public Administration itself, a sub discipline of Political Science. In this section on public policy I present different themes from public policy analysis that identify not only what governments decide to do or not do, but also how they come to these decisions. For Codd (1988, p. 235), policy analysis is: “[...]a form of enquiry which provides either the informational base upon which policy is constructed, or the critical examination of existing policies”. He considers that it is a multidisciplinary endeavour which uses the most appropriate methodological tools for the specific problem it studies (idem). As my thesis work is in part a form of public policy analysis, I provide an overview of this area of research. First, I define public policy. I then briefly present various models for analyzing these policies: the policy cycle, neo-institutionalism, the feminist approach, the networks and subsystems approach, the cognitive approach and the comparison of public policies.

2.3.1 Public Policy

There are many definitions of public policy, some more encompassing and other more restrictive. For my research, I favoured the definition of Dye (1995, p. 2): “whatever government choose to do or not to do” because it is simple to understand and very inclusive, which is useful for our fieldwork. For example, a transit system is a public policy in the sense that this is what a ‘government has decided to do’. But the lack of sidewalks in new suburban neighborhoods is also a public policy since in this case it indicates what the government decides not to do. But as Birkland recalls (2010, p. 8), there is no consensus on the definition of the term by political scientists. We present a few other definitions containing interesting elements. Birkland also offers his own definition: “[a] statement by government of what it intends to do such as a law, regulation, ruling, decision, order, or a combination of these. The lack of such statements may also be an implicit statement of policy” (ibid., p. 9). Goodwin (2011, p. 168) uses a similar definition while adding a few details:

Policy analysis conventionally focuses on government action. The types of government action regarded as ‘policy’ are various. Policy consists of a range of actions – and inactions – including, but not limited to, laws, policy statements, programs, statements of principle, processes and performances.

Kübler and Maillard (2009, p. 3) propose a definition narrower than those of Dye or Goodwin. For them, public policy must include three elements: being the result of a public authority (any level of government), a program of action with concrete steps and consistency between the different actions. Cochran (1999) [quoted by (Appiah-Adu & Bawumia, 2015, p. 41)] refers to the political struggles that go into public policy production by providing the following definition: “[p]ublic policy is the outcome of the struggle in government over who gets what”.

2.3.2 Frameworks of Public Policy Analysis

There are multiple frameworks used in policy analysis with their own ontologies. In this section I present then main ones: the policy cycle, policy networks, the cognitive approach, neo-institutionalism, the feminist analysis, the discursive and the comparative approach.

2.3.2.1 *Policy Cycle or the Sequential Approach*

The sequential approach to the cycle of public policy production stems from the policy sciences (Hassenteufel, 2008, p. 27). This field of research was more practice-oriented and aimed at providing advice to policy makers. The sequential model was initially developed by Harold Laswell (idem). It was later revised by Charles Jones in 1970 (see Figure 2:8) and by James Anderson in 1975 (see Figure 2:9) (ibid., p. 29). The most commonly used model is now that of Anderson which has five steps. This is an ideal-type (in the sense of Weber),

and not an exact representation of reality (ibid., p. 37). According to Jann & Wegruch (2007, p. 43), this model, although no longer used to explain the complete processes of public policy production, remains useful for the discipline of public administration as a system of organizing the scientific literature and research. In the model, the steps follow in succession and the cycle resumes from the beginning after the last step. These steps are: agenda setting, formulation, decision-making, implementation and evaluation. Hassenteufel (2008, p. 30) presents an excellent summary of all stages of the cycle; I summarize his description here. Agenda setting consists of the selection of the problems to solve by public authority (idem). The formulation “refers to the process of developing relevant and acceptable solutions [...]”⁴⁹ (idem). Decision-making or adoption is the moment when authorities choose which solution will be used (idem). Implementation is the stage of applying public policy (idem) and evaluation, the moment when public administrations determine the effectiveness of adopted public policy (idem). The model is criticized for oversimplifying a more complex reality and only serves to describe in a circumstantial way the production of public policies without being able to explain them. On the other hand, it remains unavoidable, even though several other models have been developed in response to the failures of the sequential model.

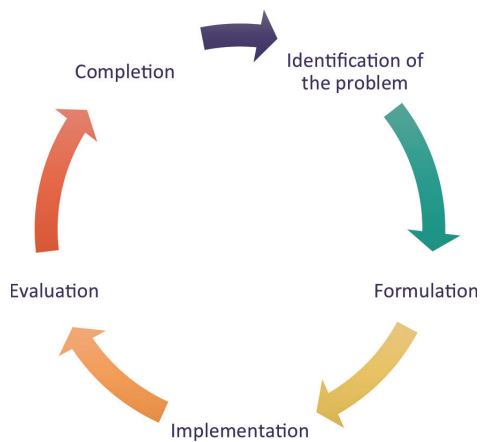


Figure 2:8 Public Policy Cycle According to Jones
Adapted from Jones (1970)

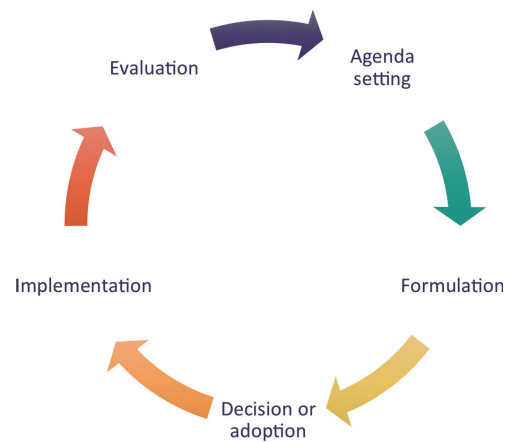


Figure 2:9 Public Policy Cycle According to Anderson
Adapted from Anderson (1975)

2.3.2.2 Networks and Subsystems Approach

Rather than focusing on the different stages of the public policy cycle, the networks and subsystems approach focuses on the actors (individuals or groups) involved in the public policy production cycle and in the relationships and interdependencies between these actors. This approach can consequently focus on any step in the cycle of the sequential approach. Moreover, in breaking with the sequential model, the approach of networks and

⁴⁹ Own translation.

subsystems does not postulate that the different stages of the cycle necessarily take place in sequence. For the researchers using this approach, the main interest comes from the fact that it explains not only the relations between the various actors, but also the complexity of public policies. This approach comes in multiple types of networks to examine public policy. According to Rhodes (2006, p. 426), the generic definition of networks associated with public policies is:

Policy networks are sets of formal institutional and informal linkages between governmental and other actors structured around shared if endlessly negotiated beliefs and interests in public policy making and implementation. These actors are interdependent and policy emerges from the interactions between them.

Based on different criteria: “[...] membership, integration, resources, and power” (Miller & Demir, 2007, p. 140), researchers working with this approach perceive several types of networks: sub-governments, issue networks, policy communities and policy subsystems. Rhodes (1997) quoted by Miller & Demir (*idem*) proposes a classification of networks extending over a continuum from one end where the (narrower) policy communities to the other end of the issue networks (more open) (*idem*). I will present a brief summary of these different types of networks.

The sub-government approach emerged in the late 1950s and was developed in response to researchers’ realization of the presence and importance of groups in the development of public policy. The sub-government is a relatively open network based on an expanded iron triangle (politicians, public administrators, interest groups). Issue networks are even more open to include a large number of heterogeneous actors who have multiple degrees of influence ranging from the most powerful to those with little influence (Rhodes, 2006, p. 428). The actors of the issue networks are not necessarily all of the same opinion and sometimes have conflicting relations (*idem*). Policy communities are more closed, linking only a small number of actors; expressly excluding certain groups and members of policy communities have frequent interactions (*ibid.*, p. 427). Stakeholders in the policy communities are stable over time, share the same values and preferences about politics, and they all have control over some resources (*ibid.*, p. 428). The subsystems are used in the advocacy coalitions model of Sabatier and Jenkins-Smith and are described as the place of specialization of public policy actors, including members from the traditional iron triangle as well as academics, researchers and journalists (Sabatier & Weible, 2007, p. 192).

The network approach is useful for defining the context of the public policies under study. It allows to describe the power relations around the policy in question. On the other hand,

it does not really allow to understand the relations between the actors. Moreover, it supposes the existence of networks, but remains silent regarding the explanation of the formation of the networks, it does not explain their origin. The approach can be useful when it is necessary to compare public policy with one another or with other countries. From an analytical point of view, this approach makes it possible to observe the power which is no longer exclusively controlled by the public actor, it calls into question the centrality of the State. The network approach also explains the nature of public policies in relation to the networks that revolve around the links between public policies and the mobilization of groups. On the other hand, this approach obscures institutions (and presupposes their stability) by placing the emphasis on interests.

Although it is useful for defining the context, the network approach has a relatively small analytical scope. Networks induce stability in public policy, so this approach can hardly be used to explain change. Moreover, according to Rhodes (2006, p. 429), although its purpose is to explain public policy, there are few examples where the approach succeeds in providing explanations. On the other hand, the model of the Sabatier and Jenkins-Smith advocacy coalitions seems to have a greater analytical scope because not only does it take into account the networks, but also the variable of ideas and attempts to explain changes. This approach is in between the network approach and the cognitive approach, the subsystem being a network, but the model taking account of beliefs (ideas) to explain change.

2.3.2.3 *Cognitive Approach*

While the network approach focuses on the link between actors and their implications for public policy, the cognitive approach focuses on the impact of ideas on public policy. According to this approach, public policies are not only problem-solving, but also serve to “construct frameworks for interpreting the world⁵⁰” (Muller, 2000, p. 189). Public policy is a place where meaning is created, a space of discourse. The cognitive approach therefore focuses on ideas, beliefs and social representations, which is interesting since these elements are rather ignored by other approaches. The cognitive approach perceives public policy as ideas that are created by the cognitive scenarios of the actors involved in it. This approach is very far from the sequential model since it is not concerned with the stages of the cycle or the chronology of these stages. On the other hand, it is at the formulation stage that it is easier to use the cognitive approach; because it is at the point when actors establish the links between problems and solutions. According to Muller (*ibid.*, p. 193), this approach researches how actors make their choices.

⁵⁰ Own translation.

Similar to the network approach, the cognitive approach can take several forms. It includes, among others, the referentials of Muller and the paradigms of Hall. The referentials are a set of norms and reference images according to which the public action is defined. Muller (2005, p. 172) defines the public policy referentials as “a cognitive and normative structure that integrates the beliefs of agents within a broader framework - sectorial and / or global.” The referential system is understood by four levels of perception of reality: values (global framework containing fundamental oppositions for example good/bad), norms (the gap between perceived and desired reality), algorithms (the causal relationships at the heart of public action) and images (images clearly associated with public policy) (ibid., p. 177). These four levels are necessary in order to document referentials. There are two levels of referentials that together explain policy changes: the overall and the sectorial levels. Changes in public policy can be explained by the tensions between the weight of norms and institutions and the freedom of actors to redefine these structures. According to Muller (ibid., p. 186):

[...] the concept of referential makes it possible to account for this tension insofar as it expresses both the constraints of the structures - through a set of cognitive and normative frameworks that weigh on the action of the actors and limit their margin of action - and the work of cognitive and normative production of these same actors, which allows them to act on the structures⁵¹.

Paradigms are also a form of the cognitive approach to public policy since ideas are at the centre of this analysis. According to this approach ideas structure public policy. Peter Hall takes up Thomas Kuhn’s (1996) paradigm concept from the sociology of science and applies it to public policy (Hall, 1993, p. 279). Resembling the referentials, this model tries to explain the change with the concept of the “paradigm shift” (idem). As with changes in scientific paradigms changes in public policy are caused by an accumulation of anomalies and learning that force actors to change paradigms (ibid., p. 280). Hall identifies three levels of change that are increasingly important. He explains changes in public policy by the fact that paradigm inconsistencies weaken public policies that are based on it, thereby making them more susceptible to change.

The cognitive approach reveals the societal motivations that can help explain public policies. It also makes it possible to explain change and takes into account not only the ideas, but sometimes, as with the aid of the referentials, it also allows to incorporate certain aspects of institutions. There are, however, some omissions in this approach. For example, it does not explain the origin of cognitive scripts and does not provide the means to properly identify them. We must also consider the danger of overestimating the importance of ideas.

⁵¹ Own translation.

Nevertheless, it has the advantage of looking at ideas, which is largely ignored by other approaches to public policy.

The cognitive approach seems very complex, but meaningful. In my view, this is an innovative way of approaching public policy, not just as problem solving, but also as a structure of meaning. This could be useful in explaining government inaction in certain areas of public policy (considering that public policy is what public authorities decide to do or not to do). On the other hand, the approach does not provide a key to decoding reality, and therefore applying this approach appears as an important challenge in analyzing and assigning meaning to public policy.

2.3.2.4 *Neo-Institutionalism*

Since the 1980s, research in political science has once again turned its interest on institutions with the return of studies putting the State at the centre of their enquiry (Stone, 1992). According to researchers using this approach, “[...] institutions can not only influence how political actors define their interests, but also how these interests are pursued and expressed⁵²” (ibid., p. 161). Hence, it is imperative to pay attention to these institutions, because they hold explanatory powers. According to Stone (ibid. p. 162), institutions can be defined as: “a coherent body of norms and principles of behaviour, complex forms of political symbolism, discursive structures and rituals”. Therefore, institutions can be concrete, such as the House of Commons in Canada or the National Assembly in France, or conceptual such as economic neo-liberalism. But researchers using this approach do not form a homogeneous current and are divided into three distinct variants: historical, sociological and rational choice neo-institutionalism. Each variant defines institutions differently and explains their role distinctly in the development of public policies. Hall and Taylor (1997, p. 492) even speak of partitioning, where each of its approaches develops completely independently of the others by refining its own paradigm. Before presenting the differences between these three variants, let us recall that, although they differ in several respects, all three seek “to elucidate the role played by institutions in determining social and political outcomes⁵³” (ibid. 469). I briefly present each of the three schools of thought of neo-institutionalism: historical, sociological and rational choice.

Historical neo-institutionalism has developed in response to behaviourism and approaches centred on civil society (ibid., p. 492). This version of neo-institutionalism based its

⁵² Own translation.

⁵³ Own translation.

ontology on the fact that past decisions have a significant impact on actors within the institutions:

[...] socio-political phenomena are strongly conditioned by contextual factors, exogenous to the actors, many of which are institutional in nature. In other words, institutions, once created, come to life and give rise to dynamics and situations that were often unwanted or foreseen by the actors⁵⁴ (idem).

Historical neo-institutionalism defines institutions as “the formal and informal procedures, protocols, norms and conventions inherent in the organizational structure of the political community or political economy⁵⁵” (Hall & Taylor, 1997, p. 471).

One of the main concepts used by the historical neo-institutionalist approach is path dependency. Howlett and Ramesh (2003, p. 217) present this concept as the fact that once established, a system tends to perpetuate itself by limiting possible choices and reducing forces that would enable deviation from the trajectory established in the past. Indeed, once public policy follows a ‘path’, some options that were previously available are no longer accessible, consequences of decisions made, unless a decision is made to go backwards, resulting in additional costs (material and political):

[...] once a system’s trajectory is in place, it tends to perpetuate itself by limiting the range of choice or the ability of forces both outside (‘exogenous’) and inside (‘endogenous’) the system to alter the trajectory. That is once a trajectory is in place, it tends to ‘lock-in’ the previous state of the system and the direction of its dynamics (idem).

Another important aspect of path dependency is that “irreversibility grows with time⁵⁶” thus producing an increasingly powerful self-reinforcing effect with time leading to choices increasingly locked-in to the initial choices (Hassenteufel, 2008, p. 242).

According to Pflieger, Kaufmann, Pattaroni & Jemelin (2009, p. 1425) path dependency can also be useful when studying urban transport policies as it can help understand urban transformation processes:

⁵⁴ Own translation.

⁵⁵ Own translation.

⁵⁶ Own translation.

An historical and comparative analysis enables us to pinpoint the material, institutional and cognitive factors that contribute to the sustainable entrenchment of certain policies in the territory and make it difficult and sometimes even impossible, to introduce new policies (ibid., p. 1435).

Hommels (2005) suggests a similar concept as path dependency, adopted from technology, and society (STS) studies which could be applied to urban studies, she proposes to use various conceptions of obduracy to better understand resistance to urban change:

[...] it is very difficult to radically alter a city's design: once in place, urban structures become fixed, obdurate. As a consequence, urban artifacts that are remnants of earlier planning decisions, the logic of which is no longer applicable, may prove to be annoying obstacles for those who aspire to bring about urban innovation (ibid., p. 324).

Sociological neo-institutionalism, on the other hand, assumes that "institutions embody and reflect tenacious cultural symbols and practices that shape the perceptions of actors and 'inform' institutional reproduction⁵⁷" (Lecours, 2002, p. 9). This form of neo-institutionalism stems from the theory of organizations (idem). Researchers associated with this school define the institution more comprehensively than the other two neo-institutionalism (Hall & Taylor, 1997, p. 482). For them, it is necessary to "include not only formal rules, procedures or norms but also systems of symbols, cognitive schemes and moral models that provide the 'frameworks of meaning' guiding human action⁵⁸" (idem).

According to sociological neo-institutionalists, changes in public policies occur gradually and slowly, as they occur through a change in the cognitive framework associated with institutions (Lecours, 2002, p. 9). In general, these studies seek to "explain why organizations adopt a given set of institutional forms, procedures or symbols, emphasizing the dissemination of these practices⁵⁹" (Hall & Taylor, 1997, p. 482). They pay particular attention to the influence of institutions on behaviour, not only through rules and conventions, but especially through the cognitive frameworks they impose by limiting what can be imagined as the realm of possible in a given context (ibid., p. 483). They explain institutional changes not by an increase in efficiency but by a strengthening of the social legitimacy that the institution confers on its members (ibid., p. 484).

Finally, neo-institutionalism of rational choice has its origin in the study of the decisions of the American Congress (ibid., 477). Researchers using the framework see institutions as the rules and procedures that govern the debates and the behaviour of political actors (idem).

⁵⁷ Own translation.

⁵⁸ Own translation.

⁵⁹ Own translation.

Indeed, it is these rules that explain the behaviour of politicians. In general, the work of neo-institutionalists of rational choice deals with formal institutions as “legislatures, executives, bureaucracies and the formation of political coalitions” (Lecours, 2002, p. 9). These researchers have imported several concepts from organization economics such as property rights and transaction costs (Hall & Taylor, 1997, p. 477).

The rational choice neo-institutionalists presuppose that actors behave rationally, even in calculating way, according to their preferences and in order to maximize their gains (*ibid.*, p. 479). Actors are therefore strategic in their decisions and do not act in order to maximize the results for the community (*idem*). As can be seen here, unlike the historical neo-institutionalists who rejected the behaviourist movement, the rational choice neo-institutionalists merge these principles with the analysis of institutions (Lecours, 2002, p. 9).

2.3.2.5 *The Feminist Approach*

Unlike neo-institutionalist approaches that have their origins in the academic world, the feminist approach has its roots in an activist social movement. This social movement still exists, but it is now supplemented by feminist theories of the social sciences. In public policy, this approach aims to rectify the invisibility of women in public policy by studying the historical experience of women as contributors to all aspects of social, political and economic life in order to demonstrate that research results, or public policies that are proclaimed as universal are often far from being so, obscuring a different reality, that of women (Hawkesworth, 1994, p. 97). One of the main criticisms of the feminist approach is the androcentrism found in the theories, methodologies and results of academic work. According to Lamoureux & De Sève (1989, p. 21), androcentrism is defined as: “the valorization of male experience only and its erection into a universally valid model⁶⁰”. According to Hawkesworth (1994, p. 111), at the level of academic work on public policy, feminist scholars examine several aspects:

⁶⁰ Own translation.

[...] the terrain of feminist policy studies includes critiques of research methodologies, prescriptions for gender-sensitive research inquiry and policymaking, examination of women's roles in shaping, making, implementing, and adjudicating public policies, as well as sustained efforts to envision and to identify obstacles to the achievement of policies that promote women's well-being and autonomy, redress historic sex discrimination, and meet the unique needs associated with women's productive and reproductive roles and choices in male-dominated societies.

Using gender as a variable to measure the effects of public policy, feminists have produced a critical literature of public policy by demonstrating the androcentrism of public redistribution policies, public policy process models, analytical tools and the dominant research paradigm (ibid., p. 105). According to Hawkesworth (idem): “[a]mong the best known of these demonstrations of androcentrism are studies that reveal gender privileges accruing to men from allegedly gender-neutral programs” [see (Johnston-Anumonwo, 1997; Rogalsky, 2010; Vincens, Vandersmissen, & Thériault, 2007)].

Feminists in public administration also examine the effects of the presence of women in the public service. By rejecting the Weberian model of neutral and impersonal bureaucracy from the outset, some studies rather show that the gender and stereotyped gender roles have structural effects on public policy (Hawkesworth, 1994, p. 107). Some studies produced by proponents of the feminist approach also address the impact of women in the policy-making process on the final content of these policies (ibid., p. 109). Finally, feminist theorists are also studying the feminist networks of public policy.

2.3.2.5.1 Gendered Effects of Public Policy

As discussed earlier, the feminist approach looks at the specific effects of policy between the genders. This is an important part of my enquiry as I want to understand the gendered differences in social exclusion related to mobility between men and women. In this section I present a few studies that use this framework. This is important because, as Fol et al. (2007, p. 805) state, not having a car is even more constraining for women than it is for men.

Some programs appear to apply equally to men and women but have very different outcomes for the opposing genders. One such example is the Canadian unemployment insurance program. Townson & Hayes (2007, p. 22) have demonstrated for example that an important “gender gap” existed in the percentage of unemployed receiving payments whereas in 2004, 40% of unemployed men were receiving benefits, only 32% of unemployed women did as well. Other programs meant specifically to promote gender equality, like

parental leave programs are found to have perverse effects (Fagnani, 1998; Pfefferkorn, 2002).

While the link between social policies and their potentially differentiated gendered effects seems evident, similar gendered differences on purely economic policies are astonishing. For example, studying the gendered effects of central bank's monetary policy on unemployment rates in developing countries, Braunstein & Heintz (2008, p. 184) find equity problems in gendered partition of repercussion stemming from inflation reduction policy whereas: "women as a group shoulder a disproportionate share of the costs of contractionary inflation reduction". Another surprising difference is that of emergency response to disaster. For example, when looking at the emergency response to hurricane Katrina that hit New Orleans in August 2005, many researchers find that men and women had very different outcomes from the ostensibly gender neutral disaster response policies (Bergin, 2016; Enarson, 2005; Williams, Sorokina, Jones-DeWeever, & Hartmann, 2006).

Does the evolution of the car system which generates car dependence have different effects for men and women? According to Oakil (2016, p. 7) "[s]ince travel behaviour of men and women are different, effect of life events will be affecting the behaviour differently." Thus, one can presume that being non-motorized in car dependent cities will have different consequence for women than for men. Bowling et al. (1999, p. 109) reported on the fact that women use public transport more than men and as non-motorized they reported to "being seen as second-class citizens for neither owning or driving a car".

2.3.2.6 *Discursive Approach to Policy Analysis*

Some policy analysts have taken a discursive approach to policy. Leung et al. (2017) call this the "post-positivist 'linguistic' turn of public policy research". In these research frameworks language is not considered neutral and seen as important factor in forming public opinions, and framing public problems.

2.3.2.6.1 *Policy as Narrative*

Many research in policy analysis consider policy from a discursive point of view. Hajer (1993, p. 44) recalls their importance and defining role of narratives in the political process: "[i]t is almost a commonplace to state that political problems are socially constructed. Whether or not a situation is perceived as a political problem depends on the narrative in which it is discussed." Since language plays a significant function allowing political actors to "create the world" (idem), the author considers the discursive approach to be an important part of policy research (idem):

The linguistic turn potentially provides the policy analyst with useful new tools to analyze how certain relations of dominance are structured and reproduced. After all, determining the way a phenomenon is linguistically represented has repercussions for politically essential questions such as who is responsible? What can be done? What should be done? The study of discourse opens new possibilities to study the political process as *mobilization of bias*⁶¹ (ibid., p. 45).

Rein & Schön (1993, p. 148) agree with the conception that policy discourse participates in the creation of the way things are: “[p]olicy is always played upon a ‘blue guitar’ because it defines, and to some extent creates, the way things are”. Goodwin (2011, p. 170) also ascribes to a similar conception:

Policy as discourse approaches start from the assumptions that all actions, objects, and practices are socially meaningful and that the interpretation of these meanings is shaped by the social and political struggles in specific socio-historical contexts. This conceptualisation of discourse is considered highly relevant in policy research, as it captures the ways in which policy shapes the world through the framing of social ‘problems’ and government ‘solutions’ and the construction of concepts, categories, distinctions and subject positions.

According to Richardson (1996) discourse permeates the policy process and the paradigm of policy as discourse also applies to urban planning:

[considering urban planning policy as discourse] allows us to see the making of policy as both the generation of a response to a real-world problem, and as a critical moment where conflicts between broader socio-political, cultural, or other discourses may be resolved, exacerbated or sidestepped. Thus we realize that policy processes are shaped by (and in turn shape) the real world at several levels: sparked by real-world problems and shaped by discourses; resolving planning problems, and affecting the relations between discourses which shape the social world (ibid., p. 288).

Richardson (ibid., p. 290), considers that policy discourse analysis is useful for critical research that in accordance with the principles of Horkheimer (1968/1982) should advance the improvement of vulnerable populations: “[s]uch questions are based on an agenda of unmasking and challenging power, and the consequent empowering of excluded or weak minorities”.

Similarly, for Goodwin (2011, p. 178) the discourse of policy affects people’s understanding by stating what the policy problems are: “policy problems are made by people and that how policy problems are constructed give shape to people’s understanding of and experience of

⁶¹ Emphasis in the original.

the world”. He considers that discourse analysis constitutes a very different approach to policy analysis since it is “[...] a research approach that is not concerned with ‘fact-finding’, but rather with the nature of facts and how they are brought into being” (idem). As such its role may differ from other analytical frameworks: “[h]ere policy analysis is understood, not as a problem-solving tool, but as a significant instrument in the democratic process” (idem).

Hajer (2006, p. 69) uses the concept of policy story lines. He finds that analysis of public policy documents often reveals the use of story lines: “[policy] often have the form of a narrative: people tell facts in a story. One quickly becomes aware that in any field there are a couple of such stories that fulfil a particularly important role”.

For Marston (2004, p. 124) is an important tool for policy analysis because it allows to explore the power relations embedded in the policy-making process:

Competing constructions of the policy problem are important struggles in policymaking, because policy actors that possess sufficient symbolic capital have a greater potential to convince others of their reality, which may reduce resistance to proposed solution. Hegemony works by convincing us that certain courses of action are both desirable and inevitable.

2.3.2.6.2 The Role of Policy Discourse Analysis

For Rein & Schön (1993, p. 150) policy discourse analysis has a role to explain the conflicts existing within policy, in order to understand the underlying relationships between what is not stated and the normative conclusions expressed in the text. According to Goodwin (2011, p. 167), as a research approach discourse analysis provides important benefits to our understanding of policy by combining into the analysis of facts and values instead of separating them: “[t]his approach provides analysts and researchers with a systematic way of exploring the discursive aspects of policy, including how problems are represented in policy and how policy subjects are constituted through problem representations”. However, the approach forces the analyst to read between the lines and consider new ways of understanding policy: “[p]olicy as discourse analysis requires policy analysts to uncover the normative nature of statements that appear to be obvious, inevitable or natural, to test judgments about truth claims, and to consider or imagine alternative ways of developing policy and practice” (ibid., p. 170).

Bacchi (2005, p. 199) presents the goal of the discursive approach: “[...] to identify, within a text, institutionally supported and culturally influenced interpretive and conceptual schemas (discourses) that produce particular understandings of issues and events”. She reiterates the foundations on which this analysis rests:

They [theorists of this approach] define discourse then in ways that identify what they see to be the constraints on change, while attempting to maintain space for a kind of activism. Their primary purpose in invoking discourse is to draw attention to the meaning making which goes on in legal and policy debates. The goal is to illustrate that change is difficult, not only because reform efforts are opposed, but because the ways in which issues get represented have a number of effects that limit the impact of reform gestures. The argument is that issues get represented in ways that mystify power relations and often create individuals responsible for their own 'failures', drawing attention away from the structures that create unequal outcomes. The focus on 'the ways issues get represented' produces a focus on language and on 'discourse', meaning the conceptual frameworks available to describe social processes (Bacchi, 2000, p. 46).

Ball (1993, p. 11) indicates a few things to consider when analysing policy text:

[They] are rarely the work of single authors or a single process of production. [As such... they are] not necessarily clear or closed or complete. The texts are the product of compromises at various stages (at points of initial influence, in the micropolitics of legislative formulation, in the parliamentary process and in the politics and micropolitics of interest group articulation).

The author (*ibid.*, p. 14) refers to Foucault (1977, p. 49) to present the importance of policy as discourse:

Thus we need to appreciate the way in which policy ensembles, collections of related policies, exercise power through a *production* of 'truth' and 'knowledge', as discourses. Discourses are 'practices that systematically form the objects of which they speak... Discourses are not about objects; they do not identify objects, they constitute them and in the practice of doing so conceal their own invention'⁶².

In a similar fashion, Codd (1988, p. 243) considers policy as "power that is exercised through discourse is a form of power which permeates the deepest recesses of civil society and provides the material conditions in which individuals are produced both as subjects and as objects". He considers the task of the policy analyst to "deconstruct" the discourse while being cognizant of the political and historical context in which it was produced (*idem*). Codd (*ibid.*, p. 245) suggests that the process of analysis should "[...] distance itself from the imaginary coherence of the text, examining its discourse and viewing it not as a vehicle for communicating 'information' or transmitting 'a plan of action', but as an ideologically constructed product of political forces".

Also following a foucauldian approach, Fischer (2003, p. 75) considers that:

⁶² Emphasis in the original.

[... policy] discourses function epistemically to regularize the thinking of a particular period, including the basic organizing principles of social action (such as the rules of feudalism or capitalism). Functioning as deep socio-linguistic structures, discourses organize the actors' understandings of reality without them necessarily being aware of it.

Fischer also presents the concept of policy storylines borrowed from Hajer (1995, p. 56): “[...] a generative sort of narrative that allows actors to draw upon various discursive categories to give meaning to specific or social phenomena’. (For example, ‘there is nothing we can do’ or ‘we must take immediate action’.)” (Fischer, 2003, p. 86). He believes that such analysis allows to show the role of elites in the policy process:

At the ‘macro’ level of analysis, the investigator is able to focus on how political and economic elites construct and maintain a societal-wide hegemonic discourse that makes clear what is on the agenda and what is not, as well as how oppositional groups seek to make their voices heard (ibid., p. 89).

For Marston (2004, p. 75) one of the important task of policy discourse analysis is to:

[...] unsettle these taken for granted assumptions, which involves analyzing how to discourse are combined to represent the social world. Framing of the policy problem can make political reforms more palatable to the general public, depending on the extent to which emerging frames concurrent with cultural norms in individual resources.

2.3.2.7 *Public Policy Comparison*

Now that I have presented several approaches to public policy analysis, I will present the literature illustrate public policy comparison. According to Sartori (1991, p. 243), public policy comparison is a research method that is characterized by the study of distinctive characteristics of certain cases. According to Mévellec (2005), comparing public policies requires identifying comparable cases and determining similarities and differences.

Public policy comparison is useful because it makes it possible to “[...] highlight the tensions, conflicts and compromises which at the same time drive changes in public instruments and feed on reform attempts⁶³” (Lanciano-morandat & Verdier, 2004, p. 380). In Lima & Steffen’s view (2004, p. 342), comparison helps to uncover the influence of specific variables on a given policy. Moreover, according to Hassenteufel (2005, p. 114), comparison allows “to take a decentralized view of one’s own national reality, by questioning elements that may seem obvious from a strictly internal point of view [...]”⁶⁴. For Sartori (1991), there are two main reasons for comparing policies. For practitioners, comparison enables one to

⁶³ Own translation.

⁶⁴ Own translation.

learn from the experience of others (ibid., p. 245). For researchers, it is a way of controlling the effect of variables (ibid., p. 244). According to him, this is a way for researchers to verify their hypotheses. Lima and Steffen (2004, p. 342) follow this same line of reasoning and argue that “international comparison is a means of identifying for a phenomenon the influence of a given variable, usually linked to the political system⁶⁵”. Finally, Hassenteufel (2005, p. 114) proposes to include the comparison in the construction of a research project aiming to explain a specific phenomenon:

When used in a more inductive way, the comparative approach, insofar as it leads to the identification of resemblances and/or dissimilarities, also leads, in a way ‘naturally’, to formulating explanatory hypotheses. The inductive comparison is not only a descriptive; it is also an explanation (or rather an attempt at explanation)⁶⁶.

Now that I have presented the usefulness of the comparative method, we can observe how it is initialised. The different authors studied agree that it is a primary necessity to identify cases that can be compared. For Lima & Steffen (2004, p. 346) this is a crucial aspect of research. To do this, Sartori (1991, p. 246) suggests identifying the various cases, aspects (“properties or characteristics”) that can be compared, and then identifying aspects that cannot be compared: “[t]he gist is - let it be reiterated - that what is comparable is established by putting the question in its proper form, which is: comparable *in which respect?*⁶⁷” (ibid., p. 247). For Steffen (2004, p. 394), it is fundamental to define boundaries and select the policy subsectors that actually fall within the scope of the analysis, taking into account the fact that their organization and institutional grounding may vary between countries. For their part, Baumgartner, Green-Pedersen & Jones (2006, p. 962) suggest a different way of comparing public policies. Rather than finding different cases to analyze, they propose the comparison of “policy dynamics” that looks at a particular policy for a long period of time and compares it to itself at different times during this period.

In any case, to organize the comparison, it is necessary to identify concepts to be compared. Sartori (1991, p. 254) suggests linking the universal to the particular by establishing categories for organizing comparative facts. He states that:

⁶⁵ Own translation.

⁶⁶ Own translation.

⁶⁷ Emphasis in the original

[...] in order to make a concept more general, viz. [sic] of increasing its travelling capability, we must reduce its characteristics or properties. Conversely, in order to make a concept more specific (contextually adequate), we must increase its properties or characteristics (idem).

In the same way, Steffen (2004, p. 397) reminds us, through his own work on the international comparison of AIDS policies, that we need to reduce the multifaceted empirical wealth to homogeneous categories comparable across national policies and to build broad categories for classifying the multiple measures identified. As for the research field work, Hassenteufel (2005, p. 119) draws our attention to the fact that it is crucial to build and use the same analytical grid on the matching types of field work by collecting the identical type of data for all cases.

To conclude the section on the comparison of public policies, I would like to present some of the pitfalls of the comparative approach revealed by my readings. Kaufmann, Jemelin, Pflieger and Pattaroni (2008) warn us that although there are several comparative studies aimed at determining best practices that could be used by public administrations in their development of transport policies, these studies are not truly transferable, as they ignore the conditions of portability specific to each policy. In order to allow for this transferability, they recommend the study of the origins of policies in order to understand their context (idem). Mévellec (2005: 38) states that comparative analysis is a risky exercise, but that these risks are generally comparable to the risks of all social science research. She makes the following recommendation:

As any researcher must always seek to go beyond common sense, so the comparatist researcher must beware of a spontaneous comparison. In both cases, only a theoretical construction of the research object and a stabilized framework of analysis, makes it possible to ensure the scientificity of the approach⁶⁸ (idem).

Hassenteufel (2005, pp. 117–118) warns us against four widespread types of erroneous comparisons, he qualifies them “dummy comparison”, “remote comparisons”, “reductive comparisons” and “biased comparison”. The dummy comparison is that in which is a comparison only by name. It might present many cases, but it fails to actually compare them. The remote comparisons are those in which the researcher has merely compared documentary elements without ever going to the field of research, only remotely being aware of the specificities of each research area. The reductive comparisons are those in which only quantitative comparisons are being made without exploring the reason for the differences. Finally, the biased comparison is that wherein comparison only proves an

⁶⁸ Own translation.

assumption made *a priori* of the research. Although these traps are important, I still consider that it is possible, using an inductive approach, to carry out a comparison that has scientific validity and that advances our understanding of the facts under study. As Steffen (2004, p. 411) states, contrary to what is generally believed, the facts do not speak for themselves, but the detour through comparison can reveal the true meaning of these facts. I also believe that comparisons force the construction of a research object in a clear and precise manner in order to be able, ultimately, to identify the components that will be comparable.

2.3.3 Evidence-Based Policy

Originally a British concept, advanced by the new-labour government, evidence-based policy has been gaining ground since the 1990s (David, 2002; Davies, Nutley, & Smith, 1999; Laurent et al., 2010; Sanderson, 2002; Solesbury, 2001). This progress has mostly happened in Anglo-Saxon countries. According to Laurent et al. (2010, p. 859) evidence-based policy making is not common in French-speaking countries, in part because the concept is hard to translate into French. A study of the Quebec provincial government public servant concurs with the low usage of the concept in policy making as 74% of civil servants that responded to the survey had never heard of it (Bernier & Howlett, 2011, p. 150). This does not mean that Quebec provincial policy makers do not use “evidence”, as the respondents also indicated that they do use various sources of information when formulating policy options, including academic research or industry/other government based scientific results (idem). Their favourite source of policy formulation ideas were from best practices and policy stakeholders (idem).

2.3.3.1 What Is Evidence-Based Policy

There are various definitions of evidence-based policy that range from a broader to a narrower perspective and have evolved over time. For example, Plewis (2000, p. 96) provides a broad definition taken directly from the UK government who initiated the move to evidence-based policy as “policy initiatives are to be supported by research evidence and that policies introduced on a trial basis are to be evaluated in as rigorous a way as possible”. For Davies (2004, p. 3) it is “an approach that ‘helps people make well-informed decisions about policies, programmes and projects by putting the best available evidence from research at the heart of policy development and implementation’ (Davies, 1999)”. He also considers evidence-based policy is opposed to “opinion- based policy, which relies heavily on either the selective use of evidence (e.g. on single studies irrespective of quality) or on the untested views of individuals or groups, often inspired by ideological standpoints, prejudices, or speculative conjecture” (idem). Davies (ibid., p. 2) also reminds us that while

evidence might be taking a relative greater importance in policy making under this approach, policy is not made on evidence alone: “there are things other than evidence that contribute to policy making, and that there are competing types of evidence that are used by policy makers and those responsible for policy implementation and delivery”. Nutley, Walter & Davies (2007, p. 12) later consider evidence-based policy to have become a movement: “a movement that promotes a particular methodology for producing a specific form of evidence: systematic reviews and meta-analyses of robust (often experimental) research studies aimed at assessing the effectiveness of health and social policy interventions”. For Howlett (2009, p. 154) it is an attempt at restructuring the policy process: “[e]vidence-based or ‘evidence-informed’ policy-making represents a recent effort to again reform or re-structure policy processes by prioritizing evidentiary decision-making criteria.” Pawson (2006, p. 22) describes the mission of evidence-based policy making:

As applied social science, evidence-based policy’s mission is to choose an intervention on the basis that it has a reasonable chance of repeating successful outcomes achieved elsewhere. However, this is not achieved by the simple repetition of a winning formula. We know that there are no universal panaceas and no magic bullets in the world of social and public programmes.

Aos et al. (2006, p. 279) use a very narrow definition of evidence-based policy-making. For them the goal of the endeavour is to implement policies that have been demonstrated to work, with a rigorous outcome-based evaluation and a positive return on investment. They describe a process for evidence-based policy making, starting with a systematic review of evidence. This is done by: analyzing the results of all rigorous evaluation in order to determine if, on average, it can be stated scientifically that a program achieves an outcome (*idem*). They also set conditions that are required to be considered evidence-based policy: the policy makers need to consider all available studies and not proceed to “cherry-picking” only the studies that have preferable results (*ibid.*, p. 281). In order to be included as “evidence”, the selected research must include a design providing control or comparison groups (*idem*).

According to Head (*ibid.*, p. 2) the advent of evidenced-based policy use in government is in line with the current focus on efficiency related to the New Public Management (NPM)⁶⁹ principles. According to Balian et al. (2016, p. 382) there is a growing demand for evidence-based policy making. For Howlett (2009, p. 154) evidence-based policy making is yet another attempt at reform with the intent of being more efficient by reducing failures caused by the mismatch between government’s expectations and the reality in the field:

⁶⁹ For more on New Public Management, see (Gruening, 2001; Lynn, 2006; Nosbonne, 2013; Siltala, 2013)

[...] unlike many earlier efforts at improving policy through analysis that did rely on an underlying apolitical, technocratic view of optimal policy-making, evidence-based policy-making represents a compromise between political and technocratic views of policy-making. That is, it relies on the notion of policy-making not as a purely rational affair but as an exercise in pragmatic judgment, whereby political, ideological or other forms of “non-evidence-based” policy-making are tempered by an effort on the part of policy specialists to “speak truth to power”—to present evidence to policy-makers that supports or refutes specific policy measures as appropriate to resolve identified policy problems (Sanderson, 2002; Wildavsky, 1979), but does not attempt to replace their judgment with their own (Head, 2008b; Tenbensel, 2004) (Howlett, 2009, p. 156).

2.3.3.2 Three Types of Evidence

Head (2008b, p. 5) uses evidence-based policy in a broader sense and refers to three intersecting sources of evidence: “political know-how; rigorous scientific and technical analysis; and practical and professional field experience” (see Figure 2:10). According to him, while traditionally what was considered evidence was the result of applied research generated within our outside government, which is too narrow of a definition and has not survived in usage:

As we come to a fuller appreciation of the complexities of modern inter-dependent problems, with a corresponding broadening in the focus of policy attention, it becomes clear that there are multiple forms of policy-relevant knowledge, that are vital to understanding the issues and the prospects for the success of policy interventions (ibid., p. 4).



Figure 2:10 Three Types of Policy Evidence⁷⁰

For the political evidence, Head (ibid., p. 5) considers: “[m]aking contextual judgments about the possible and the desirable are inherent in this form of knowledge. This ‘political’

⁷⁰ Adapted from Head (2008b, p. 6)

form of knowledge inheres primarily in politicians, parties, organised groups, and the public affairs media.” For the scientific evidence, he considers the “systematic analysis of current and past conditions and trends, and analysis of the causal inter-relationships that explain conditions and trends” (ibid., p. 6). This is the work of “professionals trained in systematic approaches to gathering and analyzing information. A concern with the quality and consistency of data is fundamental to a scientific approach to analysis” (idem). The third type of evidence, practical implementation knowledge, consists of the “‘practical wisdom’ of professionals in their ‘communities of practice’ (Wenger, 1998) and the organisational knowledge associated with managing program implementation” (idem). Unfortunately, Head (idem) notices that “[...] practical experience in delivery often tends to be undervalued by the political and scientific sectors”. Cognizant of these various sources of information not being on an equal footing, Laurent et al. (2010, p. 864) adds that when considering the use of knowledge to enact policy, it is important not to abandon the intent to choose the most reliable, the one with the most convincing proof of effectiveness for the specific policy purpose. As such, as long as their efficacy and safety have not been tested, Laurent et al. (idem) do not consider managerial knowledge equivalent to an analysis based on observations constructed according to explicit procedures and for which research has been carried out.

2.3.3.3 *Critiques of Evidence-Based Policy*

For Howlett (ibid., p. 168), this renewed need for evidence in the policy-making process also requires an increased analytical capacity for collecting and analyzing the data required to produce evidence which is not necessarily there:

The weak policy capacity found among most of the major actors involved in policy analysis, even in rich countries like Canada, is very problematic in the context of dealing with the challenges of improving policy-making through the adoption of evidence-based techniques for dealing with complex contemporary policy challenges.

Finally, because of this lack of capacity Howlett (idem) indicates that evidence-based policy might be a disappointment: “[w]ithout prior or at least concurrent efforts to enhance policy analytical capacity, unfortunately, ‘failure may be the only option’ available to governments in their efforts to deal with critical contemporary policy challenges”. Sanderson (2002, p. 19) believes that while the approach might have laudable goals, they might not be realistic and need to be mitigated:

While we can retain some confidence in our ability to understand and explain the behaviour of such [policy] systems, this needs to be tempered with a degree of modesty about what we can achieve. Thus, we need to recognize that policies are essentially 'conjectures' based upon the best available evidence. In most areas of economic and social policy this evidence will provide only partial confidence that policy interventions will work as intended.

Citing Kogan (1999), Sanderson (*ibid.*, p. 5) also adds that while governments may make use of the notion of evidence to legitimize their policy, he fears that they will only do so when it supports their political views. He also fears that while evidence might be used to craft more effective policies, other uses of evidence that are also needed might not surface: “[...] evidence of problems and needs requiring public policy intervention; a better understanding of the specific nature and incidence of social problems is fundamental to improving the effectiveness of policy responses [...]” (*ibid.*, p. 4) as well as “[...] an improved understanding of the problem to be addressed and of the effectiveness of possible policy options will help to inform the deliberations of key stakeholders in the process of setting objectives” (*idem*).

2.3.4 Car Dependence and Public Policy

Having presented the many aspects of car dependence through different ways to define and analyze it, I note that car dependence is a social phenomenon that has individual and territorial components. As such, it is often perceived as a ‘public problem’, and it is not surprising that public policy is interested in this issue. Several authors make recommendations to public decision makers with the objective of remedying car dependence. In this section, I present a brief review of this literature.

2.3.4.1 *Public Policies Are Causing Car Dependence*

Some authors are pointing the finger at public policies for creating societies’ over reliance and dependence on the car. As Wachs & Taylor (1998, p. 18) say, a combination of public policies cause the ever-increasing car dependence. Kaufmann & Flamm (2002, p. 60) agree and state that: “[c]ar dependence linked to the residential location and the independence of family members towards each other are problems which have an obvious territorial dimension and which are largely produced by the public policies⁷¹”. For Gray et al. (2001, p. 116) public administrations are also at fault: “[f]iscal and planning policy at local and national level has provided increased road capacity, while public transport fares have increased several folds in comparison with the cost of motoring”. Lucas & Jones (2009, p. 92) also agree: “[...] planning decisions thereby induce a degree of car reliance, and reduce the opportunities for those without access to a car. This effectively leads to a dynamic of car

⁷¹ Own translation.

dependence within society.” Some authors warn that the policy changes needed will be challenging to implement:

In combination, these factors serve to accord the car a powerful position in society. A policy aimed at making driving more expensive or less convenient will encounter opposition from drivers themselves, car manufacturers, businesses and institutions who have vested interests in car dependence (Gray et al., 2001, p. 116).

2.3.4.2 *Policy Recommendation to Reduce Car Dependence*

A select number of authors warn public authorities that something has to be done about car dependence and call upon them to take action. For example, Lucas et al. (2001, p. 37) state that:

[...] unless the issue of inadequate and over-costly public transport is addressed, even those on very constrained incomes will seek to own cars. Clearly, this is of considerable significance to local authorities in their delivery of the Government’s policies to reduce the number of cars on the road.

But many authors make a long list of suggestions. Dupuy (1999a, p. 4) also warns the public authorities of the difficulty of acting on automobile dependence:

It appears that the organization of society, especially in its spatial dimensions is now linked with the private automobile, so much so that any strong measure aimed at limiting its use would provoke a legitimate revolt, not only of the wealthy, but of the social body as a whole⁷².

This highlights the importance that any solutions to be viable they must therefore be legitimized by public opinion.

For Dupuy, the solution goes through an action oriented on the automotive system. Since dependency derives from the benefits gained by motorists, public authorities must reduce these benefits by working on the three effects (see section 2.2.3.7 on p. 55). In order to reduce the club effect, he suggests encouraging more clubs:

⁷² Own translation.

[...] a relevant policy is to reduce the club effect by reducing the divide between members and non-members. This requires that different categories of drivers be allowed to drive different categories of vehicle, corresponding to different performances and in particular at different speeds⁷³ (ibid., p. 116).

In order to counteract the network effect, he suggests reducing the number of fast roads, while also increasing the number of slower roads: “[t]o reduce car dependency, road networks should have less hierarchical, less tree-like, more connective configurations⁷⁴” (ibid., p. 122). To counteract the park effect, Dupuy suggests changing parking policies, for example, in order to restrict the number of parking spots available (ibid., p. 126).

For their part, Newman and Kenworthy (1989, p. 109) also make policy recommendations that address the causes revealed in their study. For them, it is necessary to ‘redensify’ the city to decrease the automobile dependency. They suggest intensifying land use, opening transport infrastructure to alternative modes (public transport, walking, cycling), restricting the fluidity of high-speed traffic, increasing the level of centralization of the city, and improve the performance of the public transport system (idem).

Sachs (1992, p. 227) calls for a reduction of speed and distances:

In particular, a policy of ease depends on gradually spreading the idea of being able to choose a life without a car without giving up too many advantages. Slower speeds and shorter routes are the preconditions for a new right in freedom of movement namely, the right not to be discriminated against for not possessing an automobile. This right not only protects non-motorized mobility, but also secures a high level of accessibility for the majority that either cannot or does not want to take the wheel. Indeed, this freedom of movement promises even more, for it keeps open the option of living with less money but still pleasantly.

Based on a study carried out in Hong Kong, one of the few cities that resisted the car’s onslaught and the rise in car dependence, Cullinane (2003, p. 32) suggests, among other things, to replace the space dedicated to the car by zones with exclusive use for public transport in order to improve the reliability and speed of the public transport offer and reduce the attractiveness of the automobile. In order to get out of the spiral of motor addiction, Curtis et al. (2009, p. 17) advocate a vast improvement in other forms of mobility:

⁷³ Own translation.

⁷⁴ Own translation.

Thus a city will only be truly moving towards a less car-dependent future if it can: build a rapid transit system down every corridor faster than traffic, and Build centres where walking, biking or a short bus or car trip become the means of reaching urban services as they are local and hence quick to reach

Kenworthy and Laube (1999) present many recommendations for policy makers that I summarize here. On the basis of their empirical results, which show a correlation between a high urban density and a low rate of motorization and a high rate of public transport use, the authors recommend that the public authorities modify the land use planning by increasing density and making room for alternative modes of transport: “[t]hrough awareness of the importance of urban density, an urban region can gradually reshape its transportation patterns by strategically developing areas and centres that are denser, more mixed in land use and more oriented to transit and non-motorized modes [...]” (ibid., p. 719). They also report on the importance of establishing a rail system, as their data shows that, in the US context, collective rail transport reduces automobile dependence: “[t]he data in this study on rail service levels and overall transit use make it difficult to ignore the significance which rail systems appear to have in enhancing the role of transit in cities” (ibid., p. 720).

In order to limit dependence on the automotive system, Urry (2004, p. 33) states that this system needs to be radically changed, because incremental changes will not suffice: “[t]he current car system could not be disrupted by linear changes but only by a set of interdependent changes occurring in a *certain* order that might move, or tip, the system into a new path [...]”. He then presents several solutions that should transform the city in order to reduce the dependence on the automobile system: “[...]an array of political, policy and social transformations, a veritable new urbanity” (idem).

Nevertheless, regardless of the solutions proposed, implementation is far from clear. For Newman et al. (1995, p. 64), the choice of instruments to reduce automobile dependency is difficult because many decision makers do not believe that it is possible to improve the situation: “[w]hat is perhaps the most debilitating part of the debate about which instruments we should be using in our cities is that many contributors believe that no significant change or improvement is possible”.

3

Research Question and Hypotheses



“And which driver is not tempted, merely by the power of his engine, to wipe out the vermin of the street, pedestrians, children and cyclists? The movements machines demand of their users already have the violent, hard-hitting, unrelenting jerkiness of Fascist maltreatment.”

Theodor Adorno (1951/2005, p. 40)

Having presented the three research fields onto which is grafted our thesis research, namely the urban and mobility studies, transport geography and public policy approaches, I now call upon these three research fields in order to formulate specific research questions and hypotheses. While these three areas are the subject of very stimulating and innovative research, it is nevertheless true that they have little dialogue, because they are enshrined in different research traditions. This research aims at bridging some of these variances by combining tools from the three fields in order to examine the situation of car dependence and mobility-related social exclusion.

I approach this doctoral dissertation research project from the perspective of critical theory. Convinced, as Horkheimer (1968/1982) was, that social sciences, albeit very different from natural sciences, have an important societal role to play. My motivations are not only theoretical, but also encompass an ulterior motive; participating in the construction of a better society, adding my (very) little building block to the edifice of a social science with a goal of “man's emancipation from slavery” (ibid., p. 246). One can perceive modern society's car dependence as a form of slavery, where the car, far from liberating us with its gift of mobility, has rather jailed us within its confine, separating us from our fellow urban dwellers. Or as Richard Sennett (Sennett, 1977/2002, p. 14) theorizes it as a form of individual isolation:

[...] as one can isolate oneself, in a private automobile, for freedom of movement, one ceases to believe one's surroundings have any meaning save as a means toward the end of one's own motion, [...] a] brutal sense of social isolation in public places, an isolation directly produced by one's visibility to others.

I am aware that such an endeavour, trying to understand car dependence and identify ways to counteract it, especially for those it socially excludes seems too “value ridden” an effort to pass as science. Yet, I am undertaking this project with the purpose of obtaining the EPFL *Doctor ès Science* degree. And to those, who would criticize any social science that is not completely objective, I will call to mind the words of Horkheimer (1968/1982, p. 248):

Professional scholars, eager to conform, may reject every connection of their disciplines with so-called value judgments and firmly pursue the separation of thought and political attitude. But the real wielders of power in their nihilism take such rejections of illusion with brutal seriousness. Value judgments, they say, belong either in the nation's poetry or in the people's courts but certainly not in the tribunals of thought. The critical theory, on the contrary, having the happiness of all individuals as its goal, does not compromise with continued misery, as do the scientific servants of authoritarian States. Reason's intuition of itself, regarded by philosophy in former times as the highest degree of happiness, is transformed in modern philosophy into the materialist concept of a free, self-determining society, while retaining from idealism the conviction that men have other possibilities than to lose themselves in the status quo or to accumulate power and profit.

I also refer to the critical theory because as Dryzek (2006) affirms, policy analysis is a critical activity intent on finding ways to make policy better. He portends that “[a]ll policy analysis should have a critical component, if only to establish that the social problem at hand is not defined in such a way as to advantage particular interests in indefensible ways” (ibid., p. 190). Parallel to my purpose, the author even uses the example of public transit subsidy to present his case: “[...] public transport systems that serve wealthy suburbs while bypassing the urban poor” (ibid., p. 192) are all arguments calling for a critical policy analysis. I intend to use this inspiration to formulate a research project encompassing these ideas.

My general objective is to broaden and deepen the knowledge generated by the existing research regarding the situation of non-motorized households and understanding the car dependence and social exclusion related to mobility. My objectives are exploratory, explanatory and recommendatory. The exploratory dimension of the research is my attempt at mapping the terrain of policy discourse on car dependence and mobility-related social exclusion. The emphasis is on highlighting the contradictions between and within policy documents, discourse of local civil servants and members of non-motorized households. The explanatory side of the research attempts to reveal the links between car dependence, the local environment, transport policies and social exclusion. While the recommendatory nature of the research intends to produce clear and practical policy recommendations for reducing social exclusion related to mobility. This third aspect originates before I undertook the data collection phase (interview) as this project is clearly intended to participate to the emancipation role of social sciences. Nonetheless, this was also reinforced during the fieldwork with non-motorized households (NMH), especially in Quebec City as respondents there felt that the voice of a scientist carried more weight than their own in the policy process. They have looked to me to take on the role of a “spokesperson” when discussing issues with local authorities.

There are a number of research conducted on car dependence. [For example, from a geography perspective see: (Coutard et al., 2002; Dupuy, 1999a; Halleux & Lambotte, 2006; Motte, 2006; Petit, 2007), from an urban studies perspective see: (Cervero & Gorham, 1995; Kenworthy & Laube, 1996; Newman & Kenworthy, 2006; Villeneuve, 1971), but apart from the example of Lucas, Grosvenor and Simpson (2001), they do not directly explore the link between social exclusion and car dependence. I also deplore the fact that little research focuses on non-motorized households. As Featherstone (2004, p. 1) recalls, flows and mobility represent important segments of social life and even as the dominant form of mobility, car mobility remains a subject mostly neglected by sociology research. While studying car dependence, my research project is a response to this denunciation. The research aims to explore the relationship between car dependence and social exclusion to those who are more or less excluded from car mobility, the non-motorized households. My research aims to fill these gaps by comparing two different urban areas across two continents and is guided by two specific objectives:

1. Document car dependence and compare its prevalence in different regions of North America and Europe and analyze the public policies related to it in order to explain why the social dimension of mobility is neglected in policy making and its effects underestimated.
2. Increase knowledge on the situation of non-motorized households to better understand their perceptions concerning car dependence and the potential social exclusion related to it, while coming to understand their daily mobility practices and expectations of public authorities as well as investigating gender-based differences.

With these objectives in mind, I have structured my research by asking a series of specific sub-questions in order to attempt answering the larger issues proposed by it. The initial research interest which motivated this Ph.D. project was inspired by personal observations and curiosity. Having travelled once or twice a year to Dublin, Ireland from 2001 to 2007 for work reasons, I noticed how the city evolved dramatically and the mobility habits of my co-workers changed accordingly with the creation of the LUAS light-rail system connecting the downtown area and its surrounding suburbs and industrial parks. The new light rail line seemed to have led to a renewed interest in active and alternative mobility as experienced by my colleagues coupled with a distinct reduction in motorized traffic in the centre of the city. These observations of decreased car use sparked my interest in the effect that structuring public transit projects can have. While studying at the University of Ottawa and often visiting my parents in Quebec City I also noticed how much harder it was to be without a car in the later and wondered how people who had no car could ever navigate in

that city. The combination of these two insights lead to the development of this research project. However, I initiated the project with research objectives rather than specific research questions and hypotheses. I ascertained that, following an inductive process (Blais & Martineau, 2006; Villemagne, 2006) I would learn about the situation of car dependence through the lenses of non-motorized households and that through increased knowledge, I would let the field work, reveal interesting questions to me. Thus, I started my initial round of field work in Quebec City and Strasbourg, interviewing members of non-motorized households and reading public policy documents with these broad objectives in mind and a rather general main research question: **“What are the roles and impacts of car dependence, public policies and the architecture of the city on mobility-related social exclusion”**.

Another significant theme underscores my initial questioning. While I have a strong interest for mobility and public policy research in general, I also have a research interest regarding the gendered effects of public policy and gender differences in mobility. I became familiar with the gendered effect of public policy while taking the *“Rapport sociaux de sexe et politiques publiques”*⁷⁵ class given by Manon Tremblay at the University of Ottawa. My interest in this topic comes from years of work as a research assistant with professors Anne Mévellec and Manon Tremblay while preparing their book⁷⁶ [see (Mévellec & Tremblay, 2016)] on the political sociology of gender differences and professionalization in municipal councils or large and medium cities in the Province of Quebec. Throughout my analysis of policy documents and interviews with NMH, I explore potential differences between men and women related to their perception of the problems the solutions they specifically resort to for their daily mobility as well as potential effects that would differ between the genders, hence what I refer to as gendered policy effects or the gendered effects of car dependence on NMH. I share this specific research interest in mobility and gender with many researchers as multiple studies have related the difference in mobility between men and women [for examples, see (Coutras, 1997; Crane, 2007; Kwan, 1999; Vincens et al., 2007)] and this question remains an undertone throughout the research.

Prior to presenting the research questions and hypotheses, I will address the paradox of studying car dependence with those who have no car. When I initially prepared this project for funding purposes, I wanted to further the understanding on policies for “transit dependents”. This social category was well defined in research (Bochner & Stuart, 1978; Dill,

⁷⁵ Translated to English: Social Gender Relations and Public Policy (Own Translation).

⁷⁶ The book is titled in French “Genre et professionnalisation de la politique municipale: un portrait des élus et élus du Québec” Or in English: Gender and Professionalization of Municipal Politics: A Portrait of Quebec’s Aldermen and Alderwomen (Own Translation).

2013; Garrett & Taylor, 1999; Grengs, 2005; Wells & Thill, 2012), although relatively limiting as it confines individuals within a single mode choice, public transit. I found this to be problematic as it seemed unrealistic that people would be confined to a single transport mode. I found a solution to this conundrum in the literature on alternative mobility. Individuals are not just considered “transit dependent” any longer as research has recognised that often, other solutions do exist, especially active mobility in the form of walking and cycling (Clewlow, 2016; Lanzendorf & Busch-Geertsema, 2014; Mahmoud, El-Assi, Habib, & Shalaby, 2015; Smiley, Rushing, & Scott, 2016). Since my definition of car dependence related to the territory and not only the individuals, it made sense to explore car dependence with those who would most strongly feel the effects of not being part of the “car club” as referred by Dupuy (1999a). In essence, the non-members of the clubs are the non-motorized households, thus generating the particular interest in better furthering the knowledge of these households. I also find that the term “non-motorized household” is much less negative/pejorative than the term “dependent” which implies a negative depiction, similar to the lexical move from the term “disabled” to the “persons with disabilities” rhetoric. A member of a non-motorized household is just that; he or she still has choices and is able to use many other modes of transport. With the advents of the car-sharing systems, a number of non-motorized household can also use the car via car-sharing. I find this turn much more useful and precise than “transit-dependent”. I also decided to limit the research to non-motorized households instead of also including low-car households in the sample because as the literature has found they often exhibit similar behaviours but NMH face a more complete lack of access to the car which made the comparison between genders and urban areas easier to implement.

In order to stay true to the inductive nature of my research process, before meeting the first non-motorized households, I had identified topics of discussion, yet I had no specific research questions, nor a strict interview protocol. After a few interviews, specific questions emerged and I formulated a semi-directed interview protocol in order to generate similar and comparable content from both groups of NMH in Quebec City and Strasbourg. In parallel, some of the quantitative research questions stem from my initial analysis of the Origin-Destination survey data from Quebec City and Strasbourg, following a semi-inductive process where I aggregated the data in many ways in order to grasp the differences between urban areas, being motorized or not and being a man or a woman. I also believe that urban planning, transport systems and social policies play a role in either curbing or increasing car dependence and the potential social exclusion that can be associated. From this outlook, I accordingly compare the policies from both urban areas.

In order to fully explore my question and organize the presentation of the research, throughout the qualitative analysis, I have elaborated eight sub-questions each addressing a specific aspect of the main question that emerged from the initial data analysis. This chapter is devoted to presenting all these questions and describing how they relate to the main research question and objectives.

Finally, it is important to note that throughout my progress on this research project, these initial questions were refined based on findings in my field research. Throughout the process, I also paid special interest in the observation of differences between men and women related to car dependence. I also focused on the gendered effects of public policy, which can have positive or negative repercussions for men and women. After my initial readings of policy documents and the first NMH interviews, I also noted my expectations regarding the answers to these questions. I present those expectations as hypotheses here, after the fact, in order to facilitate the communication. Further in this dissertation, I will also use this structure to present and discuss my findings.

3.1 Why is a Household Motorless?

If we assume that western cities are, to varying degree car dependent, then the first arising question when thinking about non-motorized households in our car dependent cities is; why? What would lead the various individuals forming a household to live without a car? Is this really a choice or are non-motorized households only so because they have no choice? This refers back to and tries to overcome the restrictions of the literature on “captive riders vs choice riders” (Jacques, Manaugh, & El-Geneidy, 2013; Jin, Beimborn, & Greenwald, 2004; Zhao, Webb, & Shah, 2014) where the non-motorized appear to be without a choice. I question the validity and usefulness of these categories as ideal-types. This question of choice or constraints comes to mind and relates directly to my second objective. In order to explain why a household is carless, I have a few hypotheses:

My first hypothesis is that as was the case with “transit-dependents” and “captive riders” some non-motorized households have a limited choice; they don’t own one, not by free will to do so, but due to varying constraints. The constraints could vary: lack of financial means, health issues preventing the operation of a car, or judicial issues such as being too young to drive or not having a driver’s licence. Previous research by Koutsopoulos and Schmidt (1986) cited by Vandersmissen, Thériault, & Villeneuve (2004, p. 490) stated that: “[...] individuals without access to an automobile include significant segments of the following social groups: the elderly, the young, the poor and the handicapped”.

However, upon reflection, being motor less can also be a choice, hence theorizing that this is the case for some. In line with that thinking, my second hypothesis is that some households are non-motorized by choice. This could be that they subscribe to concepts of back-to-basics or willed simplicity. Their environmental values could also influence their decision to forego the car in order to avoid emitting greenhouse gas and other pollutants and high energy use synonym with car mobility.

The answer probably lies somewhere between the two but I will use various sources of information in order to resolve this question and elucidate why some households do not own a car. First, I discussed this question directly with the non-motorized households that I met with in Quebec City and Strasbourg⁷⁷. I found out why they did not own a car and requested that they rate, on a scale from 1 to 10, how much of a choice or a constraint it was. Going from 0 at one end meaning absolute constraint, they would have to give up essentials (e.g. use the grocery money to keep the car) in order to afford a car, to 10, absolute choice where even if they had complete financial freedom, they would decide not to own a car. I also discovered the circumstances that led them to be without a vehicle.

3.2 How Do Non-Motorized Households Cope With the Absence of a Car for Their Daily Mobility?

Once I understand how households decide or are forced into not owning a car, the next line of questioning is in regards to their daily mobility. How do they get to work or run errands? How do they visit their family and friends? How do they go to the doctor? Is it any different than motorized households? This very question entails many sub-questions. What solutions do they put in place by themselves, what other modes of transport do they rely on? What public policy is useful to them in their daily mobility? This entire questioning is also related to my second objective. Once again I made a few hypotheses regarding these questions:

Since they cannot mainly rely on the car for their daily trips, non-motorized households (NMH) must rely more on other modes of transportation. I posit an increased modal share for public transit, cycling and walking and a lesser share for the private car when compared to motorized households (MH). I hypothesize that individuals from NMH still use the car in many different ways.

For the purpose of the research car use by NMH is referred to in several ways, depending on who owns and who drives the car. I use the following terms to define NMH car use:

⁷⁷ See questions 2 and 3 in the NMH interview protocol in Appendix 1 on p. 560.

- Borrowed car: Individuals from NMH use a car borrowed from a friend or relative and drive it themselves.
- Car-sharing: Individuals from NMH rent a car from a car-sharing scheme (e.g. Zip cars) which they have joined and drive it themselves.
- Carpooling: Individuals from NMH join a carpool as passengers. This can be organized by web services (e.g. Bla Bla Car) or by more informal means such a workplace schemes.
- Car rides: Individuals from NMH join a friend or relative for a ride in their car as a passenger, similar to a carpooling but completely informal.
- Rented car: Individuals from NMH rent a car from a car-rental company (e.g. Avis or Budget) and drive it themselves.
- Ride-sharing: Individuals from NMH hire a ride from a ride-sharing schemes (e.g. Uber or Lyft) as a passenger.
- Taxi: Individuals from NMH hire a taxi for a ride as passengers.

Relying on some public transit routes to get to work or using a bicycle lane to ride to visit friends are both products of mobility policies. I believe that non-motorized households rely on multiple public policies that are not necessarily designed with them in mind. I also hypothesize that there exist differences in terms of mode use, number of trips and distance travelled between men and women. Such differences also occur for motorized households, but I believe they are more pronounced when access to the car is more limited, as is the case for non-motorized households.

In order to verify these hypotheses, I will use the discussion I had with non-motorized households in the two urban areas pertaining to questions 7 to 14, regarding their daily mobility as well as questions 19 and 20 pertaining to public policy. I will also use the origin-destination survey (OD survey) data to calculate mode share, distance travelled for MH and NMH and compare the results. Finally, I will also use the gender variable to compare at the individual level using these data sets for the four cities in the sample.

3.3 Is Car Dependence a Public Policy Problem?

Car dependence is an essential subject of the research. I used the literature to understand the phenomena and will use various data sources to compare its prevalence in my two study areas. However, is car dependence a public policy problem? I wonder what local civil servants working on transport mobility think about it as well as non-motorized households. This question relates to my first objective aiming to further our understanding of car dependence. I think that although they do not possess a car, members of NMH find car

dependence problematic because it makes their daily mobility harder and creates environmental problems. I also think that local civil servants working on transport policies find car dependence to be a problem. Being charged with the burden to attempt to deliver high quality public transit in a sprawling area is very costly and troublesome for local authorities. I also think that the road congestion linked with car dependence is considered a complication by local authorities for its negative economic and quality of life repercussions. I expect public policy documents to also reflect that car dependence is considered a problem as suggested by Gray et al. (2001, p. 115).

Alas, even if I expect policy to establish car dependence as a problem, I don't believe that policies address it directly as such. For example, I expect policy to attempt to address the negative repercussions of car dependence such as increased road congestion, but not to address the root causes behind the problem. As Dupuy (1999b, p. 12) states, even if governments intended to address the situation directly and reduce car use, such policy would be hard to accept. Fol, Dupuy, & Coutard (2007, p. 814) also suggests that policy makers take a more socially acceptable measure for this reason. I do not expect any difference in the perception of car dependence as a problem between genders. I hold that men and women find it to equally be a problem.

In order to test this series of hypotheses, we will rely on our interview with NMH (questions 1 to 3) and local civil servants (questions 4 to 8) as well as policy document analysis.

3.4 Are Members of Non-Motorized Households Feeling Socially Excluded Related to Their Mobility?

My next research question pertains to the social exclusion related to mobility as felt by NMH. As I presented in the literature review, research has established a link between lack of mobility and social exclusion. I would like to find out if living in a carless household in car-dependent environment leads to feelings of social exclusion. This question relates to my second objective, aiming to better understand the situation of NMH.

Since this issue is initially at the core of my enquiry into non-motorized households, I evidently expect that some members of non-motorized households are feeling socially excluded in relation with mobility partly because they don't own a car. I use this line of questioning during the interviews to understand the causes behind this feeling and what are the differences between those that do feel it and those that do not. My subsequent hypotheses follow this logic.

My first hypothesis in attempting to explain the causes of mobility-related social exclusion for non-motorized households lies in a lack of accessibility to work, education, health, leisure and shopping related destinations caused by the fact of not owning a car, leaving members of NMH to feel socially excluded. Other authors have come to similar conclusions while not questioning gender differences directly or variances between various revenue groups in mobility-related social exclusion. See Cass et al. (2005), Jeekel (2014) or Stanley et al. (2011) for example.

I also posit that the feeling of being socially excluded related to mobility will be expressed and felt differently by men and women. I think that women are more likely to feel socially excluded than men when related to mobility. I believe that different revenue groups, moderate, intermediate and revenue lifestyle groups based on revenue per household unit of consumption will perceive mobility-related social exclusion differently. In particular, I expect moderate groups to experience it more and members of the affluent group to experience it less.

In order to answer this research question, I will refer to my discussion with NMH about social exclusion (question 24 and 4, 5, 6). Unfortunately, OD survey data does not include information on social exclusion and, if possible, I will have to use proxy variables from the available data set in order to also test these hypotheses using the OD survey data. In conjunction, I will use my qualitative analysis of policy documents to verify the hypotheses related to the role of public policy.

I hope to discover if the level of car dependence and local accessibility to amenities and equipment, what I call the local territory, affects feelings of being socially excluded reported by some NMH. I hypothesize that there is a correlation between the land planning of the urban area where the households live and their feeling of social exclusion. As suggested by Jain & Guiver (2001) and Gray, Shaw, & Farrington (2006), I think that the greater the car dependence of a territorial unit, the greater the mobility-related social exclusion will be for NMH.

I believe that residential location has an impact on the feeling of being socially excluded related to mobility for NMH due to the various levels of access to amenities and equipment in the neighbourhood of the residence as Kenyon, Lyons, & Rafferty (2002) suggests. It is simple to imagine that living in a neighbourhood with good access to public transit combined with an efficient walkability (availability of sidewalks, cycling trails, few barriers to walking like highways) would decrease the feeling of being socially excluded whereas

living in a neighbourhood with little access to public transit or low walkability would increase the propensity to feel socially excluded.

3.5 To Whom Are Mobility and Social Exclusion Public Policy Addressed?

In pursuing my quest to analyse public policy regarding car dependence, I investigate the target population of such policies. As Warin (1999) exposes, target populations in public policy presents an interesting line of questioning. As such, I wonder to whom are mobility public policy addressed. Who is the target population of such policies? This research question aids my attempting to understand the situation of NMH, as policies are probably not targeted towards them which can be part of the mechanics of mobility-related social exclusion that I aim to explore under my second objective.

As suggested by many authors, for example Koutsopoulos & Schmidt (1986), Grengs (2005) and Le Breton (1999), I believe that, in general, mobility policies are targeted towards the car-owning commuters, making trips back and forth between their home and their workplace and suffer from divergent objectives either prioritizing on economics or social aspects. I also believe that policies do not directly address the situation or specifics of NMH as demonstrated by Manaugh (2013) and Mattioli (2014, p. 396).

I will use my qualitative and lexicometric analysis of policy documents in order to identify whom mobility and social exclusion policies are addressed to. I will also use my interview with local civil servants (questions 10 to 12) to address this question with them and see if they consider NMH when developing policies. Finally, I also contemplate this question from the perspective of NMH; do they think policies are addressed to them?; by referring to my NMH interviews (questions 19 and 24).

3.6 What Policy Evidence Are Used in Transport Policy Decisions?

Referring to the literature on evidence-based policy (Badland & Schofield, 2005; Howlett & Newman, 2010; Maclure & Potashnik, 1997), I wonder what evidence is used in developing transport policies and if any NMH data is part of that evidence. I will try to verify the following hypotheses regarding this question:

I will attempt to see if the use of policy evidence can be characterized for the two urban regions or for the four orders of government included in the policy corpus. I imagine that each administration will have its own set of evidence to use when formulating transport related public policies. In order to verify this, I will use the policy document and

lexicometric analysis as well as my interview discussions with local civil servants (question 9).

3.7 What Is Needed to Improve the Mobility Situation and Reduce Social Exclusion of Non-Motorized Household?

Finally, it all comes back to my initial intent of acquiring more knowledge on the situation of NMH and the social exclusion they might face. Consequently, my very last question is about figuring policy options that might render mobility policies more equitable and inclusive towards NMH. This research question is related to both objectives, aiming to look for ways to improve public policy as they relate to NMH and car dependence. By answering this question, I will attempt to create useful policy recommendations for practitioners based on the analysis of the data gathered during the thesis project.

I believe that new policies can be created by local authorities in order to improve the daily mobility of NMH and potentially reduce their mobility-related social exclusion. While creating new policy is an option, improving already existing policies is also a possible way to enhance the day-to-day mobility of NMH and potentially reduce their mobility-related social exclusion. Finally, I believe that by aligning policy objectives with the vision of a perfect world as expressed by NMH, policy can be made to further improve the daily mobility of NMH while potentially reducing their mobility-related social exclusion.

Following on my intentions to use a bottom-up approach to public policy whereas the ideas of everyday citizens experiencing mobility challenges are sought to improve public policy, I will answer this research question by referring to the NMH interview material (questions 15–16, 19–23). In order to elaborate I will also use the civil servants interview material to contribute to answering this research question as well as the analysis of existing policy documents from both urban areas.

An aerial photograph of a European city street, likely in France, showing a mix of historic and modern buildings. A large, semi-transparent white number '4' is overlaid on the left side of the image. The word 'Methodology' is written in white text in the upper right quadrant. The scene is captured from an elevated perspective, looking down onto a busy street with many people and cars. The lighting suggests late afternoon or early morning, with long shadows and warm tones.

Methodology

“Much 'social life' could not be undertaken without the possibilities of the car and its 24 hour availability. It is possible to leave late by car, to miss connections, to travel in a relatively timeless fashion. Automobility thus irreversibly set in motion new flexible socialities, of commuting, family life, community, leisure, the pleasures of movement, its significance in youth culture and so on.”

Kingsley Dennis & John Urry (2009, p. 40)

As I presented the collection of my research questions, I linked each to the objectives it attempts to fulfil. I also briefly stated which methodological tool was enabling me to answer each question. In this chapter, I present the methodology, beginning with the selection of the study areas, followed by the presentation of the mixed method approach that I use, and finally delving into each specific component of the methodology as deployed.

4.1 General Plan

As part of a comparative project, the methodological apparatus is of primary importance (Hassenteufel, 2008). It is composed of three sequences. This is a first step to identify the subject of comparison (variables / indicators) through a detailed review of the literature on car dependence, non-motorized households and public policy (presented in chapter 2 on p. 11). I then conducted a case study in the first two urban areas. These case studies are based on semi-structured interviews conducted with representatives of non-motorized households. The interview discussion aims primarily to grasp mobility practices and problems encountered as well as mobility-related social exclusion to determine its causes. They also allow a better understanding of perception and evaluation of existing policies specific to each city and the problems perceived by non-motorized households.

As Mangen (2004, pp. 313, 315) specifies, the combination of various methodological tools implemented for my research is entirely appropriate for an international comparison of public policies. He recalls the advantage of qualitative methods to capture significant differences in the comparison of public policies: “[b]y eschewing top-down, highly aggregated analyses that prioritize parsimony at the cost of meaning – a bias in too many global quantitative strategies – qualitative methods offer the possibilities of bottom-up, open-ended, flexible and exploratory formulae for understanding phenomena in different environments” (ibid., p. 307). I consequently decided to use a mixed method approach.

4.2 Field Research Urban Areas

Having presented the general plan for the research, I will proceed with a brief presentation of each field work area, as well as the reasoning behind the selected urban areas.

Although globalization plays a unifying role in urbanization, historical differences in the older models of urbanization in European cities compared to North American cities continue to exert weight in the contemporary urbanization process; for example, the very different density levels typical of North American and European cities. Similar to what policy analysts call path dependence (David, 1985; North, 1990; Pflieger et al., 2009; Pierson,

1993), urbanization is relentlessly leading to urban sprawl, increasing at each stage of development the weight of previous public actions (Atkinson & Oleson, 1996; Low & Astone, 2009; Low, Gleeson, & Rush, 2005).

Several criteria have aided in the selection of these two urban areas. Inscoring this project in a Weberian tradition of comparison (Ragin & Zaret, 1983), I identified the ideal types based on general concepts that we relate through the comparison. As Weber says, the ideal types are essential for the comparison: “[... ideal types] are used as conceptual instruments for comparison with and the measurement of reality. They are indispensable for this purpose” (1949, p. 97). I have identified several criteria that may influence car dependence and would be interesting to compare.

As a result, I used a combination of criteria: the continental geographical context, the type of technology used as the backbone of the public transportation system. For each criterion, I developed contrasting ideal types. The ideal types used for comparison are:

- North American agglomeration | European agglomeration
- Tram agglomeration | Bus agglomeration

Consequently, I selected metropolitan areas that could well be associated to each of our ideal types. In order to facilitate the field work and increase the likelihood of success, I had to choose two cities for which I either had a personal understanding of the territory or easy access to researchers familiar with the area. Moreover, access to data such as origin-destination surveys was also crucial in the selection of the two cities. Additionally, since my ideal types are very different and could be thought of as opposite ends of a continuum, I also wanted to involve contrasting situations and different, even divergent public policies of mobility in order to perceive the various implications for non-motorized households.

In order to directly access and in order to analyze the policy documents as well as to directly discuss with participants directly in their own language without the need of going through an interpreter, I limited the selection to English-speaking or French-speaking cities. This also allows me to discover if public policies of geographically remote but linguistically similar community have similarities or whether these similarities are rather related to the continental geographical context. Using cities with the same language also allows to perform the similarities and specificities in the lexicometric analysis software for the two urban areas together allowing for more complete comparison within the analysis.

I chose Quebec City (Canada) for North America and Strasbourg (France) for Europe, two French language speaking urban areas. Being originally from and having grown-up in

Quebec City, I have a detailed knowledge of the territory, the history and the policies implemented in that city. The Urban Sociology Laboratory (LaSUR) in which I carry out this research harbours expertise on the Alsatian capital, having repeatedly collaborated on research projects for this town. Several fellow researchers in the lab, some from Strasbourg themselves, could enlighten me to better understand the territory. Both area's geographical position, one in North America and one in Europe, fits well with my geographical ideal type. In addition, the two cities are secondary capitals; Quebec being the capital of the province of Quebec, a federated state within the Canadian federation and Strasbourg, the Eurométropole being the host of the European Parliament, the legislative capital of the European Union. For their transit networks, both cities also correspond to my ideal types of public transportation backbone technology choice; Quebec City, with a transit system exclusively using the bus, with the Métrobus as the backbone, and Strasbourg relying on its network of modern trams criss-crossing the centre of the city and a source of local pride and city identity.

Following further analysis and comparison of these two cases during the first phase, a third comparative ideal type seemed to reveal itself and forced itself into the selection criterion for the second phase of field work. Indeed, following the initial analysis of mobility policies and interviews with non-motorized households, it seems that the direction of transport policies is quite different between the two initial cases. In Quebec City, I find that public transport is at the centre of these policies, while active mobility⁷⁸ takes centre stage in the case of Strasbourg, contrasting once again the two ideal types around the two cities of phase one. In response, I added a criterion to the ideal type: policy focussing on public transit | policy focussing on active mobility in the selection of cases for the second phase.

4.2.1 Criteria for the Selection of Urban Area

Ultimately the ideal types for comparison include the following criteria:

- North American agglomeration | European agglomeration
- Bus based transit agglomeration | Rail based transit agglomeration
- Public transit policy focus | Active modes policy focus

4.2.2 Selected Urban Areas for Investigation

When combining each ideal type, Quebec City and Strasbourg are representative of the opposite of each criteria. I combined these ideal types four ways in order to obtain two

⁷⁸ Active mobility corresponds to the so-called "active" modes of transport because the individual must take action in order to be moved thus it includes walking and cycling.

different types of urban areas to investigate and compare. Figure 4:1 shows how these urban areas fit in the spectrum associated with each ideal type.

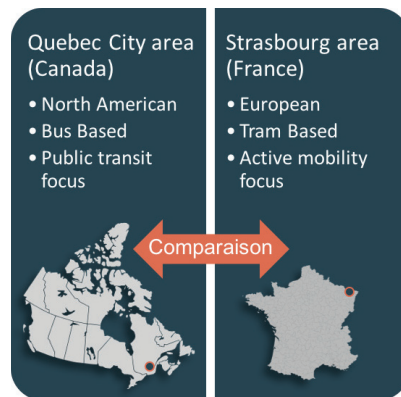


Figure 4:1 Research Fields and Ideal Types

4.2.3 Overview of the Two Urban Areas Under Study

While the three ideal types are vital in the selection of the areas to investigate, other criteria also merit a comparison, for example population density or size of the urban area. Table 4:1 presents a summary of these different values for each urban area.

		Quebec City, Canada	Strasbourg, France
Population	City	540 994	274 394
	Urban area	806 400	473 375
	City/Urban area ratio	67%	58%
Surface area (km²)	City	453	78
	Urban area	9 500	315
	City/Urban area ratio	5%	25%
Density (residents km²)	City	1 192	3 535
	Urban area	79	1 498
Cycling	Bike-sharing system	No	Yes
	Part of cycling network on grade separated right of way	Very little	Vast majority
	Length of cycling network (km)	n/a	560
Public transit	Public transit backbone	Bus	Tram
	Suburban rail	No	Yes
Mode share	Car (all motives)	80%	60%
Motorization	Number of cars per 1'000 inhabitants	651	550
City parameters	Pedestrian streets	No	Yes
	Regional capital	Yes	Yes
	University in the city	Yes	Yes
	Snow in winter	Yes	Yes

Table 4:1 General Overview of Urban Areas

In the following sections, I briefly present each urban area's urbanization history as well as the main characteristics of their transportation systems. Table 4:2 shows important characteristics of the area.

4.2.3.1 Quebec City: Proud Capital and Bastion of l'Accent d'Amérique!



Figure 4:2 Photo of Quebec City seen from *Autoroute Laurentienne*⁷⁹


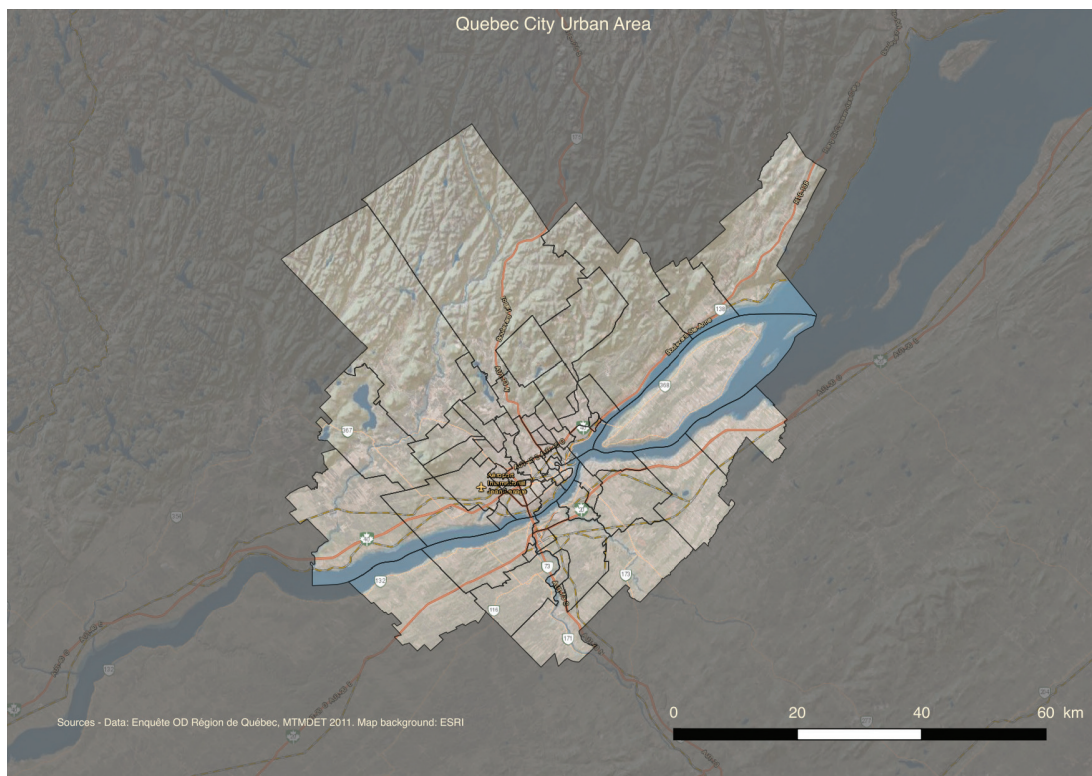
Quebec City, Canada		
	Continental area	North American
	Public transit backbone	Bus only backbone
	Language community	French speaking
	Mobility policy focus	Public transit focus
	City population	274 394
	Urban area population	473 375
	City area	453 km ²
	Urban area	9 500 km ²
	Car modal share	80%

Table 4:2 Quebec City Attributes

⁷⁹ Photo credit: Judicieux. (2014). *Autoroute Laurentienne (extrémité sud)*. Retrieved from [https://commons.wikimedia.org/wiki/File:Autoroute_Laurentienne_\(extrémit%C3%A9_sud\).jpg?uselang=fr](https://commons.wikimedia.org/wiki/File:Autoroute_Laurentienne_(extrémit%C3%A9_sud).jpg?uselang=fr).



Map 4:1 Quebec City Urban Area

Quebec City is the capital of the province of Quebec in Canada. It is located on the north shore of the Saint-Lawrence river (see Map 4:1). The city was first founded in 1608, making it one of the oldest cities in North America. Before European settlers arrived, the area was populated by Aborigines (Vallières, 2015). The first European settlers were from France, which explains why the local population still speaks French today and uses the Napoleonic civil code, a tribute to the cities' French heritage. The provincial government's considerable growth in the period of 1960 to 1980 had a strong influence on the city's growth and urbanization process (*idem*). The city's historic centre known as "Vieux-Québec" is well maintained and protected under heritage preservation laws. The City's fortifications, unique in North America, are part of United Nation's World Heritage Sites.

The urban area's economy is diverse, but a few sectors are key to its vitality as they concentrate the bulk of employment: "public administration, defence, the service industry, insurance, commerce, and transport" (*idem*). In 2000, the city governance was radically transformed as the provincial government imposed a merger between the city and its neighbours on the north shore of the Saint-Lawrence river. The new city formed originally encompassed the old areas of Quebec City as well as Sainte-Foy, Beauport, Charlesbourg, Sillery, Loretteville, Val-Bélair, Cap-Rouge, Saint-Augustin-de-Desmaures, L'Ancienne-

Lorette, Saint-Émile, Vanier and Lac-Saint-Charles. However, in 2002, both Saint-Augustin-de-Desmaures and L'Ancienne-Lorette left the city and demerged as a result of a referendum. In 2006, a new agglomeration was created by the government of Quebec joining the 2 demerged cities and the merged Quebec City. The members of the agglomeration are also part of the larger metropolitan council called the Communauté métropolitaine de Québec (CMQ), regrouping 28 cities and forming a 9 500 km² metropolitan area home to 787 219 people (CMQ, 2016). The CMQ is responsible for, among others, the regional land planning and economic development.

Quebec City is criss-crossed by a major highway system consisting of three main North-South links⁸⁰ and two main East-West links⁸¹. The city has two train stations⁸² on the Canadian federal passenger railway system called Via Rail Canada, offering intercity connections on the Quebec-Windsor corridor. The city boasts the second largest public transit system of the province, second only to Montreal. The Réseau de transport de la capitale (RTC) operates a bus only network comprised of 868 km of routes, 65 km of which is on reserved bus lanes, using 575 buses⁸³ to service 4 534 stops (RTC, 2016). The city also has an international airport as well as a major port.



Figure 4:3 801 Metrobus on a Cold Winter Day⁸⁴



Figure 4:4 The Electric "Écolobus" in Vieux-Québec⁸⁵

⁸⁰ Autoroute Laurentienne, Autoroute Robert-Bourassa and Boulevard Henri IV

⁸¹ Autoroute Félix-Leclerc and Boulevard Charest

⁸² Gare du Palais in downtown Quebec City and Sainte-Foy in the suburban area.

⁸³ See Figure 4:3 and Figure 4:4 for examples.

⁸⁴ Photo credit : Villeneuve, D. (2015a). *Photo du Métrobus 801 à l'Avenue du Zoo.*

⁸⁵ Photo credit : Villeneuve, D. (2014). *Photo de l'Écolobus dans le Vieux Québec.*

Strasbourg : the Eurooptimist

Having presented some of the characteristics of the Quebec City area, I hereby present Strasbourg urban area's history of urbanization and the main characteristics of its transportation systems. Table 4:3 shows important characteristics of the area.

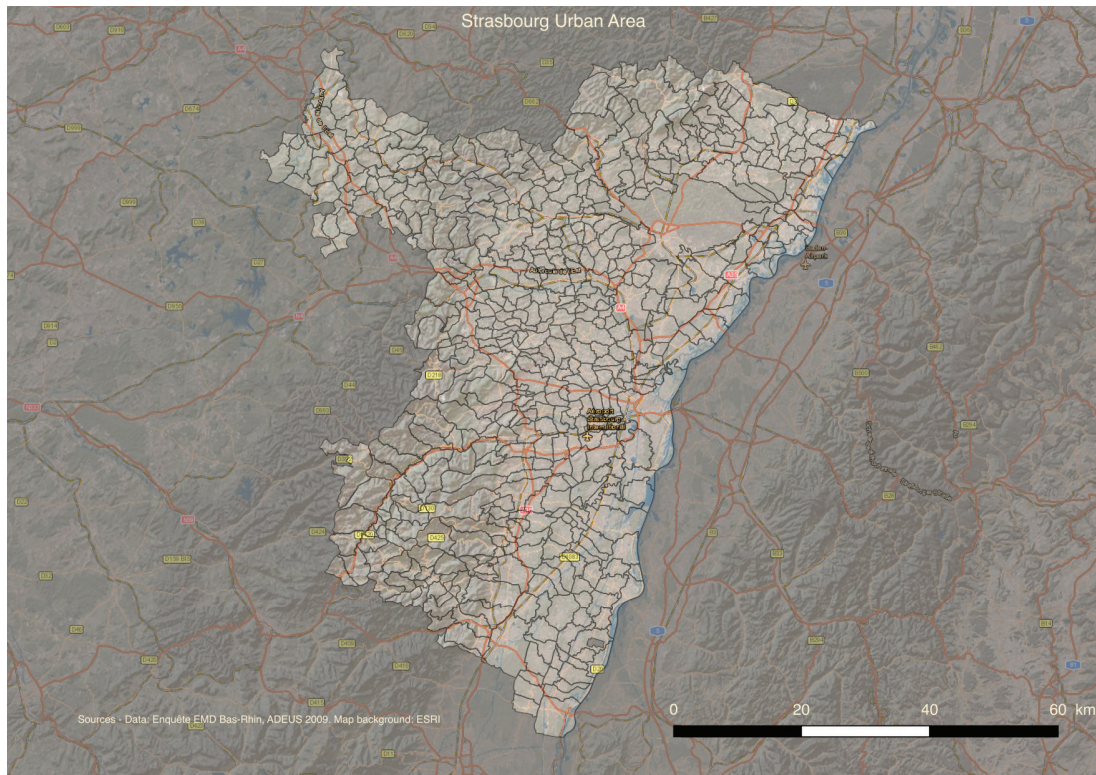


Figure 4:5 Photo of Strasbourg, France, Alsace⁸⁶

Strasbourg, France		
	Continental area	European
	Public transit backbone	Rail based backbone
	Language community	French speaking
	Mobility policy focus	Active modes focus
	City population	540 994
	Urban area population	806 400
	City area	78 km ²
	Urban area	315 km ²
	Car modal share	60%

Table 4:3 Strasbourg Attributes

⁸⁶ Photo credit: Neumann (2011).



Map 4:2 Strasbourg Urban Area

Strasbourg is the administrative capital and largest city of the Grand Est⁸⁷ region of France. It is also the seat of the prefecture and the General Council of the Bas-Rhin department and the legislative capital of the European Union and host to the European court of human rights. It is located near the north-eastern tip of the French hexagon, along the shores of the Rhine River, which is the international border between Germany and France (see Map 4:2). Originally a Roman city, the first maps of Strasbourg date around the years 410-425⁸⁸. The modern city is the heir of a mix of French, German and Alsatian heritage. The city was integrated into the kingdom of France in 1681 (*idem*) which was not a permanent change, as it was ceded to the German empire and became capital of the Reichsland Elsass-Lothringen region in 1871, following the treaty of Frankfurt (*idem*). It was integrated back into France after the German defeat of the First World War and has been part of France ever since (*idem*). Strasbourg became capital of the European council, which held its initial meeting in the city in 1949. The city's downtown area was the first urban centre to be added to the United Nation's World Heritage Sites (Cyberterre, 2016).

⁸⁷ Previously Alsace-Champagne-Ardenne-Lorraine.

⁸⁸ Strasbourg.eu. (2016a). Carrefour ferroviaire européen | Infrastructures | Strasbourg.eu. Retrieved December 1, 2016, from <http://www.strasbourg.eu/developpement-rayonnement/transports-et-infrastructures/infrastructures/carrefour-ferroviaire-europeen>.

The urban area's economy is diverse and its growth dynamic is based on three levers: an innovation-oriented economy, a high-level university linked to companies and a complete range of commercial and industrial real-estate offer (Pilarczyk, 2015, p. 5). The region has identified four key sectors for growth in the next ten years: medical technologies and new therapies, innovative mobility, the international tertiary sector and creative activities (ibid., p. 8). Since 1972, the administration of the city of Strasbourg and that of the Communauté urbaine de Strasbourg (CUS) have been merged⁸⁹. In 2015, the CUS was renamed Eurométropole de Strasbourg in 2015⁹⁰. It regroups 28 municipalities forming a 316 km² metropolitan area, home to 483 194 people (idem). The Eurométropole is responsible for, among others, the regional land planning, roads and signaling, urban transport (including tramways), economic development and international outreach⁹¹.

Strasbourg is criss-crossed by a tram network consisting of 6 lines with 69 stations with a length of 55,5 km of rail⁹². This is now the longest tram network in France and was one of the first networks to launch as part of the French tram renaissance in the 1990s (idem). The Compagnie des transports strasbourgeois (CTS) is the operator and builder of this tram network using 94 trams⁹³, as well as a 320 km bus network consisting of 30 regular routes using 235 buses and one 65 km bus rapid transit line on its own right of way operating with 10 buses⁹⁴.

The main train station in Strasbourg offers high-speed TGV connections to Paris in 2 hours 20 minutes and Lyon in 3 hours 15 minutes with regular connections to Switzerland and Germany and also includes many regional rail offerings⁹⁵. Although not overly present in the downtown area, highways cross the agglomeration with two main North-South links⁹⁶

⁸⁹ Strasbourg.eu. (2016b). La CUS est devenue Strasbourg Eurométropole | Eurométropole de Strasbourg | Strasbourg.eu. Retrieved December 1, 2016, from <http://www.strasbourg.eu/fr/fonctionnement-ville-cus/communaute-urbaine-strasbourg/la-cus-devient-strasbourg-eurometropole>

⁹⁰ Strasbourg.eu. (2016c). Les réseaux tram et bus à Strasbourg | Transports publics | Strasbourg.eu. Retrieved December 1, 2016, from <http://www.strasbourg.eu/environnement-qualite-de-vie/deplacements/transports-publics/reseaux-tram-bus>

⁹¹ Strasbourg.eu. (2016d). Les temps de l'histoire de Strasbourg - Archives de la ville et de l'Eurométropole de Strasbourg. Retrieved November 30, 2016, from <https://archives.strasbourg.eu/n/les-temps-de-l-histoire-de-strasbourg/n:106>

⁹² Strasbourg.eu. (2016e). Première agglomération cyclable de France | Exemplarité de Strasbourg | Strasbourg.eu. Retrieved December 1, 2016, from <http://www.strasbourg.eu/developpement-rayonnement/transports-et-infrastructures/exemplarite-strasbourg/premiere-agglomeration-cyclable-france>

⁹³ See Figure 4:6 and Figure 4:7 for examples.

⁹⁴ CTS. (2016). L'essentiel - CTS : Compagnie des Transports Strasbourgeois. Retrieved December 1, 2016, from <https://www.cts-strasbourg.eu/fr/la-cts/lessentiel/>

⁹⁵ Strasbourg.eu. (2016f). Présentation de l'Eurométropole | Eurométropole de Strasbourg | Strasbourg.eu. Retrieved December 1, 2016, from <http://www.strasbourg.eu/fr/fonctionnement-ville-cus/communaute-urbaine-strasbourg/presentation-cus>

⁹⁶ A4 and E25.

and three main East-West links⁹⁷. Strasbourg also features an airport with domestic and international flights.

A discussion about the Strasbourg transportation network would not be complete without reference to active mobility. The city has allocated a lot of space to pedestrians and cyclists with many pedestrian streets. It boasts a 560 km cycling network, the largest in France, with 19 00 bicycle parking spaces as well as a bike-sharing system comprising 4 400 bicycles⁹⁸.



Figure 4:6 Strasbourg Tram on Its Right of Way⁹⁹



Figure 4:7 Tram Passing in Front of European Parliament¹⁰⁰

This section provided a brief description of the two study areas without presenting a complete picture from a geography perspective. Although the area's transport network structure and social geography are of interest, transport geography is not the main angle of this research and not my area of expertise. I have attempted to consider important aspects of transport geography in the analysis and the reasoning of my discussion when presenting the results.

4.3 Using Mixed Methods

Now that the urban areas under study and the rationale behind the selection have been presented, I delve into a discussion of the methodology. Commencing with a presentation on my use of mixed methods and the reasoning for this selection, I will follow with an introduction on each methods used from both qualitative and quantitative perspective.

This research implements an investigative device using mixed methods, an approach that takes into account data collected from a quantitative point of view (data on car dependency

⁹⁷ A351, A35 and N4.

⁹⁸ Strasbourg.eu. (2016g). Une administration fusionnée | Fonctionnement Ville & Eurométropole | Strasbourg.eu. Retrieved December 1, 2016, from <http://www.strasbourg.eu/fr/web/strasbourg.eu/fonctionnement-ville-cus/administration-fusionnee>

⁹⁹ Photo credit : Villeneuve, D. (2015b). *Strasbourg tram on it's right of way near Esplanade*.

¹⁰⁰ Photo credit : Villeneuve, D. (2015c). *Tram Passing in Front of European Parliament*.

and lexicometric analysis of public policy) and a qualitative point of view (perception of non-motorized households and public policy analysis) (Johnson, Onwuegbuzie, & Turner, 2007). This approach is increasingly used in social science as researchers have attempted since the end of the 1960s to overcome the divide between quantitative and qualitative methods (da Silva & de Sousa, 2016, p. 177). The complementarity between the two approaches is now more broadly accepted, as combined, they can help understand and explain certain social facts in further depth (idem).

Comparative policy research in particular seems to have adopted the mixed method approach to a greater extent than other political science research fields (Wolf, 2010, p. 145), although according to my own review of the available literature, the mixed method approach is not frequently used to investigate transport issues and social exclusion. By linking these two points of view, my research promises a better understanding of issues regarding social exclusion in the mobility of non-motorized households.

I use a mixed method design broadly resembling the design qualified by Creswell (2009, p. 209) as sequential explanatory design (see Figure 4:8) in which I proceed with to the qualitative data collection on car dependence and social exclusion and follow with the quantitative phase of research to explain what was initially found. While generally following this mixed-method approach, for the testing of some of my research sub-questions, I only apply a singular method for analysis, while for other sub-questions, I explicitly use a mix of quantitative and qualitative data to answer the question.

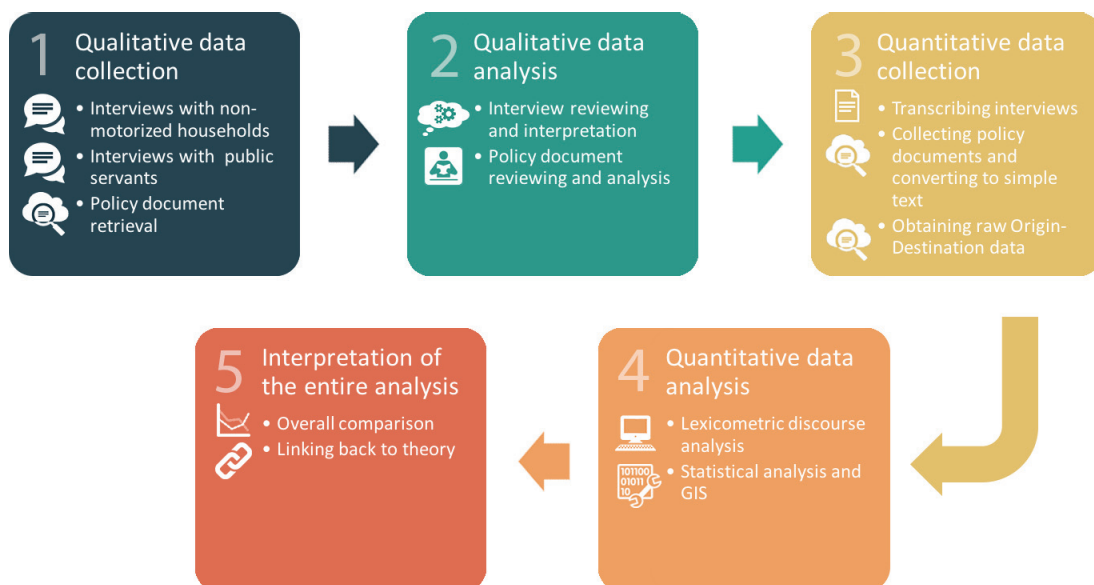


Figure 4:8 Mixed Method Model - Sequential Explanatory Design
Source: (Creswell, 2009, p. 209), adapted to fit my specific research.

4.4 Qualitative Methods Used

My qualitative analysis involves two main instruments of data collection: semi-directed interviews and policy document retrieval. I then use qualitative analysis techniques to review these documents and analyze them accordingly, which are hence forth presented.

4.4.1 Qualitative Data Collection

4.4.1.1 *Semi-Directed Interview With Non-Motorized Households*

The interviews with NMH consisted of a discussion with representatives of each household and lasting approximately one hour. Collectively, I followed the same protocol (See Appendix 1) initializing the discussion with a description of Dupuy's car dependence cycle and questioning their perspective on car dependence. I then find out the duration of which they have been without a car, and if they had one prior, why they no longer have an automobile and to describe the transition and how that affected them. We then discuss if the lack of car prevents them from going to certain places or doing certain activities. Subsequently, I find out their mode of transport to work, entertainment, purchases, health matters and visiting family and friends as well as frequency of travel for each purpose. Thereafter, I inquire as to how their mobility situation could be improved, followed by asking them to describe how things would be different in a perfect world for non-motorized households.

Subsequent to this initial half of the discussion about their mobility and personal perspective, I briefly present what public policy is, provide examples and request a list of all mobility policies that exist in the area from each participant. I then ask them to evaluate in their own terms these policies and suggest improvements that could be made or new policies that should be implemented.

The concluding section of the discussion involves social exclusion. I describe the concept and ask the participants if they ever feel it and if so, to describe why. Finally, we discuss what role, if any, the State should play towards non-motorized households.

4.4.1.1.1 Recruiting Non-Motorized Households' Participants

Recruitment of participants and the composition of a useful comparison sample is not often discussed. It is, however, an important issue to ensure the usefulness and validity of the comparison. As Savoie-Zajc (2006, p. 100) recalled, discussing the issue of sampling is of strategic importance because the type of sample retained will guide and frame the

interpretative process of the research, enriching the credibility of the results. As such, great care was exercised during the formation of the two samples to ensure a varied compositions by dynamically combining multiple recruitment methods in both urban areas.

In this phase of research, I was interested to gather the perceptions and suggestions of non-motorized households in both urban areas, with approximately 30 households in each area. To recruit participants, I used a web site¹⁰¹, Facebook, e-mails to interest groups, signage as well as the snowball method. By using Facebook, I mentioned the research using a web page describing the study and the different types of participants sought (see Appendix 3). Throughout the recruiting phase, as participants contacted me, I changed the call for participants to highlight on the page the specific types of household being less represented in the sample, and thus more needed, in order to elicit more participation from that type of household. I then asked friends located in these two regions to share this web page on their personal social network.

¹⁰¹ See Appendix 4 for a screenshot of the web site.

In both cities, I also identified organizations working with people with mobility challenges, including non-motorized households. I contacted these non-governmental organizations, presented the research and requested their collaboration to identify non-motorized households willing to meet. Following each interview, I also asked the interviewees if they could refer other people (snowball sampling method). To maximize collaboration with organizations representing non-motorized households, I offered to produce a preliminary report expressly for them following the initial field research. The report based on my initial analysis of the NMH interviews was released to them in February 2016. Finally, I also placed posters presenting the research in strategic places where public transit users were likely to see them. As Figure 4:9 shows, the various recruitment mechanisms were successful to a different degree¹⁰².

Participants recruited via each recruitment tool

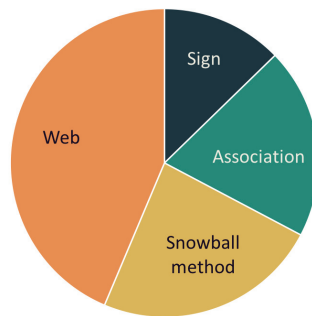


Figure 4:9 Types of Participant Recruitment Tools

¹⁰² All the charts in this section about the NMH are based on the small (57 individuals) sample. They are provided as informative representation but on purpose they do not contains any percentage precision in order to reflect this.

4.4.1.1.2 Sample Composition

While my sample of non-motorized households was drawn up at random using the aforementioned combination of recruitment techniques, it produced a variety of situations: household types (see Figure 4:10), standards of living levels (see Figure 4:16) and gender (see Figure 4:13) allowing to gather different perspectives but also enabling matching comparison between the two metropolitan areas.

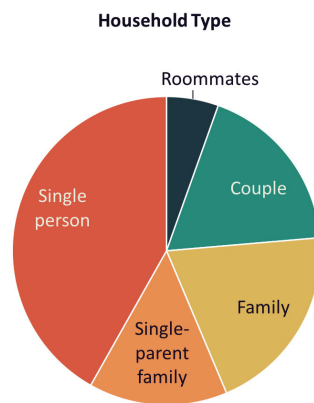


Figure 4:10 Overall Types of Households Recruited

The final composition of the samples in Quebec City and Strasbourg were diverse (as shown in Figure 4:11 and Figure 4:12) while also being similar enough to remain comparable.

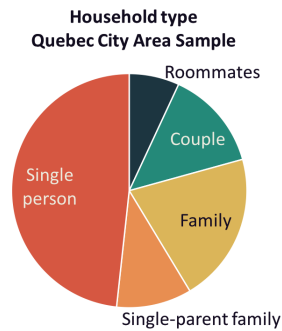


Figure 4:11 Household types in Quebec City Area Sample

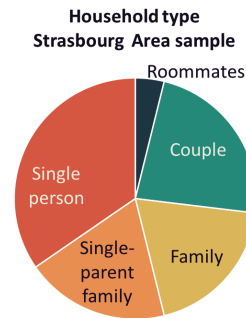


Figure 4:12 Household Types in Strasbourg Area Sample

While being diverse in terms of household types, the sample is overrepresented in women (see Figure 4:13, Figure 4:14, Figure 4:15) , however, I do not consider this a problem, since women are known to have less access to motorized vehicles while also being overrepresented in public transit users (Blumenberg, 2004; Coutras, 1997; Hanson, 2010; Vincens et al., 2007, p. 423).

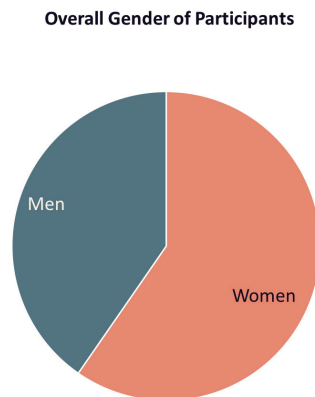


Figure 4:13 Overall Gender of Participants

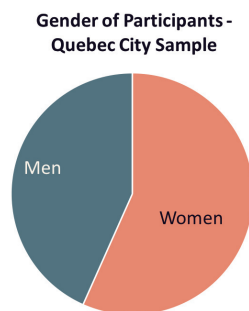


Figure 4:14 Gender of Participants in Quebec City Sample

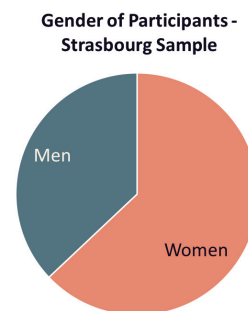


Figure 4:15 Gender of Participants in Strasbourg Sample

To calculate the participants' standard of living and to compare between France and Canada, I used the OECD equivalence scale. I divided the total income per household consumption units (cu) using the formula¹⁰³ "which attributes 1 cu to the first adult, 0.5 cu other persons aged 14 or more and 0.3 cu to children under 14 years"¹⁰⁴ (Insee, 2016). I then obtain the income per consumption unit by dividing total income by the sum of the household's cu. I follow by dividing the results into thirds assigning the label modest to the

¹⁰³ Source : Insee. (2016). Définitions, méthodes et qualité - Niveau de vie. Retrieved February 8, 2016, from <http://www.insee.fr/fr/methodes/default.asp?page=definitions/niveau-de-vie.htm>.

¹⁰⁴ Our translation.

first third, intermediate to the 2nd third and the affluent label 3rd third. These results the standard of living scale shown in Table 4:4 demonstrates these results.

Standard of living	Canada	France
Modest	< 30 000 CAD	< 15 800 EUR
Intermediate	[30 000 CAD - 50 000 CAD]	[15 800 EUR - 25 230 EUR]
Affluent	> 50 000 CAD	> 25 230 EUR

Table 4:4 Equivalent Standard of Living by Country, Income / cu

Figure 4:16 shows the distribution for the entire group of NMH participants. However, through this criterion, the two samples differ slightly (see Figure 4:17 and Figure 4:18) with more affluent respondents in Strasbourg and more modest respondents in Quebec City, but this could be explained by the minimum bar for the affluent standard of living in France (25 230 €¹⁰⁵) being relatively low compared to the equivalent measure in Canada (50 000 CAD¹⁰⁶). There is a difference of approximately 10 000 € between the two.

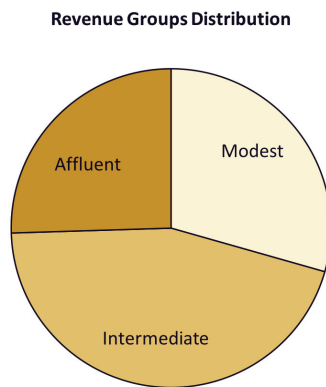


Figure 4:16 Overall Participants Standard of Living

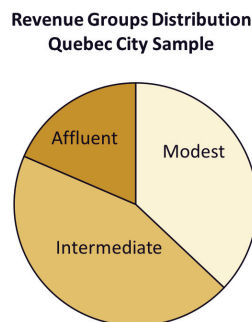


Figure 4:17 Participant Standard of Living in Quebec City Sample

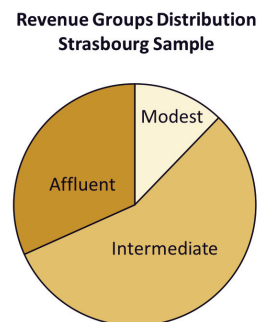


Figure 4:18 Participant Standard of Living in Strasbourg Sample

¹⁰⁵ A value of 35 895 CAD or 27 355 CHF at the time of writing

¹⁰⁶ A value of 34 995 EUR or 37 808 CHF at the time of writing

The majority of respondents do not have a monthly pass for the transit service (see Figure 4:19). This is the result of a significant difference between the samples; on one side, Quebec City, which is mainly composed of respondents with a monthly subscription (see Figure 4:20), and on the other side, Strasbourg, where the opposite is true in (see Figure 4:21). Once again, this important difference can be explained by an actual difference, the importance of the bicycle as a replacement for public transit in Strasbourg demonstrating the usefulness of adding the transit vs. active mode policy focus ideal-type.

Participant's Household Has a Public Transit Pass

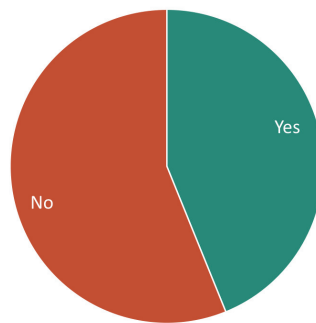


Figure 4:19 Overall Public Transit Monthly Pass of Participant's Household

Participant's Household Has a Public Transit Pass Quebec City Area

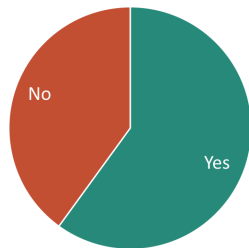


Figure 4:20 Public Transit Monthly Pass in Quebec City Sample

Participant's Household Has a Public Transit Pass Strasbourg Area

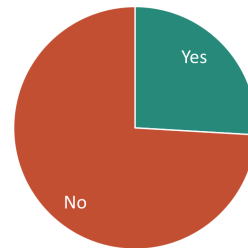


Figure 4:21 Public Transit Monthly Pass in Strasbourg Sample

As demonstrated in Figure 4:22, Figure 4:23 and Figure 4:24 the sample is shared equally between members and non-members of the local car-sharing service¹⁰⁷.

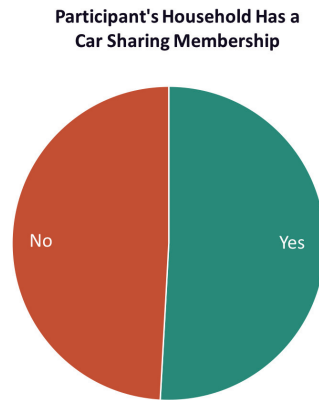


Figure 4:22 Overall Membership in The Local Car-Sharing System

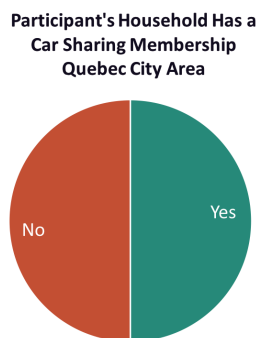


Figure 4:23 Members of the Local Car-Sharing System in Quebec City Sample

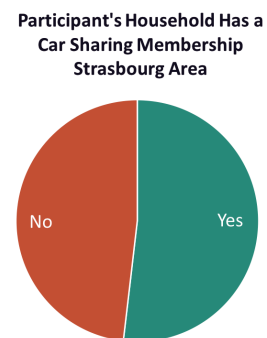


Figure 4:24 Members of the Local Car-Sharing System in Strasbourg Sample

¹⁰⁷ The private car-sharing schemes are called Communauto in Quebec City and Citiz in Strasbourg.

In both cities, the majority of respondents rent their dwelling in a very similar proportion (see Figure 4:25, Figure 4:26 and Figure 4:27).

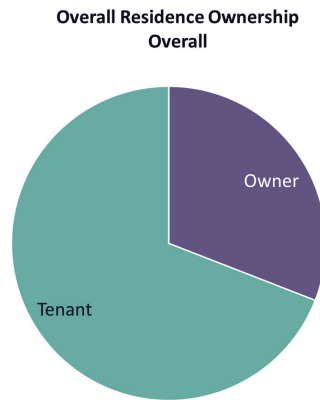


Figure 4:25 Overall Ownership Status of Dwelling

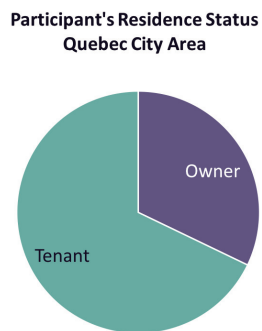


Figure 4:26 Ownership Status of Dwelling in Quebec City Sample

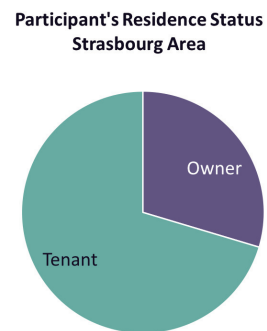


Figure 4:27 Ownership Status of Dwelling in Strasbourg Sample

As shown in Figure 4:28, the majority of respondents are between 18 and 40 years old, followed by the group of the 41 to 64 and finally, a small proportion of people aged 65 and older, in both Quebec City (see Figure 4:29) and Strasbourg (see Figure 4:30).

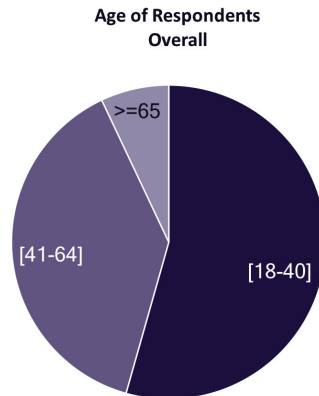


Figure 4:28 Age of Participants

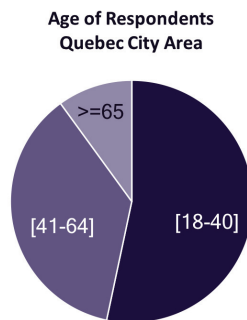


Figure 4:29 Age of Participants in Quebec City Sample

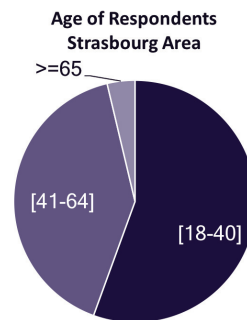


Figure 4:30 Age of Participants in Strasbourg Sample

As shown in Figure 4:31, the majority of households met had at least one individual possessing a valid driver’s licence. In this instance, our samples are significantly different between the two urban areas as a much larger number of households in Quebec City (see Figure 4:32) were without any driver’s licence owners, as opposed to households in Strasbourg (see Figure 4:33).

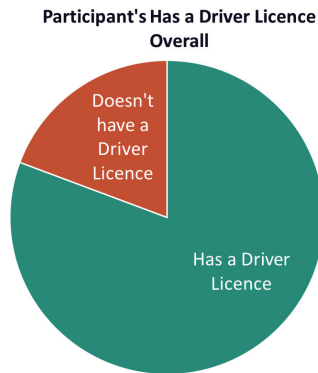


Figure 4:31 Driver’s Licence Status of Households

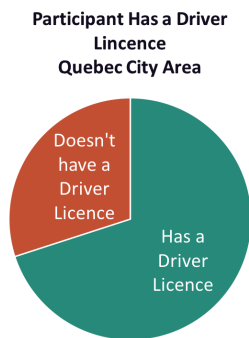


Figure 4:32 Driver’s Licence Status of Households in Quebec City Sample

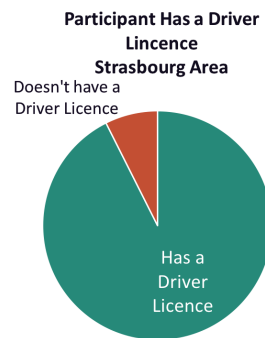


Figure 4:33 Driver’s Licence Status of Households in Strasbourg Sample

4.4.1.1.3 List of NMH Participants

Table 4:5 shows a list of all NMH participants¹⁰⁸ with their age and sex in parentheses and their standard of living in brackets grouped by household types for each urban area.

Type of household	Quebec City, Canada	Strasbourg, France
Flatmates	(M) Benoit, 44 [Modest]	(M) Michel, 30 [Intermediate]
	(W) Nadine, 27 [Modest]	
Couple	(M) Bruno, 36 [Modest]	(M) Étienne, 70 [Affluent]
	(W) Cassandre, 35 [Modest]	(W) Madeleine, 26 [Modest]
	(M) Tristan, 30 [Intermediate]	(M) Martin, 36 [Affluent]
	(W) Virginie, 28 [Intermediate]	(W) Mylène, 55 [Affluent]
	(M) Yvon, 32 [Affluent]	(M) Renaud, 29 [Modest]
		(W) Sabine, 28 [Affluent]
Family		(M) Samuel, 24 [Intermediate]
	(W) Arianne, 33 [Modest]	(W) Béatrice, 38 [Intermediate]
	(M) Denis, 41 [Intermediate]	(M) Gervais, 43 [Modest]
	(M) Jack, 34 [Intermediate]	(M) Gustave, 36 [Affluent]
	(M) Moïse, 40 [Intermediate]	(M) Loïc, 34 [Intermediate]
	(M) Raphaël, 32 [Intermediate]	(M) Thomas, 44 [Modest]
Single-parent family	(M) Roger, 38 [Intermediate]	
	(W) Caroline, 46 [Intermediate]	(W) Élise, 56 [Modest]
	(W) Mélanie, 35 [Modest]	(W) France, 51 [Intermediate]
Single person	(M) Philippe, 38 [Intermediate]	(W) Ines, 58 [Affluent]
		(W) Laurence, 63 [Modest]
		(W) Naomi, 38 [Intermediate]
	(W) Dominique, 62 [Modest]	(W) Célestine, 42 [Modest]
	(M) Félix, 70 [Affluent]	(W) Céline, 44 [Intermediate]
	(W) Héloïse, 43 [Affluent]	(W) Édith, 54 [Affluent]
	(W) Jade, 48 [Modest]	(W) Émeline, 31 [Affluent]
	(W) Johanna, 64 [Intermediate]	(W) Geneviève, 31 [Intermediate]
	(M) Léo, 41 [Affluent]	(W) Lucie, 43 [Intermediate]
	(W) Martine, 55 [Modest]	(M) Maxime, 35 [Modest]
	(W) Mireille, 34 [Modest]	(W) Rachel, 39 [Intermediate]
	(W) Pauline, 65 [Affluent]	(W) Viviane, 29 [Intermediate]
	(W) Stéphanie, 74 [Modest]	
	(W) Rose, 60 [Intermediate]	
	(W) Thérèse, 64 [Intermediate]	
(M) Tobias, 37 [Modest]		
(W) Véronique, 30 [Modest]		

Table 4:5 Complete List of NMH Participants

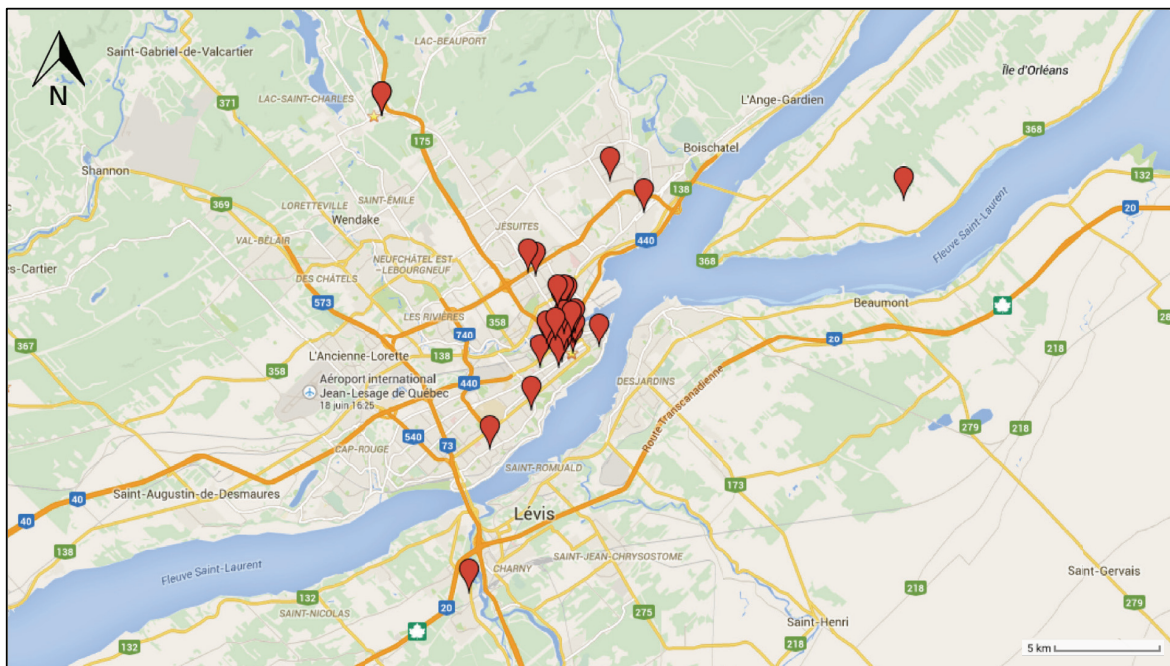
¹⁰⁸ In order to protect the privacy of all participants, the names listed here are fictitious.

4.4.1.1.4 Sample Geography

The biggest difference between the two samples is the area covered by the residence of non-motorized households. As shown in Map 4:3 and Map 4:4 (using the same scale of 2 cm = 5 km), the sample households in Quebec City are dispersed across a much wider area. In fact, the area of my sample of Quebec City is 15 times greater than that of the sample in Strasbourg (see Table 4:6). This can be explained by the difference in density between the two cities built area. This issue will be visited with greater detail during the quantitative data analysis comparing car dependence in both regions. In Map 4:5, I present a closer view of Strasbourg with a smaller scale in order to see that the distribution of respondents is still varied across different parts of the urban area.

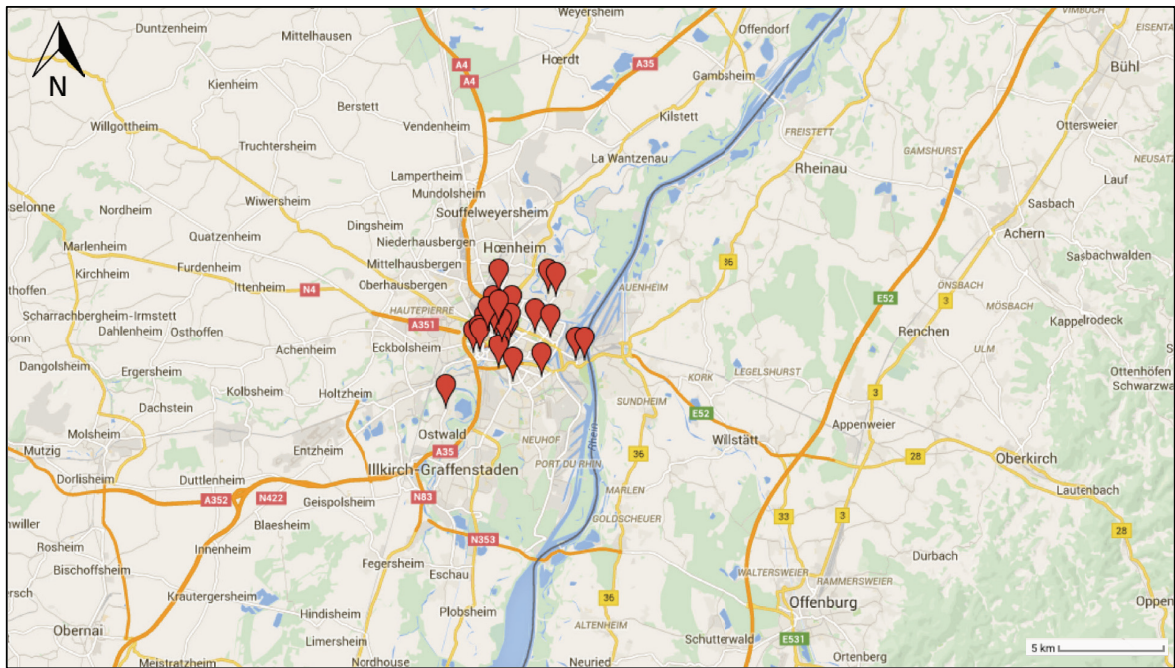
	Quebec City	Strasbourg
Sample area	274 km ²	18 km ²

Table 4:6 Comparison of Sample Area

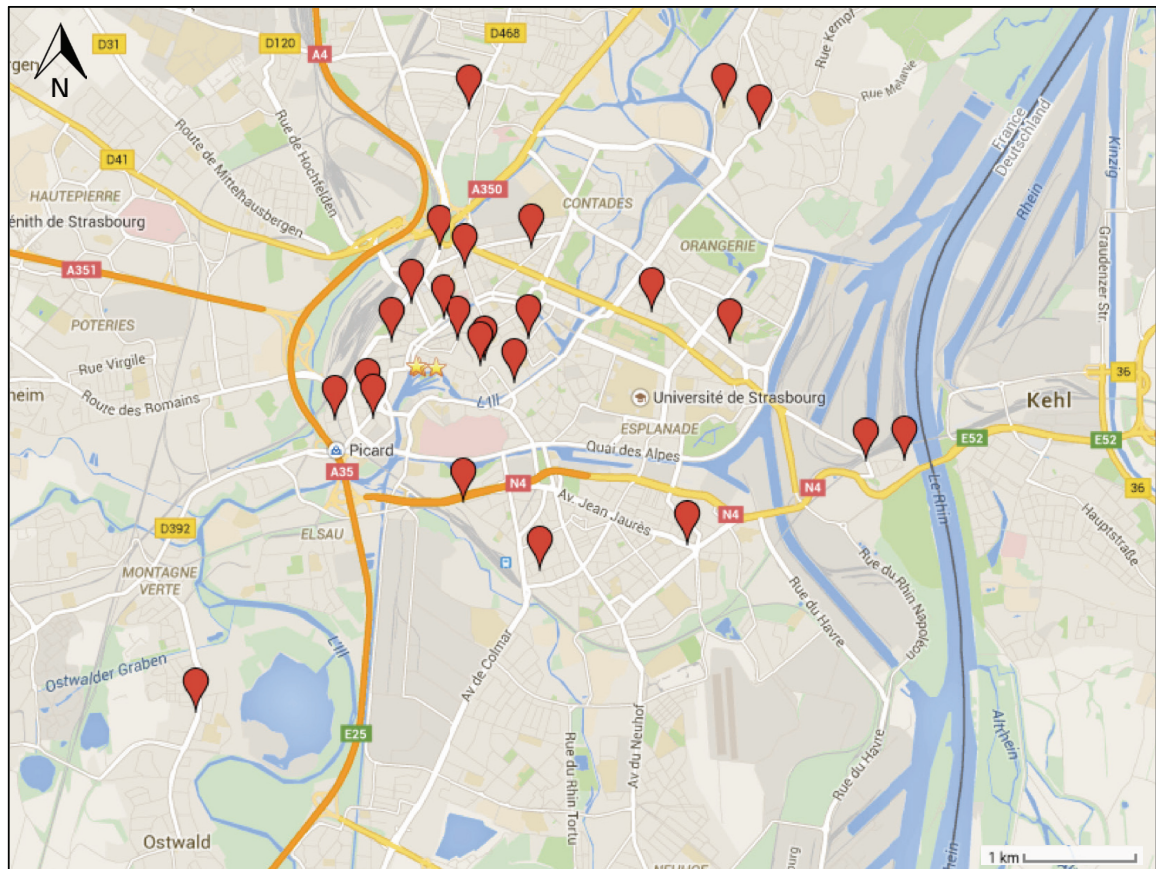


Map 4:3 Residence of Non-Motorized Households Met in Quebec

Source: Google Maps.



Map 4:4 Residence of Non-Motorized Households Met in Strasbourg
 Source: Google Maps.



Map 4:5 Close Up on The Residence of Non-Motorized Households Met in Downtown Strasbourg
Source: Google Maps.

4.4.1.2 Interviews with Local Civil Servants

Additionally, I met with policy actors (local public servants) in the two metropolitan areas to discuss the policy objectives sought by their respective mobility policies and find out what importance they assign the providing service to non-motorized households. The purpose of these interviews was to discover how decisions are made in mobility policies, what kind of evidence is put into play and who the target population is, specifically if non-motorized households are included. The semi-directed interview protocol in found in Appendix 2.

In order to preserve the anonymity of the civil servants who accepted to meet me for interviews I will not provide their titles, departments, exact age and changed their names. In each urban area, I met five civil servants if various roles and hierarchical rank from the transit authority, the transport department and the urban planning department. Table 4:7 provides the list of the civil servants that I interviewed.

Quebec City, Canada	Strasbourg, France
(350-M) James, >50	(424-M) Sébastien, [30-50]
(361-M) Mathieu, >50	(441-M) Guillaume, >50
(337-W) Mélanie, >50	(462-M) Lorris, [30-50]
(386-M) Julien, [30-50]	(406-M) Yann, >50
(389-W) Isabelle, [30-50]	(416-W) Lesslie, >50

Table 4:7 Complete List of Civil Servants Interviewed, Their Gender and Their Age

4.4.1.3 Policy Document Retrieval for Qualitative Analysis

For each urban area, I used official web sites to locate and retrieve policy documents of the various government levels pertaining to transport and social exclusion related to mobility. In the case of Quebec City and Strasbourg, I triangulated this list with the policies mentioned by the non-motorized households' participants during the interviews. The same documents were used for the qualitative and quantitative analysis. I included policies updated up to January 2015. A complete list of the policy is included for each urban area in Appendix 6 on p. 574 and Appendix 7 on p. 575.

4.4.2 Qualitative Document Analysis

Once the qualitative data is collected, the analysis can take place. In this section, I present the process of this analysis. I review public policy to determine the problem they wish to address, non-motorized households and car dependence are represented, and what priority they are given in conjunction with the other objectives that guide their actions. I believe, as Majone (1989, p. 1) stated, that “[a]s politicians know only too well but social scientists too often forget, public policy is made of language” and I intend to analyze it on that basis. While reading the policy documents, I try to decipher what story it is telling and use qualitative analysis techniques to examine this content. I performed this analysis using specialized Computer Aided Qualitative Data Analysis Software (CAQDAS) software. Using the same tools and techniques, I also review the transcribed interview with NMH and local authorities in accordance with the research questions and objective stated earlier.

Originally the domain of quantitative research, content analysis (discourse) is increasingly used for qualitative research (Hsieh & Shannon, 2005, p. 1278). The conventional method of discourse analysis provides information directly from participants without imposing preconceived categories (ibid. p. 1279). This kind of research is also used in policy analysis and urban studies: [for example: (Darcy, 1999; Farrelly & Sullivan, 2010; Marston, 2004; Salskov-Iversen, 1997; Skillington, 1998; Stenson & Watt, 1999)].

As Smit (2002, p. 66) states, “[d]ata analysis in qualitative research is an ongoing, emerging and iterative or non-linear process”. Figure 4:34 shows the process that I used in my computer aided qualitative data analysis. For this process, I was mostly inspired by the

techniques developed and described by Lewins and Silver (2007), Hwang (2007) and Friese (2012).

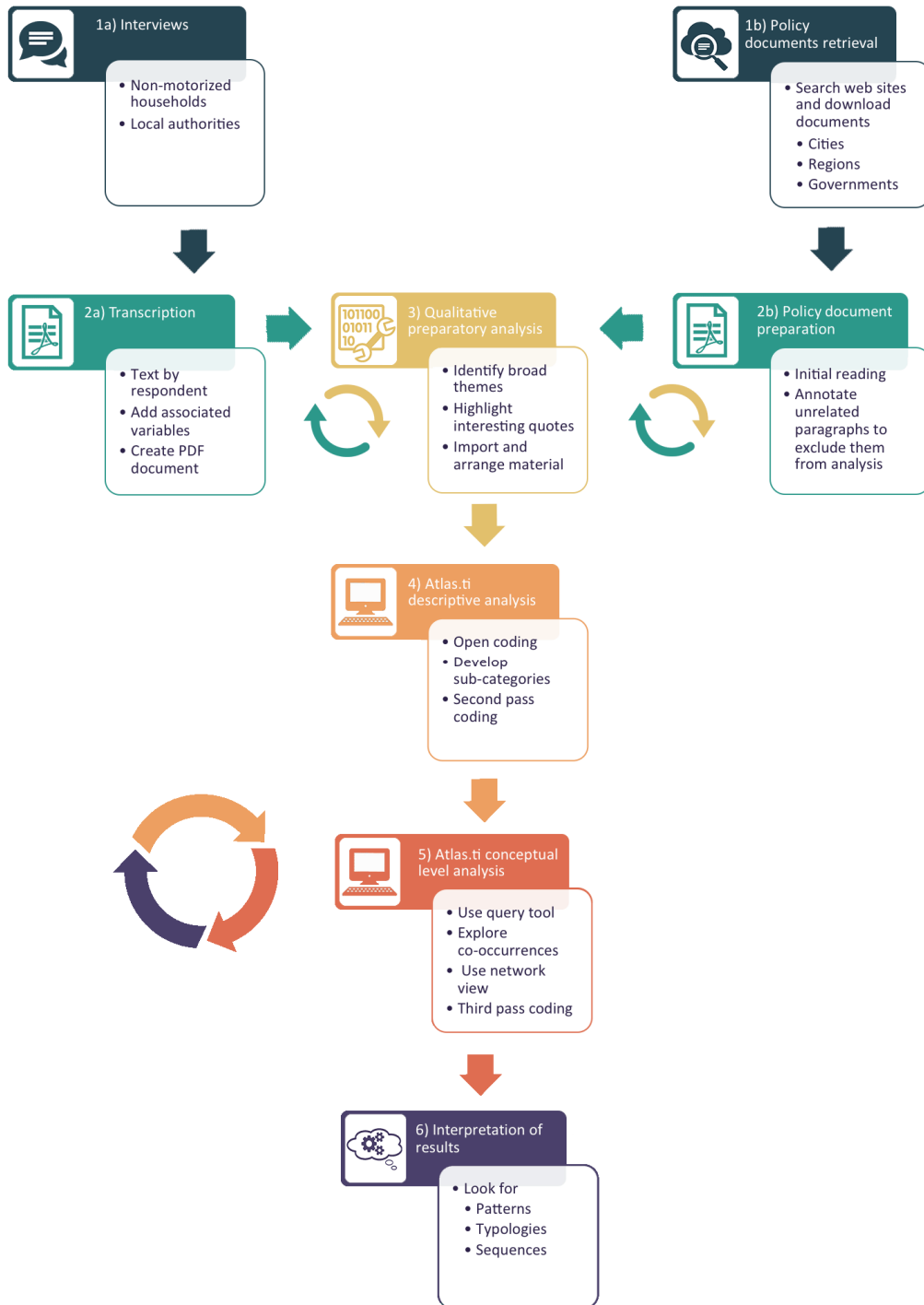


Figure 4:34 Qualitative Analysis Process

1a) Interviews

For interviews with non-motorized households and local authorities, I digitally recorded the interview with the authorization from the participants. The recording was then stored in an encrypted file storage system.

2a) Transcription

After each interview, I transcribed the interview discussion with exactitude and precision, typing everything the interviewee said while excluding what the interviewer expressed. The exclusion of the interviewer is necessary to prevent his speech from being included in the lexicometric analysis, as this it would taint the results. Each response by the interviewee was tagged with the subject of discussion, his/her identity and related socio-demographic variables. An Acrobat PDF file containing the entirety of the interviews was created for further analysis.

1b) Policy documents retrieval

For policy documents, I first searched the various web sites for national governments, provincial or county governments, regional bodies as well as city web sites, looking for policy documents relating to mobility, social exclusion, NMH and car dependence.

2b) Policy document preparation

Once I collected the policy documents, they had to be prepared for analysis. I also annotated parts of the documents not pertaining to mobility in order to strike them and ensure they are not included in the analysis. This was only mostly the case for French laws pertaining to transport or environment, for which the content is much broader than the subject of mobility, for example concerning the safe transportation of dangerous materials, in the same document as public transit subsidy for operations. For those, I excluded the sections unrelated to the topics of interest.

3) Qualitative preparatory analysis

I conducted an initial reading of the entire material, identifying the broad themes covered and interesting or exceptional quotes. This was done concomitantly with step 2a in the case of interview and 2b in the case of policy documents while as Smit (*idem*) suggests continually reflecting on impressions, relationships and connections while collecting or transcribing the data. Once read and tagged with the proper variables, each document is imported into Atlas.ti and arranged into folders according to its variables.

The next steps (4, 5 and 6) in the process, even though distinct, are completed in a recursive manner further improving the analysis with every iteration.

4) Atlas.ti descriptive level analysis

Subsequently, I imported the documents into the Atlas.ti¹⁰⁹ Computer Aided Qualitative Data Analysis Software (CAQDAS) and processed the entire material by reading it for a second time, while segmenting it into different categories and themes and assigning codes to segments. This process is called coding. I used an inductive approach to coding, allowing the material itself to “surface” the various codes. As Lewins and Silver (2007, p. 84) stated, this has the advantage of preventing “[...] existing theoretical concepts from over-defining the analysis and obscuring the possibility of identifying and developing new concepts and theories”. Following this principle, I assigned codes or categories to various segments of text. I used the open coding¹¹⁰ technique and systematically developed a coding scheme specific to the analyzed material, all the while maintaining the research objectives stated previously. As I continued, this was an iterative process and codes got assigned, changed and reassigned. I also performed a second pass on the coding, by reviewing it and regrouping and merging codes when necessary.

5) Atlas.ti conceptual level analysis

The next phase consisted of using the various analytical tools provided by Atlas.ti to review the material again, but from the perspective of the codes and see if they make sense. Referring to the coding completed during the previous step, as described by Lewins and Silver (*ibid.*, p. 85), the main purpose of this step is to find “[i]nstances in the data which most pertinently illustrate themes, concepts, relationships, etc.[...]”. This is an exploration of the data, searching different ways to visualize the material by using the query tool and the network view.

6) Interpretation of results

Once all the material has been looked at from various perspectives, I synthesize the results and interpret them, looking for patterns, trying to establish typologies of documents and perspectives and identifying sequences in the coding. But this is not the last step, as after performing this, I return to step four and start over again, testing the interpretation and analysis.

4.5 Quantitative Methods Used

As presented earlier in Figure 4:8, following the qualitative steps of the research design, I take on a quantitative approach to further explore the context in order to identify difference and similarities between the two or four metropolitan areas depending on the analysis. This entails a lexicometric discourse analysis of the policy documents and semi-directed

¹⁰⁹ For more information on this commercial software, see <http://atlasti.com>.

¹¹⁰ See Lewins and Silver (2007, p. 84).

interview material as well as analyzing raw data from Origin-Destination survey performed by local officials which I link to geographical information systems (GIS) in order to analyze it from a territorial perspective. I will now present these methodologies in further detail.

4.5.1 Quantitative Data Collection

4.5.1.1 Interview Transcripts

In order to perform a quantitative analysis, my interview material from NMH and local authorities was transcribed typing word for word what the participants had communicated during the discussion while excluding my words. The content of the interviews with non-motorized households was structured by characterizing the discourse with socio-demographic variables and the specific question of the guided interview. For example, the answers to question 1: “What does car dependency evoke for you?” are grouped into a single body of “discourses” which is then analyzed with the software and each response is associated with the age, gender, living standards, etc. of the individual who responded. The approximately 60 hours of recording of the interviews with NMH was transcribed into Microsoft Excel spreadsheets with variables as columns; the transcribed text being one variable (column), the others being associated with the information relative to the speaker and the topic being discussed. One column aggregated this entire data using the **** variable specific to IRaMuTeQ by using an Excel formula. When copied onto a word processor the NMH interview transcript represents 383 pages of non-formatted text containing 300 397 words. The transcript of the civil servants’ interviews represents 79 pages of non-formatted text containing 56 507 words.

4.5.1.2 Policy Documents Retrieval for Quantitative Analysis

Identical documents were used for the quantitative and qualitative analysis of public policy documents, please refer to section 4.4.1.3 Policy Document Retrieval for Qualitative Analysis for details.

4.5.1.3 Origin-Destination Survey Data

I am very appreciative of the public organizations that made this raw data accessible. For Quebec City, I used the 2011 Quebec City Regional Origin-Destination Survey¹¹¹, version 3 (que11pv3) from the Ministère des transports, de la mobilité durable et de l’électrification des transports du Québec. For Strasbourg, I used the raw data from the 2009 Households mobility survey from the Eurométropole de Strasbourg¹¹².

¹¹¹ Original: L’enquête Origine-Destination régionale 2011 de Québec, version 3 (que11pv3).

¹¹² Original: Enquête Ménages Déplacements (EMD) 2009.

Table 4:8 shows the main types of data across all the different databases used. As observed, the scale of the sample varies.

		Quebec City, Canada	Strasbourg, France
Households	Total	24 783	5 339
	NMH	2 934	961
	MH	21 849	4 378
	NMH (% of total)	12%	18%
	MH (% of total)	88%	82%
Individuals	Total	59 875	12 709
	Men	28 748	6 117
	Women	31 217	6 592
	Men (% of total)	48%	48%
	Women (% of total)	52%	52%
Trips	Total	137 630	47 586
	Men	66 351	23 026
	Women	71 279	24 560
	Men (% of total)	48%	48%
	Women (% of total)	52%	52%
Year of the study data production		2011	2009

Table 4:8 General Overview of OD Databases

4.5.2 Quantitative Data Analysis

Once the quantitative data is collected and prepared, the analysis can take place. In this section, I present the process of this analysis which takes many forms: lexicometric analysis, OD survey database analysis and GIS map making. In this section, I present these different analyses and the tools with which I perform them.

4.5.2.1 Discourse Analysis (IRaMuTeQ)

The lexicometric analysis is based on a discourse analysis using the software IRaMuTeQ (Ratinaud & Déjean, 2009). This open-source software uses the method known or ALCESTE (co-occurring lexemes analysis in simple statements of a text) developed by Reinert (1983, 1990, 2000).

The use of this kind of analysis for public policy has recently been the subject of a growing number of publications [for example see: (de Alba González, 2002; Beauguitte, Richard, & Guérin-Pace, 2015; Blanchard, Kasparian, & Traisnel, 2016; Carpentier, 2007; Comby, 2015; Marchand & Ratinaud, 2012; Mutombo, 2013)].

In this case, I am not only relying on the discourse analysis provided by lexicometric software, but also using a more traditional qualitative analysis, and combining the two methods. As Martin et al. (2016) expresses, these two techniques are rather complimentary.

Lexicometric analysis involves the transformation of the text to a more basic form prior to performing any further analysis. This preparatory disaggregation process is shown in Figure 4:35. A corpus is created which contains multiple texts. Each text is divided in segments, akin to sentences a segment is a series of words. Each segment is then analyzed looking for occurrences, or words. Each occurrence is then lemmatized. Lemmatization is the process of grouping words under one canonical form using a dictionary. In French, this is typically done by transforming all verbs to their infinitive, all nouns and adjectives are transformed to their masculine singular form and hyphenated words are transformed to non-hyphenated version (Lebart & Salem, 1994, p. 2:4).

As an example, the sentence “I must say I enjoy taking all these trains” would be lemmatized to “I must say I enjoy take all the train”. Once lemmatized to their canonical forms, words are split into active and supplementary forms; the active forms being words that usually convey meaning like nouns, verbs and adjectives while supplementary forms are linking words that do not convey meaning as well as determinants. Most of the further analysis is only conducted on active forms. For the purpose of analysis, our example sentence would then look like: “enjoy train” when only using the active forms.

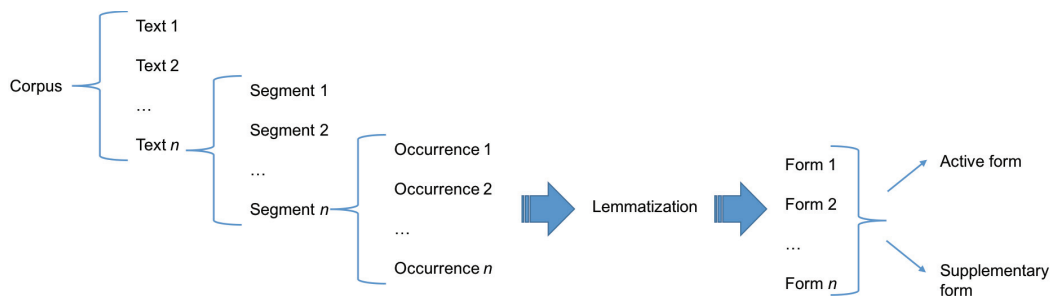


Figure 4:35 IRaMuTeQ Text Disaggregation Process

Source : (Pélissier, 2016, p. 10) adapted and translated by the author.

My research involves multiple lexicometric analysis based on various corpuses formed by the interview transcripts¹¹³ and an exhaustive list of transport and urban planning policy documents¹¹⁴ for each fieldwork following the process illustrated in Figure 4:36.

¹¹³ See section 4.5.1.1 Interview Transcripts on p. 145 for details.

¹¹⁴ See section 4.5.1.2 Policy Documents Retrieval for Quantitative Analysis on p. 145 for details.

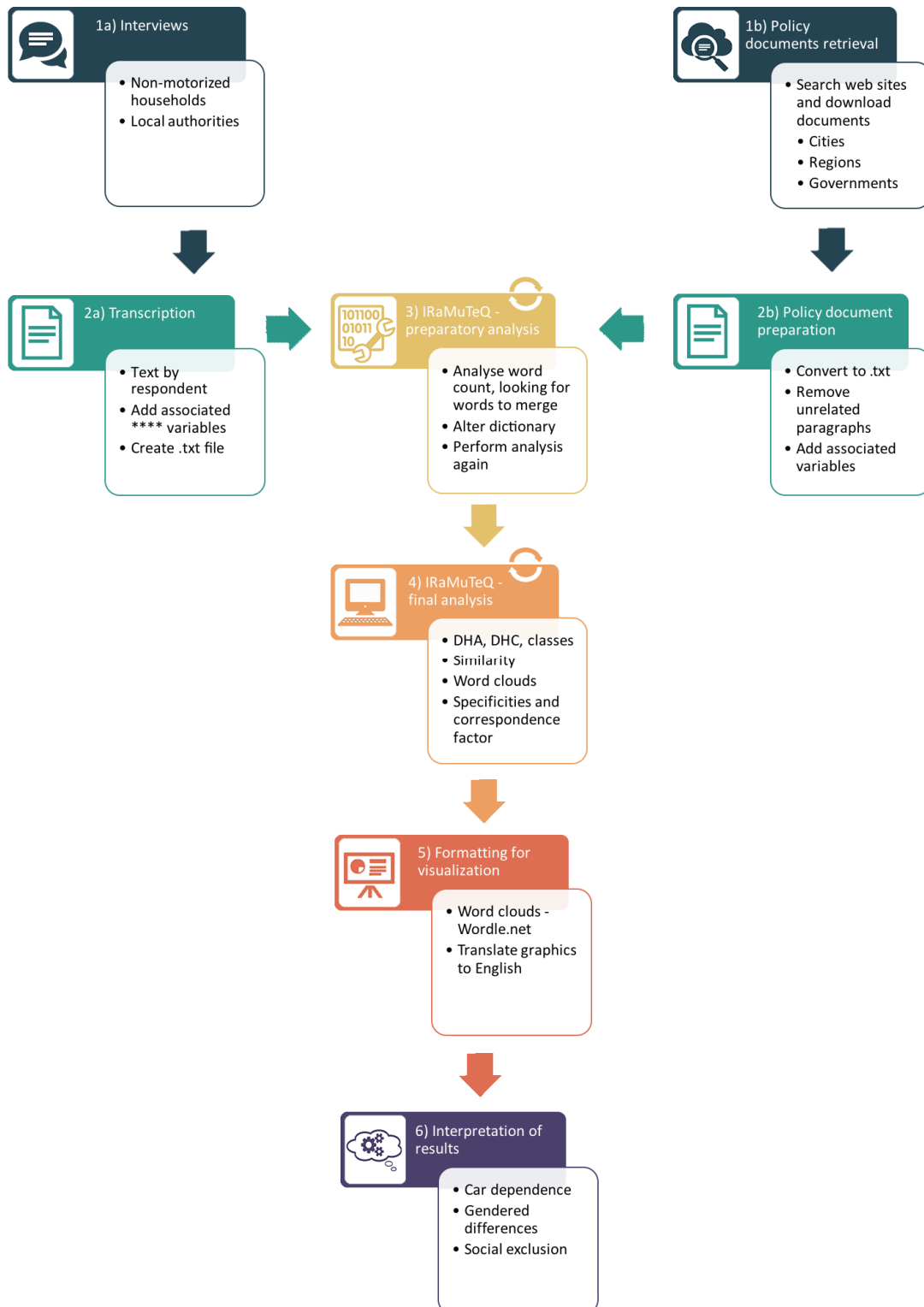


Figure 4:36 IRaMuTeQ Quantitative Analysis Process

1a) Interviews

The process for interviews is the same as with the qualitative analysis. For details, see 1a) Interviews on p. 143.

2a) Transcription

The process for transcription is the same as with the qualitative analysis. For details, see 2a) Transcription on p. 143.

1b) Policy documents retrieval

The process for document retrieval is the same as with the qualitative analysis. For details, see 1b) Policy documents retrieval on p. 143.

2b) Policy document preparation

The process for document preparation is the same as with the qualitative analysis. For details, see 2b) Policy documents preparation on p. 143.

3) IRaMuTeQ preparatory analysis

Even though both urban regions speak the same language (France and Quebec both speak French), they each use their own variant of the language, which affects the vocabulary used. These differences can obfuscate the lexicometric analysis. As a preventative measure, I used an iterative process of alterations to the software's internal dictionary. But this is a very iterative and time-consuming process.

For each language, I analyzed the entire corpus, performing vocabulary statistics as well as real analysis for the research purposes and exercised great care in the identification of word variants that are not recognized as the same. In order for IRaMuTeQ to properly understand that some words actually had the same meaning, I had to implement many modifications to its internal dictionary. For example, Strasbourg households would refer to a car by the words "auto", "bagnole", "caisse", etc. which for our analysis should be considered as one concept, the car. However, in Quebec City, they use the words "voiture" and mostly "char" which has a completely different meaning in standard French. I reconciled these various differences through a trial and errors process, refining and adding new words and expressions each time I analyzed a series of answers from those transcripts and policy documents. In particular, Quebecers use many words that were simply not included in the dictionary for IRaMuTeQ which seems slightly more formal than my typical conversations with NMH in that city. For that reason, I had to add many words specific to Quebec's version of French to IRaMuTeQ's standard French dictionary.

Additionally, many respondents were discussing proper names of location and people around them. Most of those were also naturally missing from the dictionary and had to be added manually. I illustrate this process by referring to the following tables (Table 4:9 to Table 4:13) showing the lemmatization list and instance count for a few important words: car, bike, train, car-sharing and bus from my French-speaking NMH interview preparatory analysis.

This step is an iterative process of importance, since the lexicographical decisions made at this time in the dictionary serve as references throughout the rest of the analysis process. Every time a change is made to the dictionary or expression list, it annuls all previous analysis performed and has to be completed again to take into account the new dictionary alterations.

Auto	Occurences
voiture	1465
auto	499
voitures	228
automobile	79
autos	71
char	44
bagnole	19
caisse	10
chars	10
automobiles	10
bagnoles	5
voiture	3
voiture	3
voiture	3
voiture	2
autp	2
automobile	2
voiture	2
automobile	2
atuto	2
voiture	1
casserole	1
voiture	1
voitures	1
automobile	1
voituer	1
voiture	1
automobile	1
voitures	1
voiture	1
vboiture	1
bazou	1
voiture	1
automobiles	1
voiture	1
voiture	1
voiture	1
autoto	1
dauto	1
autoa	1
voitures	1
voiture	1
Total	2 483

Table 4:9 List of Words Lemmatized Down to Car

Vélo	Occurrences
vélo	1077
vélos	140
bicyclette	6
bicycle	6
bycicle	4
évlo	3
byciclette	3
véoo	2
vélo	2
bicyclettes	2
bycicles	1
bicyclette	1
véos	1
bvélo	1
bicyclettes	1
levélo	1
bicycles	1
Total	1 252

Table 4:10 List of Words Lemmatized Down to Bicycle

Train	Occurrences
train	416
trains	59
tg	32
ter	17
trans	1
trian	1
traibn	1
Total	527

Table 4:11 List of Words Lemmatized Down to Train

Auto partage	Occurrences
communauto	144
cities	72
autopartage	48
autotrement	29
auto_partage	6
comunauto	2
commuauto	2
autoautrement	2
autortement	1
communato	1
communauto	1
communaut	1
autpoartage	1
communtauto	1
autopartagée	1
communauto	1
communautio	1
autotrementet	1
mobility	1
Total	316

Table 4:12 List of Words Lemmatized Down to Car-Sharing

Autobus	Occurrences
autobus	682
bus	486
autbous	4
autbus	3
autpbus	2
aubobus	1
autobuss	1
aiutobus	1
atubobus	1
autobys	1
auyobus	1
autobyus	1
Total	1 184

Table 4:13 List of Words Lemmatized Down to Bus

Finally, since I processed the transcription independently, without the help of a professional transcription expert, the transcripts contained quite a few spelling mistakes, especially for place names around Strasbourg, which are often taken directly from the old Alsatian language and do not resemble French places. I identified these typing mistakes in IRaMuTeQ's unrecognised list and added them as synonyms in the dictionary, thus ensuring they would be lemmatized during the analysis down to the word they were actually supposed to be. As it can be seen in Table 4:14, my iterative dictionary refinement and alteration process has helped reduce the number of distinct words by 14% and the number of unrecognised words by 32%, thus enabling an improved quality of analysis and legitimate comparison between the two French-speaking locales.

Statistics on the corpus	Results with the original IRaMuTeQ French dictionary	Results with the manually updated French dictionary	Difference	Difference in %
Number of words	308 399	301 859	-6 540	-2%
Number of distinct words	10 187	8712	-1 475	-14%
Number of hapax ¹¹⁵	5 677	4 487	-1 190	-21%
Number of adjectives	860	855	-4	-1%
Number of adverbs	209	209	0	0%
Number of nouns	2 542	2 648	106	4%
Number of unrecognized words	5 031	3340	-1 591	-32%
Number of verbs	1 053	1 046	-7	-1%
Number of active forms ¹¹⁶	9 695	8 198	-1 497	-15%

Table 4:14 Corpus Statistics Before and After Updating The French Dictionary

4) IRaMuTeQ final analysis

Once the dictionary had been manually fixed, insisted on performing the entire analysis one last time in order to obtain the proper results. Depending on the question and hypotheses that I was attempting to test, I used various reports generated by the lexicometric software. This is also an iterative process. For example, many analyses had to be performed multiple times, requiring one to try many different parameters in order to obtain results covering the largest possible part of the corpus.

Depending on the specific research questions, I use a combination of different analysis tools provided by IRaMuTeQ. I briefly present them in the following section.

4.5.2.1.1 Text Statistics

The most basic analysis provided by IRaMuTeQ is the text statistics, which provide a count of the different words in the corpus by type (e.g. noun, verb, adverb, adjective) as well as the frequency of each form. Table 4:15 shows a sample of this analysis performed on the text of my previous chapter.

Statistics on the Chapter 3 Corpus	
Number of text	1
Number of occurrences	7 073
Number of forms	1 123
Number of hapax	557
Number of adjectives	42
Number of nouns	441
Number of unrecognized words	172
Number of verbs	179

Table 4:15 Corpus Statistics for Chapter 3

¹¹⁵ Words appearing only once in the entire corpus.

¹¹⁶ Words normally conveying a meaning, the only words included in later analyses (adjectives, adverbs, nouns and unrecognized words).

4.5.2.1.2 Specificities and Correspondence Factor Analysis

This analysis can identify specific words by subcategories and performs a factor analysis to test the association of words with selected variables. For example, I use this kind of analysis to uncover words that are associated with gender, specifically, the words said by men versus women. This produces a table of words with their relative association to the variable. Table 4:16 and Table 4:17 show sample specificity analysis results of the top 10 words more likely to be found in chapters 3 and 4 using this thesis as a sample. For example, the word question has a probability factor of 20.4 of appearing in chapter 3 and the opposite probability factor of -20.4 for appearing in chapter 4. This makes complete sense since that chapter is devoted to presenting the research questions and hypotheses.

Active forms	Chapter 3	Chapter 4
Question	20.4	-20.4
Mobility	18.6	-18.6
Car	16.4	-16.4
Hypothesis	15.4	-15.4
Relate	14.7	-14.7
NMH	13	-13
Exclusion	12.8	-12.8
Social	11.8	-11.8
Feel	11.4	-11.4
Dependence	10.8	-10.8

Table 4:16 Sample Specificity Analysis Results for Chapter 3

Active forms	Chapter 4	Chapter 3
Figure	13.1	-13.1
Sample	10.8	-10.8
Table	10.2	-10.2
Word	10.2	-10.2
City	9.7	-9.7
Analysis	7.8	-7.8
Database	7.3	-7.3
Data	7.1	-7.1
Strasbourg	7.1	-7.1
Type	7.0	-7.0

Table 4:17 Sample Specificity Analysis Results for Chapter 4

To calculate the specificity factors of each form, IRaMuTeQ uses the method developed by Lafon (1980), which considers the probability of a word being specific to a sub-corpus formed by all texts according to a variable, in this case the chapter, over its probability to appear in the entire corpus, in this case both chapters combined. This analysis takes into account the variable length of each sub-corpus in its calculation of probability and compares the result to a hypergeometric distribution in order to calculate a deviation factor. This enables the creation of a probabilistic index that remains valid for the entire range of frequencies and allows to identify statistically relevant specificities. The columns titled chapter 3 and chapter 4 in Table 4:16 and Table 4:17 show the value of this factor. For my analysis, I used the threshold of 10 occurrences, meaning that I only take into account the words that appear at least 10 times in the whole corpus.

4.5.2.1.3 Method of Descending Hierarchical Analysis (DHA)

This analysis is based on the ALCESTE method developed by Reinert (1983, 1990, 2000). Its objective is to create clusters of words similar to each other but different from all others into classes, generating a statistical classification of different speeches in the same discourse similar to the clusters created by a multiple factor analysis. According to Pélissier (2016, p. 18), in order to process this analysis, a matrix is formed with on one dimension, every single

form in the text and on the other dimension, every segment of text. For each cell in the matrix, a Boolean variable is set to true or false depending on the occurrence of the form in that segment. For an example, see Table 4:18. A cluster analysis is then performed on the matrix to regroup the forms into classes.

Form	Segment 1	Segment 2	...	Segment <i>n</i>
i	1	0		0
must	1	0		1
say	0	1		1
...				
form <i>n</i>	1	1		0

Table 4:18 Sample DHA Lexical Matrix

Thereafter, the software divides the matrix into classes in an iterative process. Starting with the whole as class 1, it subdivides it into two more classes with words as distant from each other, each of these classes are then revisited and subdivided again a certain number of times (specified by the researcher) or until no more subdivision occurs (Hohl, Tsirogianni, & Gerber, 2011, p. 7).

When presenting the results of this analysis, IRaMuTeQ specifies what percentage of the corpus fits the model. In general, any result covering more than 70 % of the corpus is considered acceptable. As such, all results presented in the thesis only include analyses with coverage of 70% or greater. Figure 4:37 shows a sample DHC dendrogram chart, which is the result of our DHA analysis illustrating the 5 distinct classes that exist in the text of chapters 3 and 4. Typically each dendrogram is also followed with a table of correlating variables as computed by IRaMuTeQ using each forms of a word and the variables associated to the person saying it. In order to simplify the reading of these tables, each variable is represented by an icon (see Table 5:1 for a list of all the icons and their meaning) and the strength of the correlation is expression by the P value.

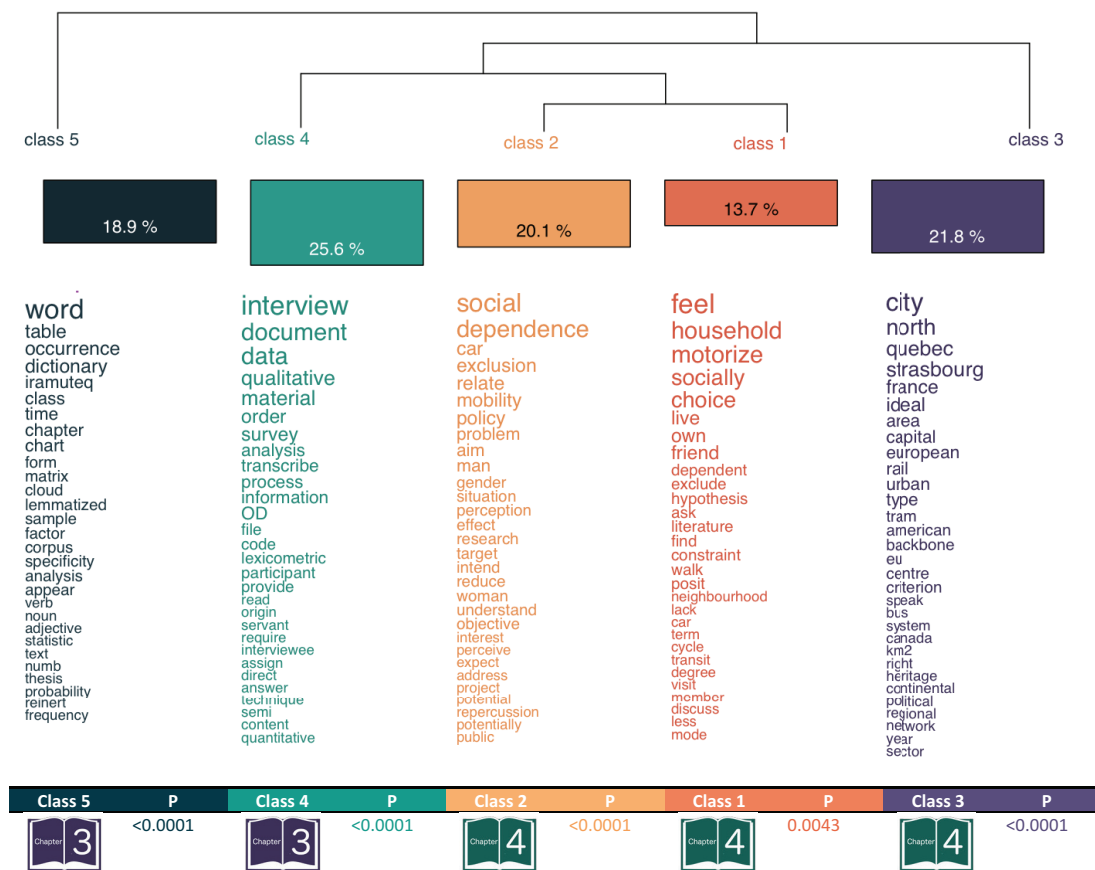


Figure 4:37 Sample DHC Dendrogram Chart

The last step in the analysis is for the researcher to name each class. According to Reinert¹¹⁷, each class should be considered a “lexical world”. By seeking the internal coherence of the vocabulary of each class and the inter-class differences of the vocabularies, the researcher

¹¹⁷ Cited by Dalud-Vincent & Normand (2011, p. 18).

can assign a “title” to each class and to note the great trends from the corpus (Dalud-Vincent & Normand, 2011, p. 18).

4.5.2.1.4 Factorial Correspondence Analysis

This analysis is based on the Reinert classification method, however, in this occurrence, creating a matrix of forms and classes as opposed to the matrix of form to segment of the DHA analysis. For each cell in the matrix, a Boolean variable is set to true or false depending on the occurrence of the form in each class. For an example of the correspondence matrix, see Table 4:19. The matrix is not shown directly, but rather its graphical representation. According to Lebart & Salem (1988) quoted by Pélissier (2016), this analysis is largely based on linear algebra and the graphical representations they produce depicts geometric proximities between point lines and point columns which visually translate to the statistical associations between rows and columns.

Form	Class 1	Class 2	...	Class <i>n</i>
i	1	0		0
must	1	0		1
say	0	1		1
...				
form <i>n</i>	1	1		0

Table 4:19 Sample Correspondence Lexical Matrix

4.5.2.1.6 Similarity Analysis

This analysis arranges the words in a network chart based on their co-occurrence within a single segment. The software calculates for every form, the frequency of appearances together, thus creating a co-occurrence index for every form. Typically, only the words appearing a minimum number of times are included in order to retain the readability of the network chart. In those charts, the size of the words is correlated to the number of times it occurs and the width of the line linking words is correlated to the strength of their connection (number of times they appear together in a segment). Figure 4:40 shows a sample similarity analysis chart based on all the active forms appearing more than twelve times in my previous chapter.

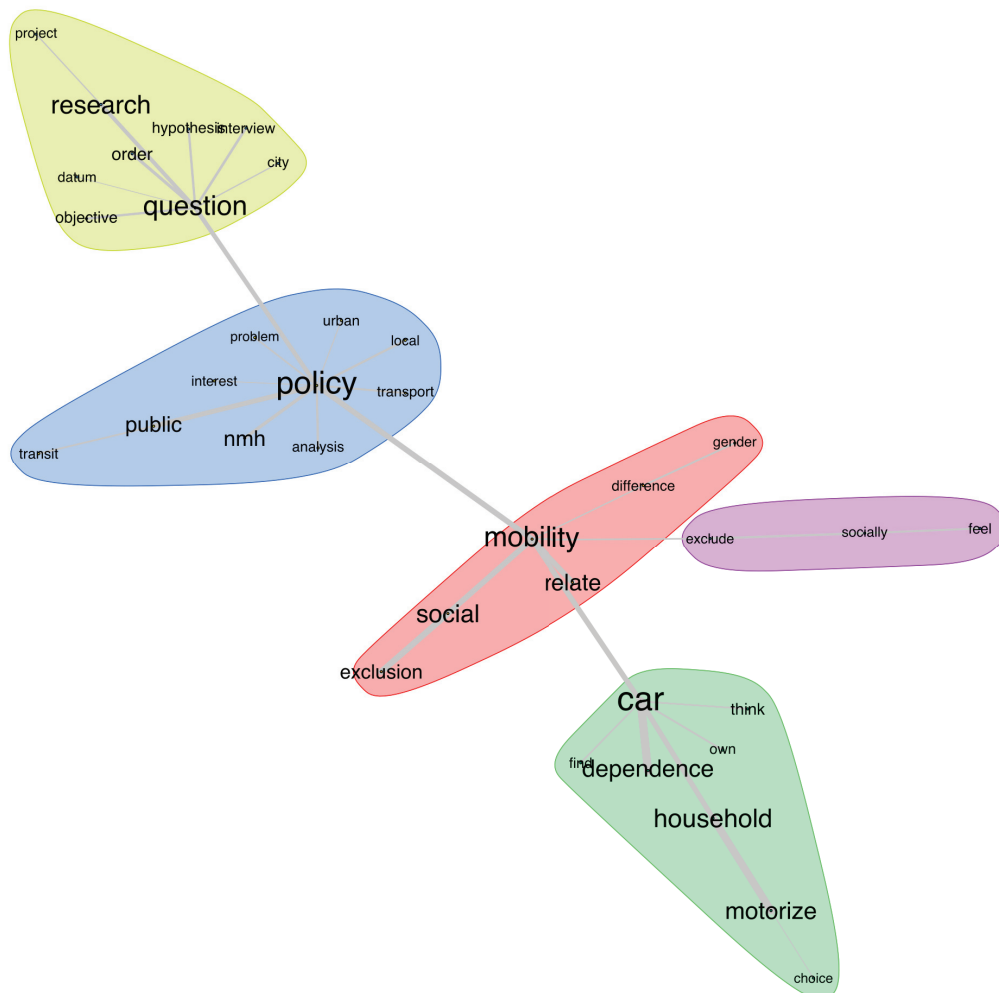


Figure 4:40 Sample Similarity Analysis Network Chart

6) Interpretation of results

Finally, once all the graphics and tables were produced, I still had to review and ponder their meaning, which even in a very quantitative endeavour, leaves the interpretation to the reflexivity of the researcher. As Wanlin (2007, p. 251) puts it, citing Robert & Bouillaguet (1997, p. 31), the interpretation of the results consists of relying on the elements discovered by the categorization to conjure a reading of the corpus studied, which is both original and objective.

4.5.2.2 Origin-Destination Survey Data Analysis

The OD survey data analysis involves four different databases generated by four different organizations. The challenge is to create, with the information from these disparate databases, a common set of data that can be used in a comparison. Each database is using similar general rules, but they are unique and I had to process them in different ways. In this section, I present each of them and the transformation required to arrive at comparable data. The OD comparable high level data that I generated in this step is also used to perform the GIS analysis.

The database for Quebec City contains data from a large number of people. The complete list of fields and their description as provided by the Ministry is available in the Appendix 8 on p. 576. This database was provided in the form of a single flat Excel file containing all the data and as such required aggregation in SPSS. The database for Strasbourg contains data for the Eurométropole agglomeration. The complete list of fields and their description as provided by the Eurométropole is available in Appendix 9 on p. 583.

Despite the excellent of the data provided by the Ministère des transports, de la mobilité durable et de l'électrification des transports du Québec and the Eurométropole, the processing of the OD database in order to answer research questions requires a phase of verification, cleaning and preparation. A multi-step process had to be used to compile the data and arrive at a generic and comparable data set. Figure 4:42 demonstrates the various steps of this process.

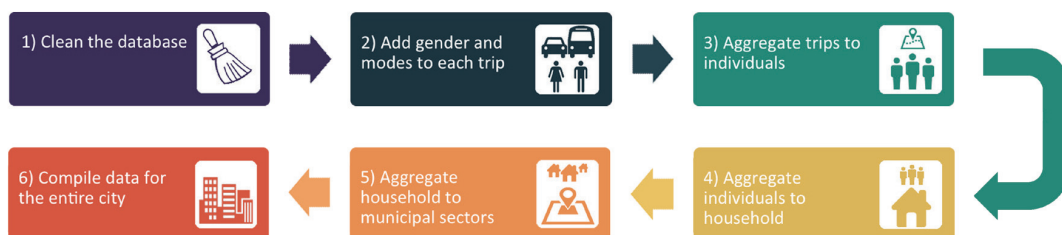


Figure 4:42 Quebec City SPSS Analysis Process

1) Clean the database

Data cleaning consisted of an examination of the consistency of the data and the relevance of certain specified information. In some cases, adjustments, corrections or deletions of information were deemed necessary. Specifically, some trip had to be suppressed from the data set. While examining the distribution of trip distance, some trip had a distance of 0 km, while some had very long distances in the thousands of km that obviously were erroneous data. I removed those trips during the cleaning process.

2) Add gender and modes to each trip

Since one of my specific interests is comparing between the genders, I added necessary variables to account for the number of trips and the distance for each mode by gender.

3) Aggregate trips to individuals

Some aggregation of the data was necessary to synthesize some information regarding individuals. This allowed to obtain a single row of information for each individual in the sample, while summing up the all their trip distances and the amount of use for each mode of transport. I also added to each individual whether he or she was a member of a MH or a NMH.

4) Aggregate individuals to household

The next step consisted of performing a similar aggregation, this time for individuals, grouping them by households. I also added new calculated variables for totalling the distance travelled by the entire household for each mode of transport and the number of trips taken via every mode.

5) Aggregate household to municipal sectors

The last step performed in SPSS was the aggregation of all households for each municipal sector, allowing to generate statistics per sector and by the typology of territorial types for each urban area.

4.6 Epistemological Reflections

In this section, I reflect on epistemological concerns surrounding my thesis by being critical and presenting some of the issues encountered during my field work.

4.6.1 Linguistic Differences

Although Quebec and France are French-speaking locales, there are still linguistic differences between the two that may affect the comparison in the lexicometric analysis. For example, in our discussions of automobile dependence with representatives of non-motorized households, the terms frequently used to talk about automobiles differ. While in

Strasbourg, people refer to “caisse”, “bagnole” and “auto” to talk about the car, in Quebec City they use the words “char” or “voiture” describe the same thing. Even though these words have different meanings in the standard French dictionary, in this case, they have to be treated as the same. As these numerous terms finally refer to the same object, I had to modify the dictionary used in the lexicometric analysis in order to combine them around a single term. Having a typically Quebecois accent, and recognizable as such, I believe that the French participants potentially adjusted their discourse in order to deem it understandable to a foreigner. This does not prevent some from using acronyms that are unknown to me as a national of a different country and continent. Not being very familiar with the region of Strasbourg, the names of places were also difficult to transcribe and during the interviews with the Strasbourg participants, these references which had to be significant regarding distances, were not indicative to me. Although I made efforts to master the local toponymy, some references were lacking. These linguistic pitfalls appeared especially when transcribing interviews. To compensate for this, I consulted a Strasbourg colleague who helped me decipher and correctly spell these terms in order to locate them on a map. As a result, I have repeatedly modified the lexicon and the list of expressions from the lexicometric analysis software. It may seem peculiar to speak of translation, whereas in both cases it is French, but the Alsatian and Quebecois meanings of certain French words differ enough to cause concern in the lexicometric discourse comparison.

4.6.2 Different Data Source = Different Data Altogether

Similar clashes occur when comparing statistical data. I gained access to data from an origin-destination survey of the Greater Québec City¹¹⁹ and Strasbourg¹²⁰ regions. However, these data bases are organized in different ways and the geographical divisions used to regroup the data are very distinct. While the Quebec database contains 69 municipal sectors, the Strasbourg base comprises 1147 sectors on a much smaller scale. The number of households surveyed also varies greatly. While in Quebec City, there the cleaned-up database contained 27 783 households with 59 875 individuals, the Strasbourg database has 5 399 households with 12 709 individuals, which means that, per geographical unit, the database of Quebec City has an average of 383 households, whereas the Strasbourg database has on average only 4.7 households. I consequently had to resort to using clusters of geographical sectors on the Strasbourg database in order to obtain similar and comparable data. One extra difficulty being that these groupings must also make sense as to the geographical reality of Strasbourg to ensure their validity as a unit of analysis. In the end, I used the typology of urban areas presented in Map 5:2 on p. 172.

¹¹⁹ The raw data from the 2011 Quebec City area origin-destination survey were provided by the ministère des Transports, de la Mobilité durable et de l'Électrification des transports (MTMDET) du Québec.

¹²⁰ Enquête mobilité ménage 2009, Strasbourg Eurométropole.

For the comparison of public policy texts, striking differences remain, which can influence the results, and thus the validity of the comparison. In both cases I conducted a census of public policy documents in order to create a comprehensive corpus of transport policies in both cities. While for Quebec City it was fairly easy to identify the documents to be included, which were clearly published on the web sites of the provincial and federal ministries as well as the regional and municipal governments, establishing a corpus for Strasbourg was more complex because of the existence of a vast number of documents (including many laws), some of which are not available in text version, for example the case of scanned image only PDF files where the text remains incomprehensible for the lexicometric software. I manually transformed these image files to include the text, I have manually excluded from the corpus articles of law that did not relate to the mobility of people, but for a research endeavour that wants to produce a quantitative analysis, such as lexicometric analysis, the subjective creation of a corpus, although realized as objectively as possible can induce differences in the results.

4.6.3 Political System Differences

Differences in the political organization of the cities in the sample must also be taken into account. Even if elected officials have the same title, the responsibilities and prerogatives of a mayor in France are very different from those of a mayor in Quebec (Mévellec, 2005, p. 60). The interactions between different levels of government (national, provincial, departmental, regional, municipal) also differ significantly between cities in different countries and various federated states within a country. The comparativist who is interested in public policy must take this aspect into account. The role of the mayor and the various political institutions must be taken into account. This calls into question the validity of the comparison across the different urban areas.

To alleviate this issue, I took the precaution of only meeting non-elected public officials in the cities where I did public administration interviews to keep these political system differences to a minimum and ensure the validity of our findings. The differences also show in the list of documents included in the policy documents analysis for each region. I adapted the selection of documents to represent the policy as expressed locally.

4.6.4 Different Rapport with Research and Researchers

Although I used the same protocol in all field works, the same method of selecting participants and was careful to create comparable samples, the rapport of research participants to researchers differs between the different field works. For example, the well-known and publicized ethics overview boards overseeing research with human participants

in North American universities has led to a close confidence rapport between researchers and participants over the last few years, while that is not the case in France, for example. These differences affect what each terrain provides as a substrate for data. Researchers must pay attention to this phenomenon. During my interviews in Quebec City and Strasbourg, I perceived these differences and it affected the interviews in minor ways. For example, in Quebec City I was often perceived as a potential spokesperson for the participants who seemed to assume that what they told me could be used to petition improvement to their situation. The research was not presented as such in both field works, but in France the neutrality of the social sciences which is generally assumed allowed me to collect testimonies that are less political and activists oriented. These differences are integral to the interview material and were taken into account during the analysis.

4.6.5 On Reflexivity

To end this chapter on methodology I would like to discuss reflexivity and to present the product of my reflection on the value and the meaning of this work as I'm producing it, in an effort to refute claims that such work is the endeavour of a social science where the researcher is not part of the subject of his research, society, and yet claim to the relevance and scientific quality of this work. The knowledge acquired through the application of the methodology previously presented was the product of an interpretative approach in which I believe that, as Bevir (2013, p. 609) exposes, the explanations are the fruit of a dialogue between researcher and object of study, in a social science which involves an interaction in which the researchers react to the interpretations of the actors they study.

I would like to share with you two definitions of reflexivity that were inspirational and important to me during the whole 4 years' process of this PhD thesis. For Jessop (2003, p. 7) Reflexivity is the "[...] ability and commitment to uncover and make explicit to oneself the nature of one's intentions, projects, and actions and their conditions of possibility; and, in this context, to learn about them, critique them, and act upon any lessons that have been learnt". For me this means that I must recognize my role in the creation of the knowledge and reflect on the fact that I am not neutral on the subject matter. For Mason (2002, p. 5): "[r]eflexivity in this sense means thinking critically about what you are doing and why, confronting and often challenging your own assumptions, and recognizing the extent to which your thoughts, actions and decisions shape how you research and what you see". I have kept that in mind especially while interviewing NMH and local officials by preparing myself to be open to new ideas and perspectives that might not coincide with mine. When presenting certain questions, I made a point of explaining that these might be irrelevant to the respondent and asked the participants if they thought the question had value.

Being reflexive about the research is more evident for the data that I generated directly, the 1st hand data generated by the interviews, the lexicometric analysis and the discourse analysis. For the 2nd hand data, which was created by others, like the OD survey data and the census data, I have to rely on the good will and scientific ethics of those who created the data. For this reason I have picked sources which are as reliable as possible and I have scrutinized the data. I have attempted to be reflexive throughout this study. Of all the different issues mentioned in this section, certain ones had to be specifically taken into account from a reflexive perspective: particularly the linguistic differences of 4.6.1 and the different rapport with research and researchers of section 4.6.4. To further the quality of the interview process and the usefulness of the data obtained through the process, throughout the interview I encouraged participants by agreeing with them and verified that I understood them correctly by paraphrasing what they had said and asking for them to confirm I had the right understanding of what they meant. Through reflexivity I left behind the assumptions that I had correctly understood the participants on the first take.

For example, I made clear in my objectives that I firmly believe that providing a public service in the form of public transit is important to me as well as the need to lower and aim to eliminate social exclusion related to mobility. When performing interviews, I have noted from the beginning and informed the participants that I consider this social exclusion to be an injustice. I kept all these considerations in mind while performing the analyses and attempted to put into practice the recommendations of Mason:

[...] researchers should constantly take stock of their actions and their role in the research process, and subject these to the same critical scrutiny as the rest of their “data”. This is based on the belief that a researcher cannot be neutral, or objective, or detached, from the knowledge and evidence they are generating. Instead, they should seek to understand their role in that process (2002, p. 7).

It was through this kind of reflexive thinking that I came to realize that I was perceived differently by the NMH of Quebec City than the ones in Strasbourg. This was especially helpful during the coding part of the qualitative discourse analysis process, in order to ensure that the codes I assigned were as unbiased as possible. For that specific case, Mason (2002, p. 110) was once again a source of inspiration:

All these factors make the process of documentary analysis look less and less like “excavation”. The process of reading, understanding, translating and interpreting documents, selecting them, comparing them, and so on adds a further dimension of construction as well as reflexivity here, as Scott points out:

Textual analysis involves mediation between the frames of reference of the researcher and those who produced the text. The aim of this dialogue is to move within the “hermeneutic circle” in which we comprehend a text by understanding that frame of reference from which it was produced, and appreciate that frame of reference by understanding the text. The researcher’s own frame of reference becomes the springboard from which the circle is entered, and so the circle reaches back to encompass the dialogue between the researcher and the text. (1990, p. 32)

Being reflexive also meant paying extra attention to reflect the original dialogue when transcribing the recorded interviews as suggested by Poland (2001, p. 630). It also meant that when meeting NMH members, especially in Quebec City, I was aware that I first believe it inconceivable to live properly in that city without a car, and had to look beyond my own beliefs to listen carefully to what they were saying. It also meant I had to keep my cool and not let myself be impressed by the high level of security required to meet some of the local officials, having to provide ID and receive security clearance for some interview. And finally noticing how some officials were much less isolated by a layer of security “red tape”. While I was having a conversation with these various individuals, I sometimes had to repress contradictory emotions when I disagreed with what was being said and made note of these instances on my field notes. The silent observer part of myself, ever-present during the interview process, also made notes of emotional responses and changes in tonality in the person I was talking with. I end this chapter with one last quote on the meaning of reflexivity by Warren (2001, p. 98) which summarizes my feeling on the subject on interviews: “each participant [both the researcher and the interviewee] looks at the world through the other’s eyes, incorporating both self and other into the process of interpretation”.



Empirical Results and Discussion

Objective 1:
Understanding Car Dependence

“The construction of our habitat continues to be dominated by market forces and short-term financial imperatives. Not surprisingly, this has produced spectacularly chaotic results, it astounds me that the built environment in so many places remains an incidental political issue. Cities are the cradle of civilisation, the condensers and engines of our cultural development. Putting the culture of cities back on the political agenda is critical, for while they might be places where life is at its most precarious, cities can also fundamentally inspire. This is the dichotomy of the city: its potential to brutalise and its potential to civilise.”

Richard Rogers & Philip Gumuchdjian (1997, p. 1–17)

In this chapter I present the empirical results related to my first objective which is to document car dependence and compare its prevalence in different regions of North America and Europe and analyze the public policies related to it to explain why the social dimension of mobility is neglected in policy making and its effects underestimated. For each question, I combine the different methodological approaches implemented in the research.

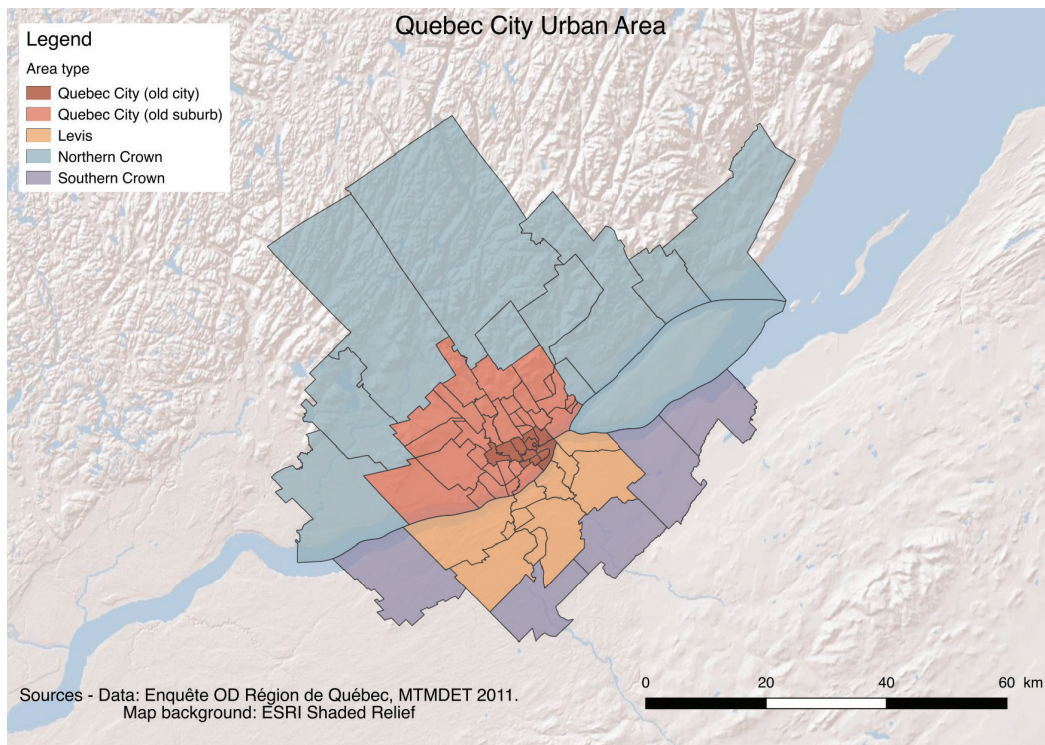
First, I present the analysis of the OD survey data regarding car dependence. Then I discuss my analysis of the interview material with NMH and civil servants about what they see as car dependence. This is followed by a presentation of the results of my discourse analysis regarding accessibility issues for NMH with both groups, followed by a discussion of car dependence and policies from multiple perspectives. I conclude the chapter by presenting car dependence as it is portrayed in the policy documents, comparing the two urban areas. This entire chapter is devoted to providing an answer to the research sub-question about car dependence¹²¹.

5.1 The 10'000 Feet View: Car Dependence Seen from OD Data

The data gathered by the OD research does not directly measure car dependence but by comparing modal split, the number of cars per household and comparing the reported mobility of motorized and non-motorized households it becomes possible to make some deductions about the relative car dependence of each area. As was the case in the research reported by Bhat & Guo (2007, p. 524), the characteristics of the built environment has an influence on car ownership. For each urban area, I present the results for the different sub area according to different yet similar typologies of built environment.

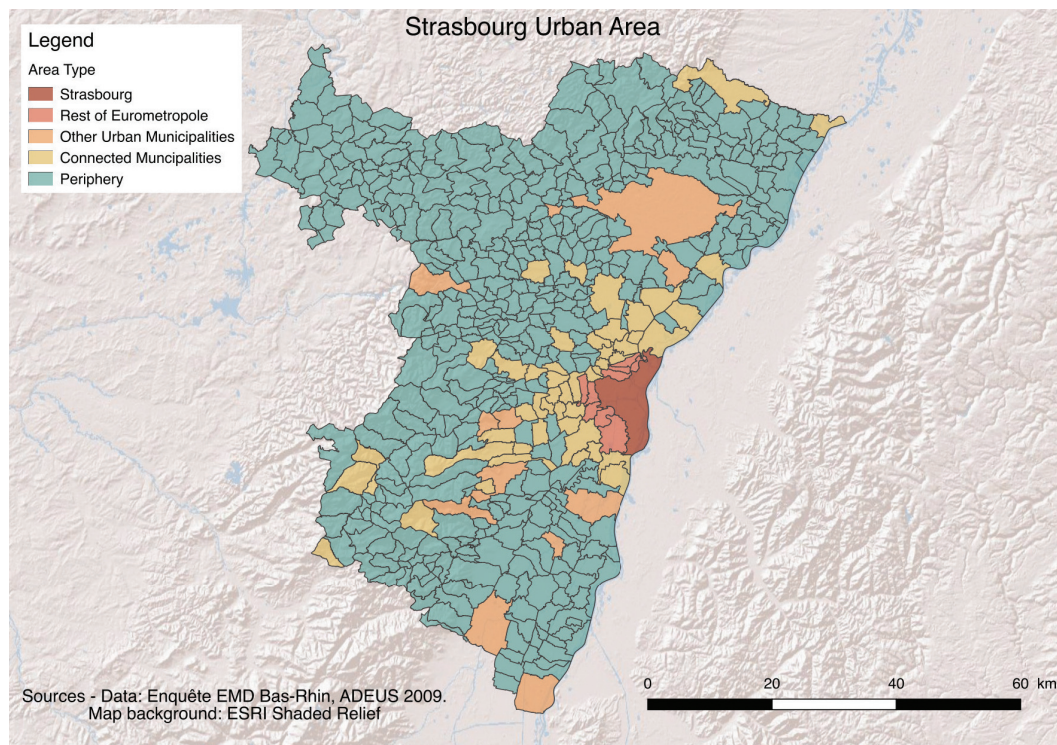
¹²¹ See section 3.3 on p. 107.

For Quebec City, the typology consists of five different areas. The *Old City* consisting of the Quebec City as it was prior to the 2001 municipal merger. This included downtown and the historic city center. The *Old Suburbs* consisting of the municipalities surrounding Quebec City that were amalgamated in 2001 to form the current Quebec City municipality. This is mostly a residential and less dense area put along a continuous urban fabric. *Levis*, consisting of the municipality of Levis after the 2001 municipal mergers which includes a dense downtown area and the amalgamated old suburbs of Levis that are much less dense. *Northern Crown* which are the municipalities surrounding the northern part of the current Quebec City and *Southern Crown* consisting of the municipalities surrounding the City of Levis. Both crowns consist of a few villages, agricultural land and represents a very sparse, mostly green environment. Map 5:1 shows the different areas in the Quebec City area typology.



Map 5:1 Quebec City Urban Area Showing the Typology

For Strasbourg, I have used a typology previously employed by the LaSUR in a research project performed for the ADEUS¹²². The typology divides the Urban area as follows: *Strasbourg* which is the current commune of Strasbourg. *Rest of Eurometropole* which are the other municipalities that together form the Eurometropole agglomeration. *Other urban municipalities* are high density communes with a strong proximity to services with many jobs as well as good public transport. *Connected municipalities* which are located all around Strasbourg, in a dense and fairly green environment. These municipalities have a high density of jobs and services and remain well served by public transport with few social housing. The property market is tense and the socio-economic level of household is high. Finally, the *Periphery* defines municipalities inside the Bas-Rhin department that are less dense, sometimes agricultural and less connected to the Strasbourg agglomeration. This typology was borrowed from (Dubois, Kaufmann, Munafò, Tabbone, & Villeneuve, 2015). Map 5:2 shows the Bas-Rhin department which I have considered as the Strasbourg urban area in order to use a similar an area similar in scale with the Quebec City urban area.



Map 5:2 Strasbourg Urban Area Showing the Typology

¹²² See Dubois, Kaufmann, Munafò, Tabbone, & Villeneuve (2015).

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5.1.1 NMH/MH per Area

The first way to compare car dependence between the two urban areas based on data from the Origin-Destination survey is to look at the number of motorized and non-motorized households across the typology of territories of each urban area (see Figure 5:1). The first observation is that the further away from the older, denser, better served by public transit area, the higher the rate of motorized households in both urban regions. The largest difference being from the first column in the typologies, the old city of Quebec City and the current city of Strasbourg and the next column, the old suburbs of Quebec City that have been amalgamated into Quebec City and the other municipalities that form the Eurometropole agglomeration of Strasbourg, with respectively 22 and 15 percentage point drop between the two types of territories. Then, when also comparing between the two urban areas, both from an overall perspective, as well as each territory types, I notice that the households of the Strasbourg area are constantly less motorized than the ones of the Quebec City area. For example, there is a 6-percentage point difference between the two urban areas. This is an indication of greater car dependence in the Quebec City area than in the Strasbourg area. With the percentage of households having at least one car as high as 96%, 97% and 98%, for some sectors of the Quebec City area, one could easily think that “everyone has a car”.



Figure 5:1 Percentage of Motorized Household - Area Type by Urban Area

5.1.2 Number of Cars per Household

The second way to compare the two areas in term of car dependence is to look at the number of cars per household in closer detail (see Figure 5:2). Indeed, as was the case for Næss (2006, p. 166), the more car-dependent an area, the more cars are necessary per household. Once again, the Canadian urban area appears more car dependent that its European equivalent.

Overall, the Quebec City urban area has 2 percentage points more households with two cars and 4 percentage points more households with three cars.

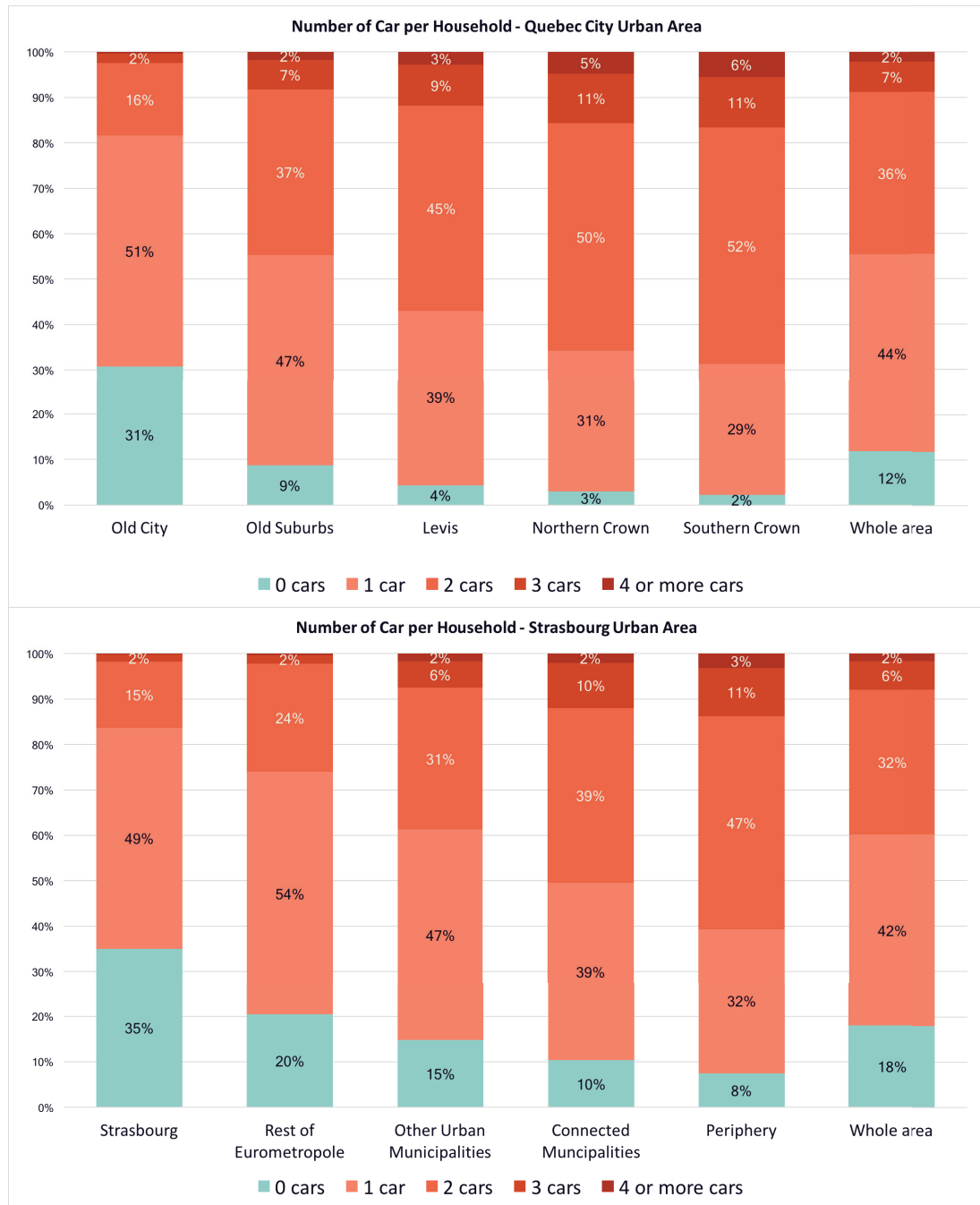


Figure 5:2 Number of Car per Household - Area Type by Urban Area

5.1.3 Modal Split per Urban Area

The third way to compare the level of car dependence between the two urban areas is by comparing the share of all trips for each transport mode, the “modal split” (see Figure 5:3). In order to compare these two charts, one has to be reminded that Quebec City does not have a tram and thus the bus modal share is equivalent to the addition of the bus and tram mode share for the Strasbourg area. I have kept the tram separate because it demonstrates that this mode is mostly used by households located in the Eurometropole where the tram network is also located and not by people traveling into Strasbourg from outside Eurometropole, getting to the network and making the rest of the way on the tram.

Here again Quebec City appears more car dependent with a 21-percentage point lead over Strasbourg in the overall mode share for the car (as drivers). The other important and surprising difference is that even with its less extensive bus only transit network, the Quebec City area has a 6-percentage point lead over the Strasbourg area in public transit mode share, in effect a mode share for transit that is double the Strasbourg urban area overall. This is a such a surprise because of the large investments in public transit infrastructure in that area, with a tram, a bus rapid transit and regular bus service, as well as the general perception of Strasbourg as a leading transit city. The other major difference is the very high mode share for active mobility (25% for walking and 6% for cycling) overall in the Strasbourg urban area compared to much lower active mode share in the Quebec City area. This active mobility difference in mode share can be explained by many factors such as the climate and the topography which lends themselves more easily to those modes in Strasbourg than in Quebec City, but also Strasbourg’s stronger policy focus on increasing these mode shares. While both urban area show a policy focus on cycling (see section 5.4.4.7 on p. 322), the Strasbourg area policy documents show a stronger focus on walking in that area when compared to the Quebec City area (see section 5.4.4.8 on p. 327). Strasbourg’s land use also lends itself more easily to active modes because of its high density and it has a more developed network of cycling infrastructure. This also concurs with typical findings comparing active mobility between Europe and North America (Pucher & Dijkstra, 2003, p. 1510).

A striking and relevant difference in terms of car dependence is the comparison between motorized and active modes of transport. When combined, the various motorized modes¹²³ reach a 90% share in the Quebec City area while only representing a 62% share of the trips in the Strasbourg area. This appears indicative of a higher prevalence of car dependence in the Canadian city than its European counterpart.

¹²³ The car as driver and passenger, the bus and the tram.

As was the case for the percentage of motorized households and the number of cars per households, I notice in both urban areas that as we move further into the typology, the share of active modes diminishes while the share of car modes increases. However, this increase shows much higher levels of car mode shares in the Quebec City urban area for every step of the territorial typology ladder.

Finally, the last important difference is with the “other” modes. These represent a more important share of trips in the Strasbourg area than in the Quebec City area. Unfortunately, due to the different sources of data, the “other” category does not include exactly the same thing in both cases. For example, in Quebec City it includes the trips on the ferry that crosses the Saint-Lawrence river between Quebec City’s historic center and Levis’s lower downtown area. In the Strasbourg area, it includes trucks which are considered apart from cars in that area but not in the Quebec City area. In both cases the mode also includes motorcycles and scooters which are vastly more popular in the Strasbourg area than in Quebec City area.

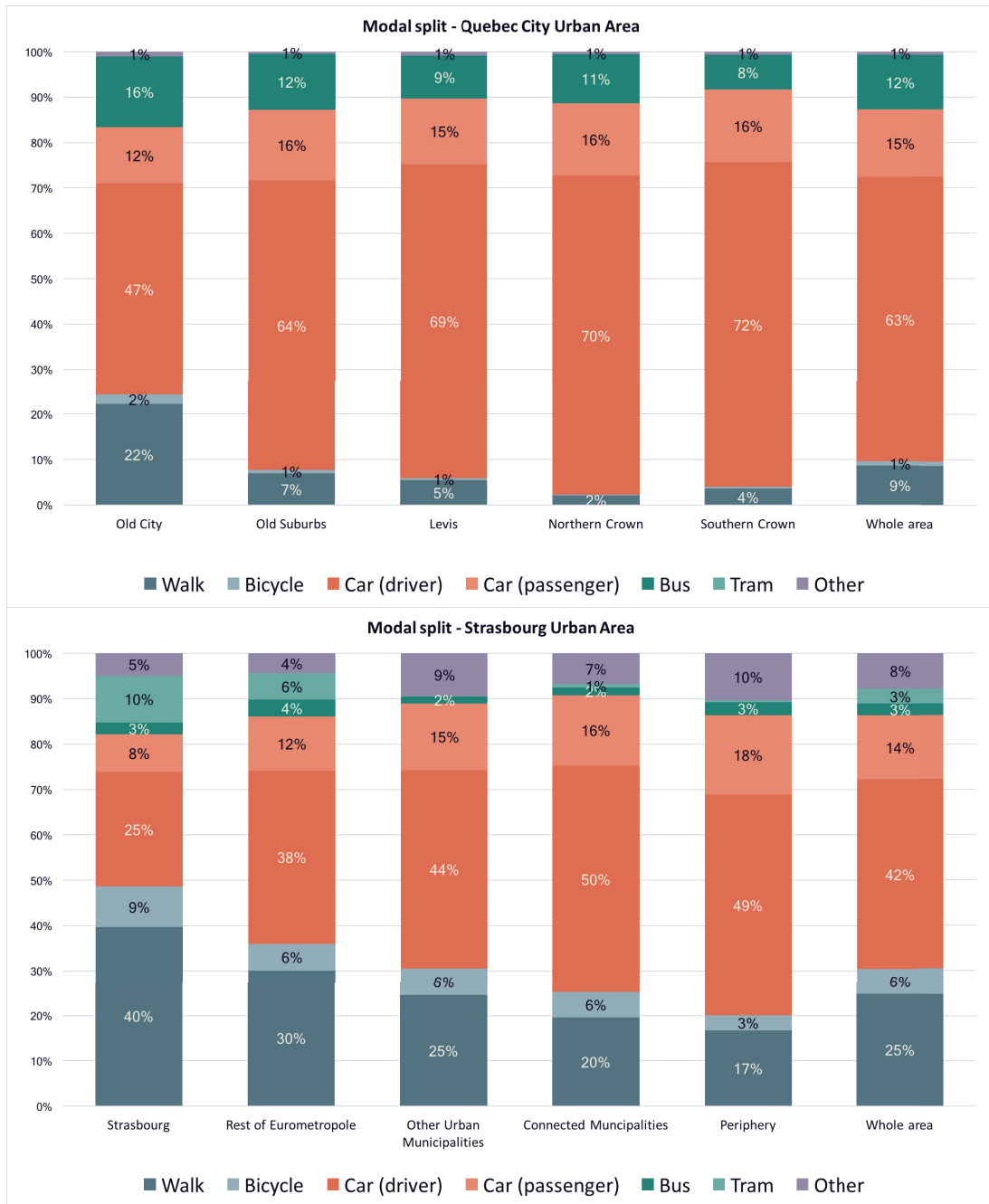


Figure 5:3 Modal Split by Urban Area

5.1.4 Modal Split per Area Based on Trip Distance

The major difference between the two cities in terms of share for motorized modes versus active modes begs further investigation. In order to explore the difference, I split the trips into two categories, those of three kilometres or less, and those of more than three kilometres (see Figure 5:4). The differences from the charts showing the modal split for all trips between the two areas remains true at every level, but the much smaller share of active modes in the Quebec City area, even for trips of three km or less is quite noticeable. Strasbourg leads in active mobility across all types of territories at both trip lengths. Its lead by a staggering 28 percentage points in active mode shares for trips of three km or less is impressive. From that perspective, the Quebec City area once again appears more car dependent than the Strasbourg area. The fact that overall, 77% of all trips of three km or less are made by motorized modes of transport there versus only 42% in Strasbourg approximates the strength of car dependence in the Quebec City area. Strasbourg's urban area's lead of 4 percentage points in active mode share for trips of more than three kilometres is also significant.

When comparing within each urban area between the territorial types, the differences are not following the same trends as before. Some of the different types of territories appear similar in this analysis more than in others.



Figure 5:4 Modal Split by Urban Area by Trips Over and Less Than 3 km

5.1.5 Modal Split Per Area Based on Household Motorization Status

When comparing the modal split of NMH versus MH between the two urban areas, the same patterns emerge (see Figure 5:5). Overall, the difference in shares of motorized modes is higher in the Canadian area than the French one (5 percentage points more for NMH and 20 percentage points more for MH). The mode share of combined active modes in the Quebec City area stands 22 percentage points below the Strasbourg area for NMH and 19 22 percentage points below for MH. Also indicative of a greater car dependence in the provincial capital is the fact that the overall car driver share for NMH is double that of Strasbourg and the car as a passenger has 4 percentage points more share over there.

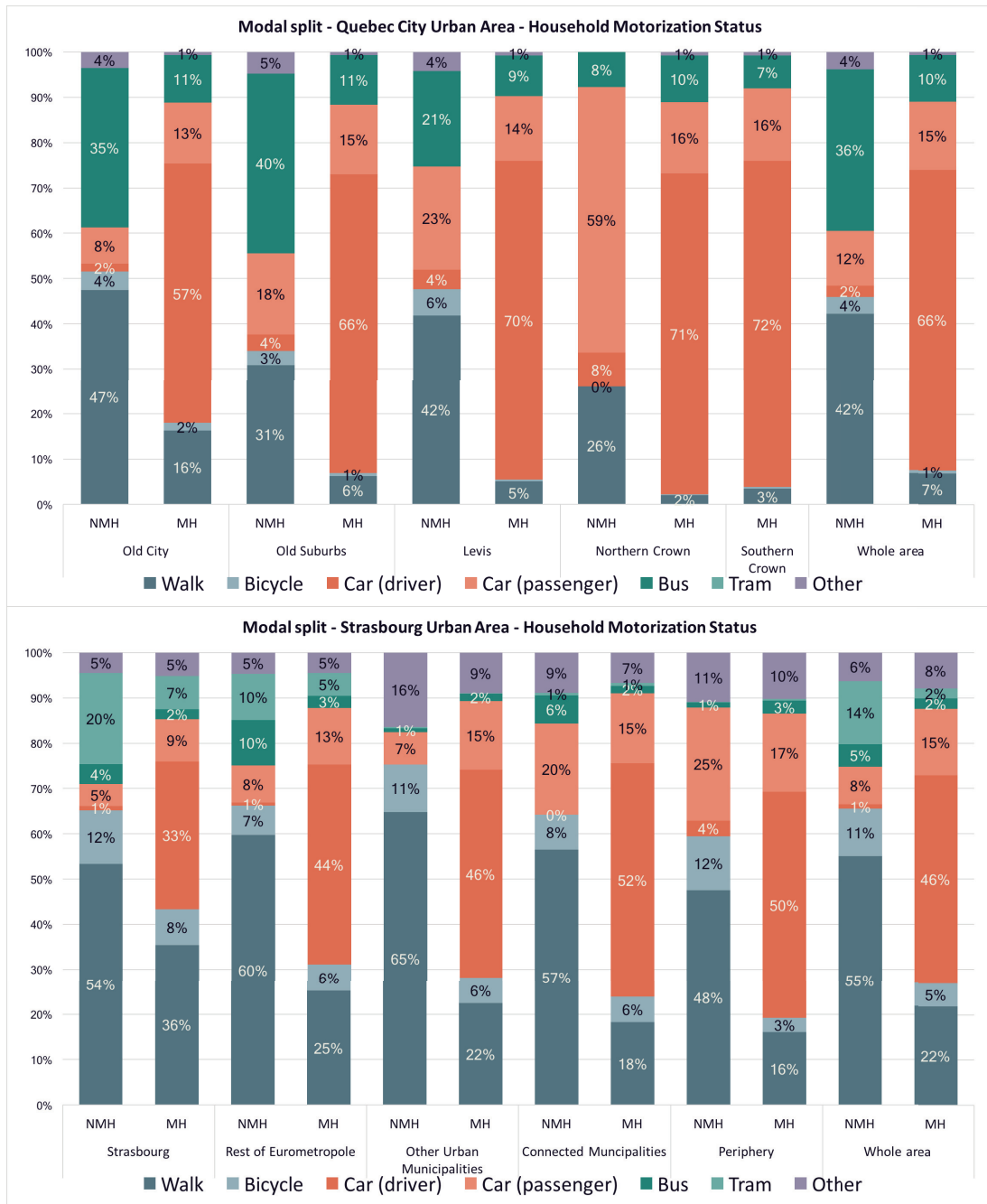


Figure 5:5 Modal Split by Urban Area by Household Motorization Status

5.1.6 Distance Travelled Per Area Per Mode

The last comparison from the perspective offered by the OD data is the distance travelled per mode on average, counting only the users of each mode¹²⁴. Unfortunately, this comparison is only valid within an urban area across the different part of the typology and not between the two urban areas as the methodology used to calculate distances is quite different, lending to much more realistic values (and thus inflated compared to the Quebec City area data set) in the case of the Strasbourg data set. For both areas (see Figure 5:6 and Figure 5:7), we observe a trend of increasing distance for motorized modes as we move up in the typology.

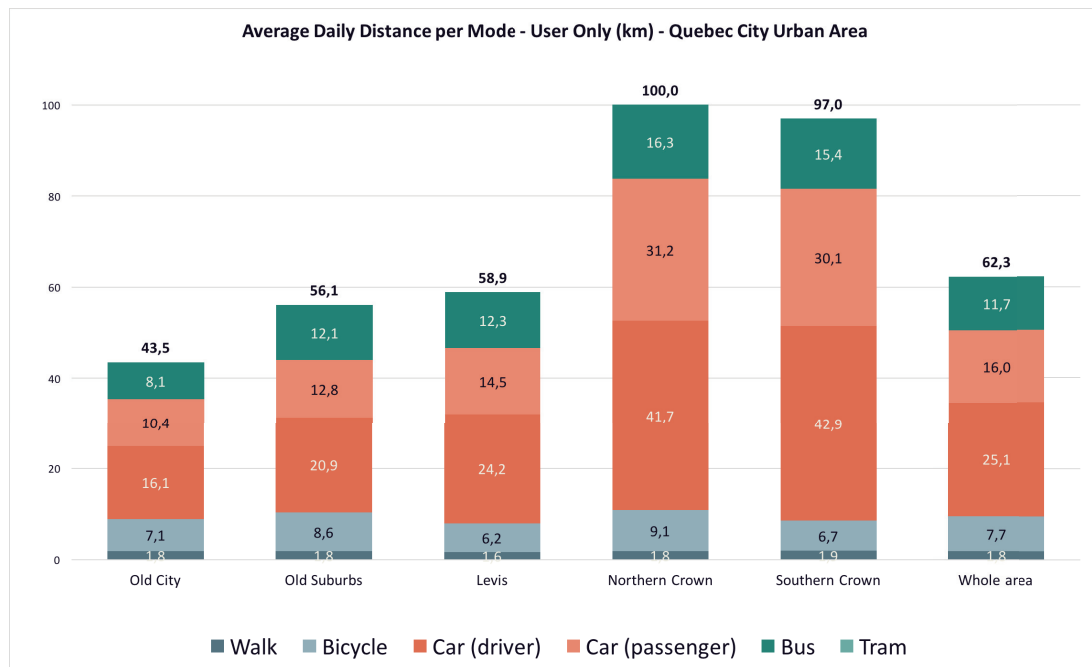


Figure 5:6 Average Daily Distance per Mode (km) - Users Only - Quebec City Urban Area

¹²⁴ E.g. an area's total distance travelled by bicycle divided by the total number of cyclists in that area from the OD sample data, indicating the actual average trip length for each mode's actual users.

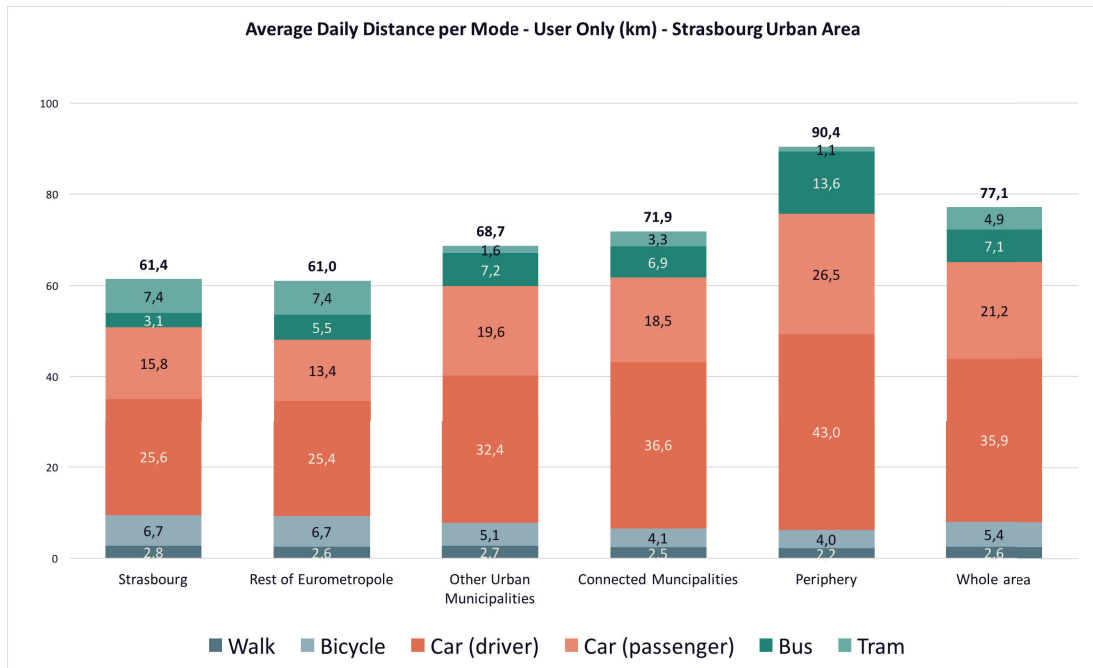


Figure 5:7 Average Daily Distance per Mode (km) - Users Only - Strasbourg urban area

5.2 Perceptions of Car Dependence

When I met NMH and public servants, I started the discussion by introducing my definition of car dependence from Dupuy (1999a) and then asked what they thought about car dependence. This section presents the results of analyzing their answers with the quantitative techniques of IRaMuTeQ, followed by a similar analysis of the discussions with civil servants regarding their thoughts on car dependence. Combining a bottom-up approach of the view from non-motorized households with a top-down approach of the view from local public administration.

Hierarchical analysis (DHA) produced with IRaMuTeQ. At the top of the chart is a block containing a percentage value represents the relative importance of each class over the total number of segments that were included in the analysis. Below this block is a list of words included in the class in descending order of importance in the weight of the formation of the class¹²⁶. Each of these charts is then followed by a table showing the variables for each class that were identified to be significantly correlated based on the multiple forms of a word used in connection with the variables regarding each participant¹²⁷. In order to simplify the comprehension of these tables, each variable is represented by an icon (see Table 5:1 for a list of all the icons and their meaning) and the strength of their correlation is expression by the P value. I have provided a condensed chart of all the icons and their meaning on the very last page of the thesis for easy consulting.

¹²⁵ All the interviews with NMH and civil servants used in the analysis were done in French. All the charts depicting word networks, word clouds or dendrograms and quotes in English from participants are my own translation.

¹²⁶ See section 4.5.2.1.3 Method of Descending Hierarchical Analysis (DHA) on p. 153 for details on the formation of classes.

¹²⁷ This is calculated using the χ^2 statistical analysis.






























Icons for data from Non-Motorized Households	
 Quebec City	 Respondent doesn't feel socially excluded
 Strasbourg	 Respondent feels socially excluded
 Motorized households	 The household has a membership in the car-sharing system
 Non-motorized households	 The household doesn't have a membership in the car-sharing system
 Women respondent	 At least one member of the household has a transit pass
 Men respondent	 No member of the household has a transit pass
 Modest revenue level	 Respondent has a driver's licence
 Middle revenue level	 Respondent doesn't have driver's licence
 Affluent revenue level	 Household owns their residence
 Household type: Single person	 Household is renting their residence
 Household type: Roommates	 Respondent is employed
 Household type: Couple	 Respondent is unemployed
 Household type: Family	 Age: 18 to 40
 Household type: Single Parent Family	 Age: 41 to 64
	 Age: 65 and more

Table 5:1 Icons Used for Variables Associated with Non-Motorized Households¹²⁸

Referring to Figure 5:9 and all subsequent dendrograms, it is important to note that the classes are not displayed in numerical order. For example, in that dendrogram, the first class displayed is class 3. IRaMuTeQ numbers the classes through a recursive subdivision, and classes are numbered in the order in which they were found to be impossible to further subdivide. The closer the classes are in the dendrogram, the closer their discourse matches.

¹²⁸ This table of icons is replicated on the very last page of the thesis for easy reference.

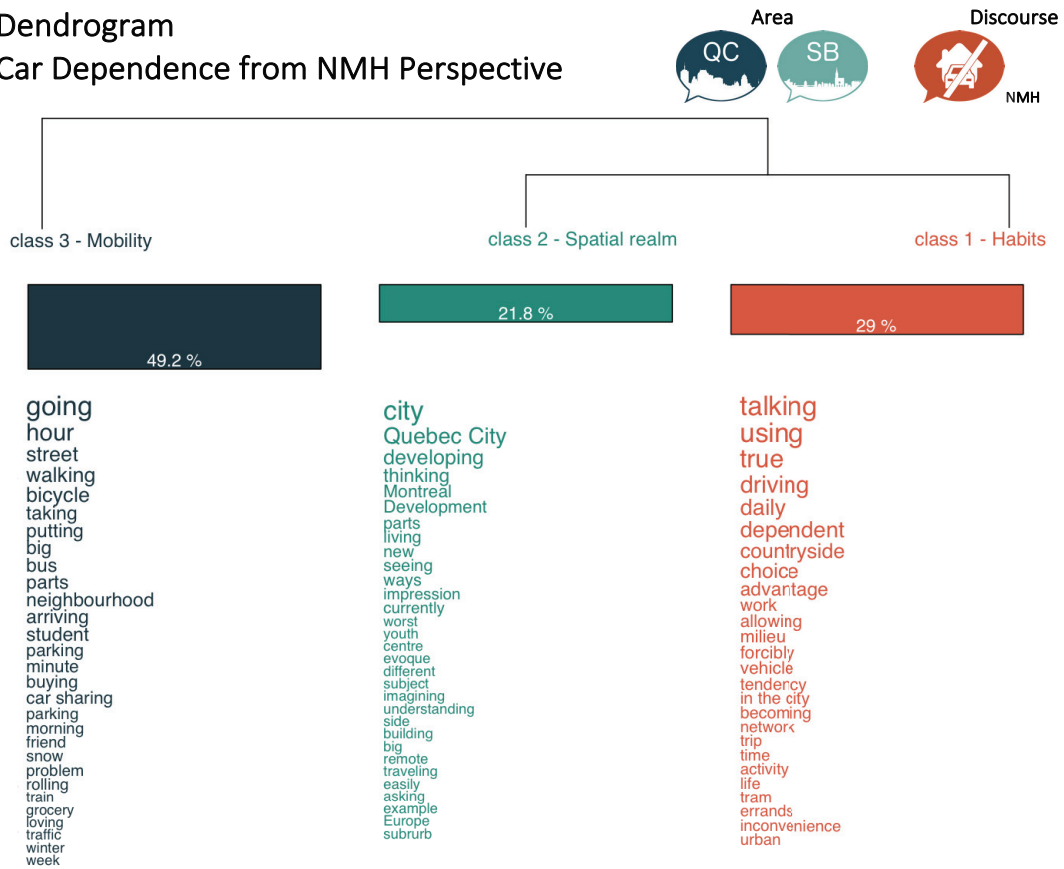
Likewise the further the distances that separate them in the diagram, the further apart are their discourse. For this reason, I discuss the results of the classes based on the order in which they appear in the dendrogram.

In this case, the third class of speech is about mobility and is associated with an affluent lifestyle as well as being a member of a car-sharing system and being aged between 41 and 64 years old. It is also associated with multiple modalities of the variables associated to the discourse, for example, living in the Quebec City urban area, being unemployed, being a woman, being 65 years or older, not feeling socially excluded, renting their home and living in a single-person household. Generally, this class of discourse is spoken by NMH that are the most mobile. Indeed, I found that people from the affluent revenue groups are more mobile than the other respondents. Being a member of the car-sharing system greatly simplifies the mobility of NMH and also explain the greater importance of mobility related topics in this class of discourse.

Class 2 is a discourse about spatial aspects of car dependence and is mostly spoken by NMH with a modest lifestyle or having no driver's licence. It is also associated in a smaller measure to respondents aged 18 to 40 years old, respondents in the Quebec City urban area, and people renting their home. Respondents from NMH who have modest means and do not own a driver's license are the most limited in their mobility and the most likely to feel that spatial distance is a problem of car dependence.

The first discourse type in class 1 (shown last in the dendrogram) is about habits related to car dependence and is mostly spoken by NMH in the Strasbourg urban area. It is also related to respondents that rent their home; not members of the car-sharing system; employed; aged 18 to 40; do not own a transit pass; and that live in a single parent household. Respondents that were not members of a car-sharing system were most likely to note that using the car for everything was just a bad habit, and that they themselves didn't have once since they made the choice of not owning a car. This was most likely to be the case in the Strasbourg area.

Dendrogram Car Dependence from NMH Perspective



Class 3	P	Class 2	P	Class 1	P
Affluent	<0.0001	Modest	<0.0001	SB	Strasbourg <0.0001
Car-sharing	<0.0001	No Licence	<0.0001	Renting	0.0004
Age [41-64]	<0.0001	Age [18-40]	0.0014	Not car-sharing	0.0007
Quebec City	0.0006	Quebec City	0.0103	Employed	0.0059
Unemployed	0.0058	Roommates	0.0171	Age [18-40]	0.0119
Women	0.0166	Transit pass	0.0247	No transit pass	0.0164
Age >=65	0.0335	Renting	0.0287	Single parent	0.0174
Not socially excluded	0.0375				
Renting	0.0384				
Single person	0.0403				

Figure 5:9 Dendrogram - Car Dependence from NMH Perspective

Performing specificities analysis in IRaMuTeQ, I can also identify words that are specifically associated with socio-demographic variables.

5.2.1.1 Gender Specific Discourse on Car Dependence

When analyzing the responses with a specificities analysis between men and women (see Figure 5:10), looking for words more likely to be said by each group, I see for example that women mention car-sharing as an explanation for remaining non-motorized in a car-dependent city. They also mention children and issues with having a car in the city, like parking and searching for a place for parking the car. While men comparatively discuss the bicycle and cycle lanes as a potential solution to limit car dependence.

For these kinds of graphics, the location of the words inside each bubble is randomized but the size varies in accordance to the likelihood¹²⁹ of being mentioned by this group over any other groups.



Figure 5:10 Specific Discourse of Car Dependence by Gender

The women from NMH more often mentioned children as a reason for car dependence, indeed the so called “soccer mom” who drives her children from one activity to the next come to mind, indicating that in the NMH sample women worried more about children mobility and linked it to car dependence. This is in line with previous research for example Dowling (2000) on the driving of suburban mothers in Sydney, Australia or similar findings from Schwanen (2011) for suburban mothers in Utrecht, The Netherlands. Nobis & Lenz (2005, p. 117) found similar results in the Germany.

Sample women comments about children and car dependence:

¹²⁹ Using the specificities factor computed by IRaMuTeQ as described in the methodology section (see section 4.5.2.1.2 on p. 153).

I live outside the city now and when I look at the neighbours, it's one, two, three cars when the children grow up.

(190-W) Jade, 48 - Quebec City area (St-Laurent, Île d'Orléans) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

I also see car dependence in the way that, because you have a car you start to introduce a certain rhythm in your life and use it also as the mode of transport to go get your kids.

(402-W) Viviane, 29 - Strasbourg area (Robertsau (Cité universitaire)) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

The women interviewed also mentioned car-sharing as a way to ease car dependence more often than men did. Having the option to still access a car was an important securing factor for women in my sample. Studies on gender and car-sharing have been inconclusive with some finding that it is mostly used by men in Europe, mostly used by women in the US and Canada or that there is no difference (Millard-Ball, 2005). This is in line with the results presented by Martin (2007) reporting a higher share of women's use of the car-sharing system of Montreal. However this contrasted with the results from Jemelin & Louvet (2007, p. 21) who found more men than women using the Paris car-sharing system.

Sample women comments on the car-sharing system:

Maybe I'm still car dependent, on the side... But it has been solved by the fact the car-sharing system exists in Quebec City.

(183-W) Héroïse, 43 - Quebec City area (St-Sauveur) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

I haven't owned a car for four years, I use the car-sharing system, but I don't own one and I don't regret it. I don't miss it at all.

(155-W) Pauline, 65 - Quebec City area (Faubourg St-Jean) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

While previous studies found that cycling was often a male oriented mode of transport, for example in Australia and other Anglo-Saxon countries (Dickinson, Kingham, Copsey, & Hougie, 2003; Garrard, Crawford, & Hakman, 2006, p. 16; Steinbach, Green, Datta, & Edwards, 2011). This confirmed the findings of Butler et al. (2007) that reported that Canadian women cycle less than Canadian men and the similar situation in France, where Guidez et al. (2003, p. 1) found that 63% of bicycle trips in France were done by men.

Sample men comments on the bicycle as an alternative to car dependence:

It was taking 45 minutes on the bus, so often I went by bike in about half an hour.

(384-M) Gustave, 36 - Strasbourg area (La Robertsau) - Revenue level: Affluent - Household type: Family - Household size: 3 persons - Car-sharing: Yes - Doesn't feel socially excluded.

I used to take my car to go buy cigarettes, but now I do it with my bicycle, if I have to go 200 metres without my bike it seems far... Maybe it's another form of dependence.

(359-M) Loic, 34 - Strasbourg area (Hypercentre) - Revenue level: Intermediate - Household type: Family - Household size: 6 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Sample men comments on cycle lanes as an instrument in the arsenal against car dependence:

Cyclists may be a bit pampered, because they have a cycle lane network, although mostly recreational, so not necessarily useful for daily chores or running errands.

(209-M) Bruno, 36 - Quebec City area (Lairret) - Revenue level: Modest - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

There are some *cycle lanes* on their own right of way. They are beginning to build them, but then it's always a question of choice, but while you can't choose where you work, for activities you always have a choice.

(243-M) Maxime, 35 - Strasbourg area (Contarde) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

5.2.1.2 Urban Area Specific Discourse

When analyzing the responses with a specificities analysis (see Figure 5.11), between both urban areas where I met with NMH, I found that in Quebec City, the question of parking is important while in Strasbourg, the bicycle holds a relatively strong part in the discussion.



Figure 5:11 Specific Discourse of NMH Car Dependence by Urban Area

Even though this question was about car dependence and not the reason why they don't have a car, many respondents living in downtown Quebec City especially mentioned parking related issues in their choice to "free" themselves from car dependence. They related to the high cost of parking at their residence in the city or the nuisance of having to move their car somewhere else during snow plowing (in the middle of the night) if they had parked it on the streets:

The public transit system is deficient, and for cars well, often when we live downtown the problem is the parking, it means substantial costs for parking otherwise, it's the constant moving of the car from street to street when it's snow plowing time.

(194-W) Mélanie, 35 - Quebec City area (La Cité) - Revenue level: Modest - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

Three times a week I had to move my car at 9 PM and then go get it back in the morning. I had to wake up at 6 AM to go get the car at the municipal parking lot just because the snow plow was coming and they kept plowing all the time because it was snowing all the time.

(88-M) Philippe, 38 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

The case of the Quebec City area NMH illustrates the importance of a local policy issue causing annoyance for motorists living in the downtown area where parking is mostly on the street. The local parking bylaw stipulates that between November 1st and April 15, street parking is forbidden between 23h and 6h30 on snow days which are communicated by flashing light signals¹³⁰. The city does provide public parking on these snow days, but to be allowed to park there, a resident must purchase a snow day permit worth CAD 103¹³¹ for the duration of the winter and depending on the parking lot they have to remove the car before 8h or earlier¹³². The fact that this “tax” on winter parking caused some to get rid of their car agrees with the conclusions of Ruet et al. (2014, p. 7) who found that parking taxations could induce demotorization.

While in Strasbourg, respondents also relate to losing their car dependence when getting rid of their car or losing access to a car, but in this case the bicycle played a more important role of that cycle. The relative importance of reliance on the bicycle as a way to leave car dependence is a surprising result as a previous study by Dargay et al. (2003, p. 24) found

¹³⁰ Québec, V. de. (2017a). Ville de Québec - Déneigement. Retrieved August 1, 2017, from <https://www.ville.quebec.qc.ca/citoyens/deneigement/index.aspx>.

¹³¹ This is worth approximately CHF 80, EUR 70, GBP 62 at time of publishing.

¹³² Québec, V. de. (2017b). Ville de Québec - Stationnements disponibles lors d'une opération déneigement. Retrieved August 1, 2017, from https://www.ville.quebec.qc.ca/citoyens/stationnement/lors_deneigement/index.aspx.

that in France, it was the main factor in only 3.8 % of cases of demotorization in 2001. However, the fact that respondents in the Strasbourg area mention the bicycle more than respondents in the Quebec City area is not surprising as the overall mode share of the bicycle was six times greater in the Strasbourg area than it was in the Quebec City area (see section 5.1.3 on p. 177).

I rediscovered the bicycle, in fact a year after getting my driver's licence. I rediscovered it, I had apprehension, negative apprehension, but with it, I rediscovered the landscape, the territory, that's it.

(243-M) Maxime, 35 - Strasbourg area (Contarde) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Well, yeah, it's not the same, me I use my bicycle, but sometimes only to run an errand ten metres from here, if only because my handlebars can carry more weight.

(336-W) Célestine, 42 - Strasbourg area (St-Étienne) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

5.2.1.3 Revenue Level Related Discourse on Perception of Car Dependence

When analyzing the responses with a specificities analysis (see Figure 5:12), between modest, middle and affluent revenue levels, looking for words more likely to be said by each group, I see for example that the modest revenue group associates car dependence with difficulty. They also mention more often than the other groups the bicycle as a solution which makes sense considering that cycling is an affordable mode of transport. An interesting aspect is that many people in this group discovered or had an important reflection about car dependence while attending university. The middle revenue group often mentioned their parents as examples of car dependence and relate to habits of using a car with the car dependence associated for them with car ownership. Finally, the most affluent group associates car-sharing as potential solutions while living in a downtown neighbourhood was also highlighted as a solution.



Figure 5:12 Specific Discourse on Car Dependence by Revenue level

Respondents from the modest revenue group more often expressed finding things difficult. Some of the difficulties were related to the cost of automobility. This is expected and in line the results of Dargay et al. (2003, p. 24) as problems associated with maintenance cost is

known to be a cause of demotorization. However, the respondents of this revenue group mentioned more general difficulties, not directly linked with monetary hardships.

Comments about difficulties associated with car dependence by participants with a modest household revenue level:

Yes, it is limiting. I would say from an employment perspective, it was like **difficult**. I never had a car the entire time I was there and it was **difficult** even for a student job.

(111-W) Nadine, 27 - Quebec City area (St-Sauveur) - Revenue level: Modest - Household type: Roomates - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

It is possible to live in Quebec City without a car but it's **difficult**, it requires a lot of motivation, it requires being very organized and a bit of an "I don't give a damn" attitude about what others think.

(209-M) Bruno, 36 - Quebec City area (Lairet) - Revenue level: Modest - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

As reported in other studies, usage of walking and cycling is inversely related to the revenue levels. This was the case in Canada, as reported by Butler et al. (2007) as well as in the UK as reported by Dickinson et al. (2003, p. 56).

Comments referring to the bicycle by participants with a modest household revenue level:

In fact, I feel like I don't fit the mould of people living in Beauport. I must be one of the only one doing errands by foot and by **bike**.

(217-W) Mireille, 34 - Quebec City area (Beauport) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Well, I have friends who don't own a car and they get yelled at while travelling on their bicycle, stuff like: "Go buy yourself a car you scum!" or things like that.

(209-M) Bruno, 36 - Quebec City area (Lairet) - Revenue level: Modest - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

Comments that people from intermediate revenue level made about their parents being examples of car dependence:

So, right now the car park at my parent's place consists of five cars and a camping car! It was driving me crazy at an early stage in my twenties.

(226-W) Béatrice, 38 - Strasbourg area (Place de Haguenau) - Revenue level: Intermediate - Household type: Family - Household size: 3 persons - Car-sharing: No - Doesn't feel socially excluded.

When I look at my parents, they made the choice to live in the country side, they are 100% car dependent to go to work and run errands, it's an important notion.

(402-W) Viviane, 29 - Strasbourg area (Robertsau (Cité universitaire)) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Comments from intermediate revenue level household members about the fact that owning a car is being car dependent:

I see it more in the relationship that people have with their car than a constraint of the city on people, in the sense that I think that people are so used to having a car that they can no longer conceive of managing without...

(81-W) Virginie, 28 - Quebec City area (Sillery) - Revenue level: Intermediate - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

Car dependent, effectively because we have begun to introduce the **car** into our daily life.

(402-W) Viviane, 29 - Strasbourg area (Robertsau (Cité universitaire)) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

The relationship with income and car ownership is demonstrated in the literature (Paulley et al., 2006, p. 303). For car-sharing membership, data from the Quebec City system indicates a higher proportion of high revenue individuals (Robert, 2000, p. 20). This is in accordance with similar findings for North-America and Europe (Millard-Ball, 2005, pp. 3-10). Accordingly, respondents from the higher revenue group were more likely to discuss car-sharing during our conversation about car dependence than other revenue groups.

Sample comments from affluent household members regarding car-sharing as a way to sidestep territorial car dependence

But if the **car-sharing** system were to disappear, I would have to ask myself the question [of car ownership] as it would be more problematic.

(183-W) Héroïse, 43 - Quebec City area (St-Sauveur) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

My son who doesn't have a car with his wife and three kids, they joined the **car-sharing** scheme, so I was well informed on car-sharing before deciding to join the system and get rid of my car.

(155-W) Pauline, 65 - Quebec City area (Faubourg St-Jean) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

As shown in the literature, dense areas like city centres are less car dependent (Dodman, 2009; Newman & Kenworthy, 2006). This was noted by respondents, especially those with a higher revenue.

Comments from affluent individuals on the importance of living in downtown neighbourhoods in fighting car dependence:

I'm a member of the car-sharing system since 2010 and it is this **neighbourhood**, we have lots and lots of cars for car-sharing. I have three right here in about two-minute walk.

(155-W) Pauline, 65 - Quebec City area (Faubourg St-Jean) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

For sure, the fact of living in a **downtown neighbourhood**, and working **downtown**, the bus system here in Quebec City is particularly efficient **downtown** I find, especially in comparison to Halifax where I lived for seven years.

(183-W) H lo se, 43 - Quebec City area (St-Sauveur) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

When performed in binary mode (with only two possible values for a variable like gender), the analysis only matters for positively significant words since the topmost words of each group are automatically the opposite group's lowest values. But in the case when a variable can have more than two values, as is the case with my revenue level variable, the negative specificities analysis can also be informative as it shows the words that are "avoided" by each group, which can also be revealing (Lebart & Salem, 1994, p. 177).

In this case Figure 5:13 shows the negatively significant words for each of the three groups. In this instance, the size is correlated with the likelihood of that word being avoided by the group.



Figure 5:13 Specific Discourse on Car Dependence by Revenue level - Words Avoided

As an example, this analysis shows for example that the least privileged are avoiding the term car-sharing, rolling and taking which make sense in light of their mentioning of alternate modes more often. This result shows that, as found in quantitative analysis of car-sharing membership, the lowest revenue group participates less in such ventures, see Robert (2000) for example. At the opposite end of the revenue groups spectrum, the most affluent

avoid the term car dependence in their very description of the concept which can be interpreted to indicate that they feel less dependent because of their extra monetary means.

5.2.1.4 Qualitative Analysis of What Is Car Dependence from the Point of View of NMH

Based on a qualitative review of the interview transcription material some answers appear intuitively significant, for expressing an interesting point of view. In this section I describe some of those passages.

A few people express how vastly generalized car dependence makes them feel odd for not having a car. In this example, Sabine expresses how she feels different from the norm for not having a car:

Yes, yes, it is clearly what I see [cycle of car dependence] in my friends or family. Anyway, it's not at all normal not having a car so uh it is me who is abnormal in the story! [Laughing]

(396-W) Sabine, 28 - Strasbourg area (Neudorf) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

In this quote, Naomi expresses a similar idea while also referring to the fact that generally people consider being without a car is being “dependent”:

Yes, quite, I see it in others because I chose not to have a car and in fact [...] I'm taken for someone not necessarily very balanced we will say mentally [Laughing] not because... In reality I have a lot of friends who try to take public transport, to walk, who have a relatively reasoned use of the car but nevertheless it seems to them I've completely put myself in a funny dependence by not having a car.

(341-W) Naomi, 38 - Strasbourg area (Wihrel) - Revenue level: Intermediate - Household type: Single parent family - Household size: 3 persons - Car-sharing: Yes - Feels socially excluded.

Some people echo one of the scientific definitions of car dependence, demonstrating a certain understanding of the subject matter. For example, this quote referring to the car dependence as addiction model:

So, car dependence is not... It is true that one would tend to say the opposite. One can be **addicted** to the car, actually because they started introducing the car err [sic] in their daily life, in a very usual way. And without further thinking, without thinking about another mode and therefore err. And so, it's a matter of **habits** actually.

(402-W) Viviane, 29 - Strasbourg area (Robertsau (Cité universitaire)) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

In this example, Martine related the accessibility difference between the car and other modes of transportation which are at cause in Dupuy's definition of car dependence:

Well yes, somewhere because I have no car myself. So, I transport myself by public transit and I realize that often there are places I would like to go and that I cannot go because it is **not accessible by public transit** for example. For me, I find it terrible that we cannot have access going to the cinema in Beauport because it is not accessible by public transport. Things like that...

(176-W) Martine, 55 - Quebec City area (Montcalm) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Another interesting example is that of Céline who recounts what she considers to be the negative aspects of car dependence, something she feels “free” from:

So, me it reminds me of something because I see it [the vicious cycle of car dependence] in people who have a car and think that I have no **freedom**, who feel like I'm locked in while I do not have the impression of being “locked in”, on the contrary I have the **freedom** of not having a budget of €300 per month set aside for in an insurance, in repayment of credit, in parking fees and voila and I do not really feel that I do less yo there [sic]! And to have an activity level lower than them.

(248-W) Céline, 44 - Strasbourg area (Gare) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

For Geneviève, car dependence is when you can't get to work without a car:

And heum I'm ... yeah so that's actually it's more the side that it's essential to have a car to go to work actually.

(309-W) Geneviève, 31 - Strasbourg area (Homme de fer) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

In this section, I presented the perceptions of respondents from NMH about car dependence in their respective urban area. Overall respondents felt that car dependence existed in their area but a few differences were highlighted. When comparing the discussions based on the gender of the participants, I found that women associated more frequently car dependence to having children and driving them around while men associated the usage of bicycle and cycling infrastructures as ways to avoid car dependence. Comparing the responses on the urban area level revealed specific local issues like the problematic night parking on snow day in the Quebec City area, especially in the downtown core and the importance of cycling and its infrastructure in the Strasbourg area which makes sense since its cycling network is highly developed compared to the Quebec City area.

5.2.2 Top-Down: Car Dependence for Public Servants

In both urban areas, I met with civil servants from various departments: the transit authority, the transport department and urban planning department¹³³. These were civil servants from various levels of the departments however, similar to the research presented by Perl & Newman (2012), all of them “described their role as that of researching and presenting policy options to elected leaders, rather than serving as decision makers themselves”. From a different perspective but in a similar fashion, to the discussions with NMH, I have analyzed the response to the same question asked to public servants working in the two urban areas. The word network produced here (see Figure 5:14) contains eight distinct communities of words. The three main communities of words are the same then for NMH (car, going and city) but ‘car’ and ‘going’ are simpler for public servants than it was for NMH. There are different perspectives as shown for example with a focus on ‘problem’ and ‘city’ in the word networks of public servants.

¹³³ A complete but anonymized list of civil servant participants can be consulted in Table 4:7 on p. 141.

Word Network Car Dependence from Public Servant Perspective

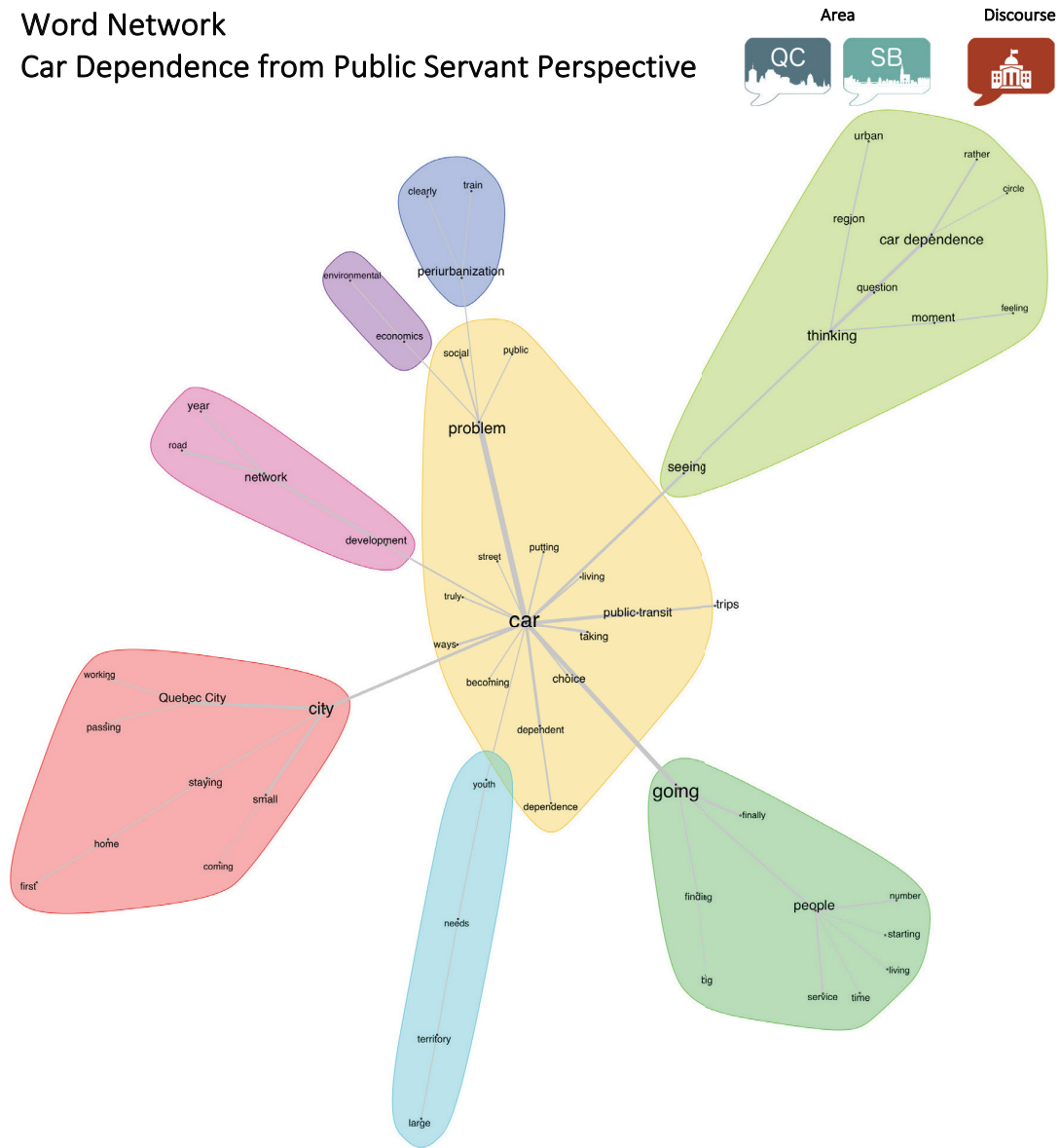


Figure 5:14 Word Network of Car Dependence Discussion with Public Servants

As with dendrograms showing results of the analysis for NMH discussions, I included a table below each diagram listing the variables associated with each class. To ease the reading of the tables I also used a series of icons specific to public servants (see Table 5:2).







Icons for data from Public servants	
	Public Servants
	Quebec City administration
	Strasbourg administration
	Department: Transit Authority
	Department: Transportation
	Department: Land planning

Table 5:2 Icons Used for Variables Associated with Public Servants¹³⁴

¹³⁴ This table of icons is replicated on the very last page of the thesis for easy reference.

Out of this discussion emerged a large number (six) of classes of discourse (see Figure 5:15), even if the size of the corpus is relatively small compared to that of NMH. Class 3 is about places in the city. Class 5 is about different values associated with policy. Class 6 is about space at a different scale. The second class contains a discourse about the needs of various types of users. Class 1 is about the policy problems and finally, class 4 is about reflections brought on by the discussion.

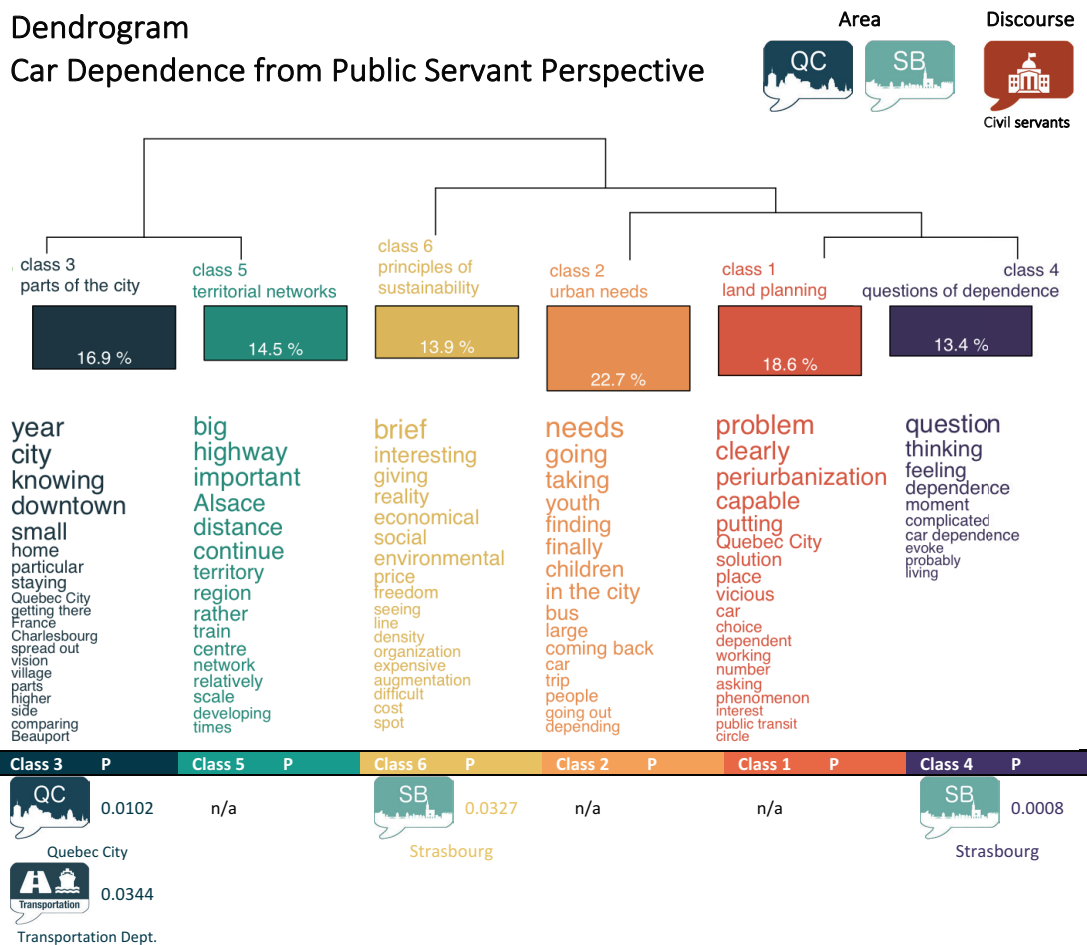


Figure 5:15 Dendrogram - Car Dependence from Public Servant's Perspective

In the same way that I did with the NMH household data, with the help of a specificities analysis in IRaMuTeQ, I can identify words that are specifically associated with socio-demographic variables associated with the public servant. The two variables that I use are the urban area and the department in which the civil servant works.

5.2.2.1 Urban Area Specific Discourse on Car Dependence by Public Servants

The results of the following analysis should be taken with precaution. The resultant subgroups of the specificities analysis are based on very small samples since the entire group consisted of only ten individuals. Considering that their answers contained long segments of text, which was considered enough for validity by the software, I still include the results in this discussion. When analyzing the responses with a specificities analysis between civil servants in Quebec City area and in Strasbourg area (see Figure 5:16), looking for words more likely to be said by each group, I see for example that many public servants in Quebec City mention the car more than their counterparts in Strasbourg in their answer. While in Strasbourg the top specific issue seems to be peri-urbanization while addressing car dependence.



Figure 5:16 Specific Discourse of Car Dependence by Urban Area

Comments from public servants in Quebec City regarding the car:

It is a bit of a vicious circle, we can't from an economics perspective adequately serve those suburban neighbourhoods with public transit and so that leaves the whole floor to the car.

(350-M) James, 54 - Dept.: Transport - Quebec City.

[...] we always do, we know that we are car dependent, that the car generates problems but the solutions that we put forward is to make more room for the car...

(386-M) Julien, 31 - Dept.: Land Planning - Quebec City.

The civil servants in the Quebec City area make clear reference to the issues of car dependence mentioned by Dupuy (1999a) when he cites the increased cost implied in servicing less dense areas with public transit while the number of transit users diminishes in the entire system. Schaeffer & Sclar (1975, p. 103) as well as Coutard et al. (2002, p. 170) also come to similar conclusion. This is a more important problem in the Quebec City area due to its lower density when compared to the Strasbourg area¹³⁵.

Comments from public servants in Strasbourg regarding peri-urbanization:

It's sad, but, well that's the way it is. I asked myself that finally if we didn't have peri-urbanization what would we have in its place? [...] In the end, what tools do we have to limit peri-urbanization?

(424-M) Sébastien, 44 - Dept.: Land Planning - Strasbourg.

It's a problem for those that are [car dependent] and would love to no longer be, yes it's a problem in relation to the traffic volumes that it can generate because we might have less peri-urbanization than in other regions, but we still have some...

(462-M) Lorris, 46 - Dept.: Transport - Strasbourg.

The civil servants in the Strasbourg area focus the discussion on car dependence on the issue of peri-urbanization. Periurbanization has been considered an important public problem since the 1990's in France, as well as a problem for urban studies as many researcher have looked into the issue. See for example (Bertrand & Marcelpoil, 1999; Donzelot, 2004; Steinberg, 1991; Vanier, 2005; Vanier & Roux, 2008). In Canada, the issue is less critical and

¹³⁵ To recall section 4.2.3 on p. 117, the density differences are impressive. The city of Quebec City has 1'192 inhabitants per square km, compared to 3'535 for the city of Strasbourg. The difference is even more important when taking into account the entire urban area, with the density of the Quebec City urban area being a meagre 79 inhabitants per square km, compared to 1'498 for the Strasbourg urban area.

is most often dealt with under a different label: urban sprawl¹³⁶. When comparing peri-urbanization across Europe and North America, Mouafo (1994, p. 414) found that urban sprawl was a more entrenched phenomena in North America, having first started there around 1880 and being considered a “normal” part of the urban phenomenon, however, he found it to be a newer issue in Europe (1960-70) linked to the recent globalization phenomenon. Far from being a problem in Canada in the 1960’s and 1970’s, Mouafo found that urban sprawl was actually encouraged by the public policies of the federal government’s Canada Mortgage and Housing Corporation and the Quebec equivalent *Société d’habitation du Québec* (ibid., p. 417). Urban sprawl in the province of Quebec has recently attracted more research interest. See for example (Bryant, 2013; Doyon, 2009; Fortin & Després, 2009; Simard, 2014).

¹³⁶ “*Étalement urbain*” the French translation of urban sprawl is also different from *périurbanisation*.

5.2.2.2 Department Specific Discourse on Car Dependence by Public Servants

The analysis also reveals certain differences according to which department the public servant works in (see Figure 5:17). In the two urban areas, I met with employees of the transit authority, the land planning and the transportation departments.



Figure 5:17 Specific Discourse of Car Dependence by Department

More than any other groups, employees of the transit authorities talk about going, they show their customer focus, by often replying to my questions with examples based on their user's experience of car dependence while going some place...

[...] it's very delicate, because we all have schedules to respect going to and fro ... and finally the frequency is so low that you need to leave for an entire day to be there an effective hour.

(441-M) Guillaume, 56 - Dept.: Transit Authority - Strasbourg.

Members of the transportation department most often mentioned network when compared with the other groups:

*At some point in the 1960s there was a big reflection by the Quebec [provincial] government and, well, after this reflection, they went on to build a very very strong highway **network** [criss-crossing the city].*

(350-M) James, 54 - Dept.: Transport - Quebec City.

Land planners are the group most often talking about cars and the region:

*In fact I go from the principle that not having a **car** in the city is less serious [an issue] than not having a **car** when you live in the country side.*

(406-M) Yann, 53 - Dept.: Land Planning - Strasbourg.

*To take [restricting] measures, in a **region** like Quebec City where the majority of the population is dependent on the **automobile**, you know, has a more suburban type of lifestyle. So, this population will not necessarily be in favour of measures that will have a negative impact on it.*

(386-M) Julien, 31 - Dept.: Land Planning - Quebec City.

This analysis is based on a small sample of only ten civil servants, but the lengths of their answers allowed IRaMuTeQ to perform this analysis without encountering a problem. The results are not surprising, and in each case show that the civil servants have their respective administrative focus in mind when answering the questions to more general enquiry like the phenomena of car dependence. The fact that these lists of specificities are logically representatives of each unit, public transit thinking about customer's going somewhere, the transport department thinking of the various transport networks under its purview and the land planning personnel more broadly about the region and the space devoted to the car reassures me that even with a small sample the analysis is relevant.

5.2.3 Bottom-Up vs Top-Down: Similarities & Differences

When comparing the perception of car dependence from the NMH and from the civil servants, a few differences appear. Comparing the word networks from both points of view (see Figure 5:8 on p. 186 and Figure 5:14 on p. 207) I notice that 'car' and 'going' are important clusters in both networks. The discussion about car dependence with participants from the

NMH included more references to other transport modes ('bicycle', 'bus', 'walking', 'tram'), left out during the public servants discussions, reflecting a more granular understanding of the phenomena by the NMH participants. On the other hand, the word network from civil servants shows a more encompassing reflexion on the phenomena and its root causes. Their word network includes issues not discussed by NMH participants like 'peri-urbanization', 'questions', 'circle', 'thinking'.

The comparison between the two dendrograms (see Figure 5:9 on p. 190 and Figure 5:15 on p. 209) and their classes of discourses shows similar differences. The civil servants have a class of discourse about their reflexions on car dependence. The dendrogram from NMH participants contains only three classes of discourse while the civil servant dendrogram contains six different classes, depicting an extra level of complexity. Some of the discourse classes converge, but only the civil servants include a discourse on aspects of sustainability and land planning.

5.3 Car Dependence and Territorial Accessibility

Part of the interview discussion with NMH and civil servants was centred about the differences between what non-motorists have access to in comparison with what motorists can access. Assuming that motorists have access to the entire region, the question was framed as "are there places or activities that non-motorist can't access or perform". In this section I present the results from both group and compare them. This is following the logic from Schaeffer & Sclar (1975, p. 103) that states that car dependence means that only the car can access the entire region. As recommended by Von Der Mühl & Ruzicka-Rossier (2012) even if automobility will remain an important vector of accessibility, it is important to look for opportunities to also improve and optimize accessibility to alternative modes.

5.3.1 Bottom-Up: Territorial Accessibility for NMH

This is an important question from the perspective of NMH as being unable to perform certain activities that might be considered "normal" for others living in the urban areas or the impossibility to reach certain places in the area might explain feeling socially excluded. It is also an important aspect of car dependence which can be measured in terms of differential access between those with and those without a car. With a lot more material regarding this issue, thanks to the greater number of non-motorized household respondents, I present here the result of multiple analyses that are not possible for public servants because of their limited numbers and the reduced size of the corpus formed by the discussion. The word network of the NMH answers (see Figure 5:18) shows that 'going', or being prevented from going is at the centre of the discourse. With the 'car' forming its own

Yeah, some things you know I completely stopped for many years after not having a car, alpine skiing, I think is one of those, going cross-country skiing as well.

(106-M) Raphaël, 32 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Riding with friends is also an enabling way to alleviate the need for a car for certain activities:

For sure, I no longer ski, and for hiking, for example it's true that I rely on friends and colleagues who say I'm going this weekend, are you coming with us?

(253-W) Édith, 54 - Strasbourg area (Hypercentre) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

From the qualitative analysis of the interview, car-sharing appears as a solution for some households:

Certainly, but I don't suffer from it. At 45 I'm not missing anything in terms of activities. Especially since Strasbourg got a car-sharing system, I recently got a membership with a friend who also doesn't have a car.

(248-W) Céline, 44 - Strasbourg area (Gare) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

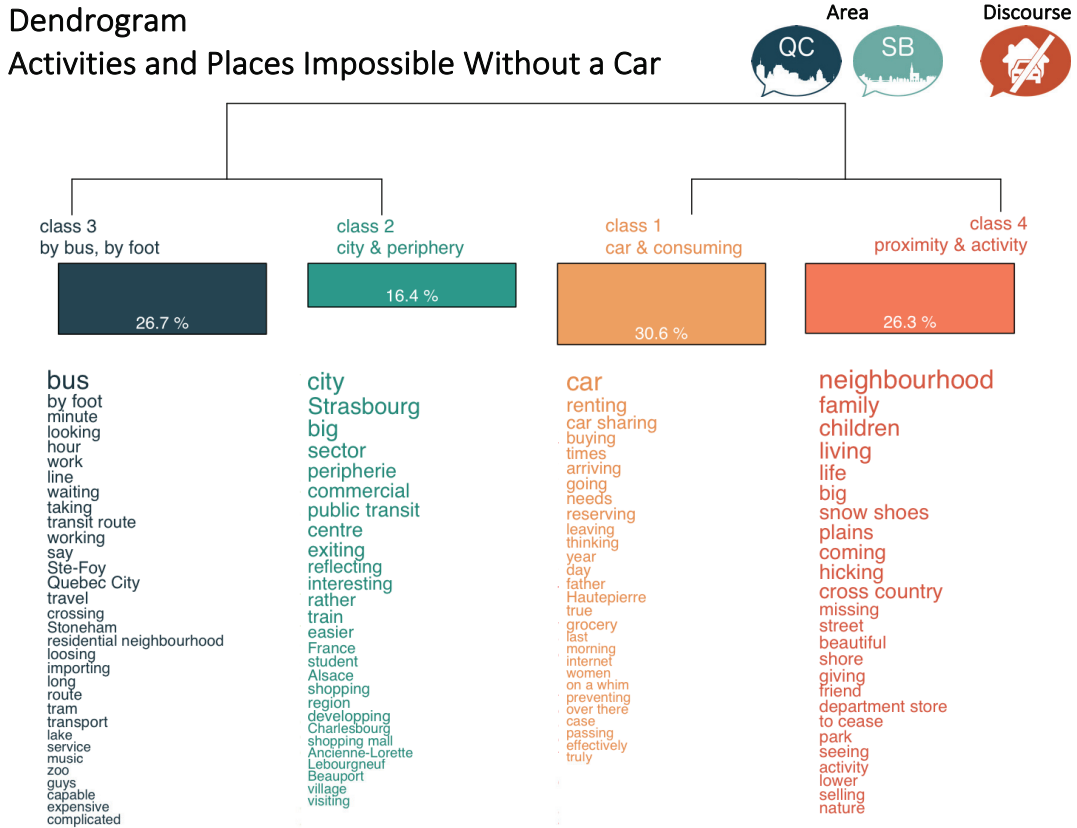
Shopping has to be done downtown in Strasbourg which is not necessarily the most desirable option:

There are all areas of activity, large shopping centres, so located on the outskirts, close to the motorways which are ... there to go by bike it is extremely painful, well, often there is no bike path to get there. So, I make do with the centres, shops that are downtown eh.

(402-W) Viviane, 29 - Strasbourg area (Robertsau (Cité universitaire)) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

When analyzing the various discourses within all the discussions, four distinct classes appear (see Figure 5:19). Class 3 stands out as the discourse of those experiencing multiple difficulties. It is about alternative forms of transportation mainly the bus and walking. It is

associated with not having a job, being in the modest revenue group, being 65 years or older, not being a member of a car-sharing system, being a woman, being in Quebec City, not having a driver's licence, not having a transit pass and being either from a single-person household or a single parent family. Class 2, describing city and periphery places is correlated with being in Strasbourg, having a transit pass, having a job and a licence to drive. Class 1 related to car and consuming and it is associated with being in Strasbourg, having a membership in the car-sharing system and not feeling socially excluded. Class 4 is about nearby things and activities to undertake. It is correlated with being in Quebec City and being a man.



Class 3	P	Class 2	P	Class 1	P	Class 4	P
Unemployed	<0.0001	Strasbourg	0.0002	Strasbourg	<0.0001	Quebec City	0.0004
Modest	<0.0001	Transit pass	0.0006	Car-sharing	0.0005	Men	0.0046
Age >=65	<0.0001	Employed	0.0023	Not socially excluded	0.0016		
Not car-sharing	<0.0001	Driver licence	0.0131				
Women	<0.0001						
Quebec City	0.0001						
No driver licence	0.0007						
Socially excluded	0.0008						
Single person	0.0010						
No Transit pass	0.0028						
Single parent	0.0471						

Figure 5:19 Dendrogram - Activities and Places Impossible Without a Car (NMH)

Of all the classes of discourse, class 3 regroups the discourse of all the negative associations, as well as being a woman and being in the Quebec City area, meaning this class expresses the most difficulties encountered while the other classes are describing different work arounds found by those who had less negatively connoted variables. The class discusses problems getting to a place with the bus or having to go by bus, it includes notions of wasting time and some specific neighbourhoods of the Quebec City area. This is in part related to the fact that the Quebec City sample included more respondents feeling socially excluded in relation to their mobility and this discussion about place or activities impossible to do without a car brought up more issues in that urban area. Classes two and three are associated with positive variables, having a licence, not feeling socially excluded and being members of the car-sharing system.

5.3.1.1 Gender Differences in Activities and Places Impossible Without a Car

There are also differences in discourse varying by many sociodemographic variables. One of the most interesting of these variables and a specific interest in this research is the differences between women and men. The first analysis I would like to present is separate dendrograms produced for each gender. This is performed by creating a sub-corpus containing only the answers of each gender and performing the AFC discourse analysis for each sub-corpus. At first glance, I notice that the women's discourse is more complex and varied, having to be separated into six different classes (see Figure 5:20) than the men discourse which is composed of 4 different classes (see Figure 5:21). The discourse of women is also correlated with more variables for each class.

For women, class 4 is about public transit and places it cannot reach. This class is most strongly associated with being 65 years or older, not having a driver licence, being unemployed and living in the Quebec City urban area. Since it is mainly about the bus, which is the only public transit option in the Quebec City area it is unsurprisingly associated with that urban area. This discourse class is more about having a hard time reaching certain area than for feeling like wasting time, which also makes sense considering that it is associated with the elderly and the unemployed who have less issues with time constraint. Class 3 on the other hand is about the time constraint, about getting there, waiting, mentioning issues with the sidewalk, problematic transit routes... It is strongly correlated with being from the most modest revenue group, living in the Quebec City urban area and not being a member of the car-sharing system, but also being in the youngest age group, those feeling time constraints. The respondents giving those answers were also more likely to feel socially excluded. Class 6 appears specifically related to the Strasbourg area as 'Strasbourg' is its most frequent word and it is strongly associated with being from that

urban area. It also relates issues more specifically associated with the NMH of that area like accessibility of shopping areas located in the periphery. Class 2 is about the outdoors activities, for example, being unable to go skiing, hiking or visiting parks or the Vosges mountain range. This discourse class is shared by women respondents from both urban areas. It is associated with not feeling socially excluded, being between 41 and 64 years old, and renting one's residence. Class 1 revolves around daily life with words such as home, living, errands and family. It is associated with living in a roommates' household and having a transit pass. Class 5 is about the car, mostly a rented car or part of the car-sharing system and places that you can only access with a car, like the cinemas in Quebec City. It is associated with being a member of the car-sharing system as well as having a driver's licence. The respondents in this class of discourse relied on rental car and car-sharing for effectively reaching those car dependent areas.

For men, class 3 is about multiple issues around consuming places such as stores, shopping malls, commercial zones far away on the outskirts of the city but also with going to stores that are accessible by walking and cycling, even though they might not be the preferred shopping destinations. It is correlated with being a member of the car-sharing system. Class 2 is about leisure activities that one cannot do without a car like sauntering in a park or the once again infamous "impossible to reach by transit" cinemas of the Quebec City urban area. This is correlated with living in a single-person household, not being a member of the car-sharing system and being from the modest revenue group. The discourse also regroups the answers of those living in the Quebec City area and those feeling socially excluded. Class 4 is regrouping activities relying on car-sharing to be accessed. It is also correlated with being a member of the car-sharing system. Finally, class 1 talks about alternative mobility grouping public transit and the bicycle. This class is associated with being from a roommates' household, not having a driver's licence, not being a member of the car-sharing system, and not having a job.

Dendrogram - Activities and Places Impossible Without a Car

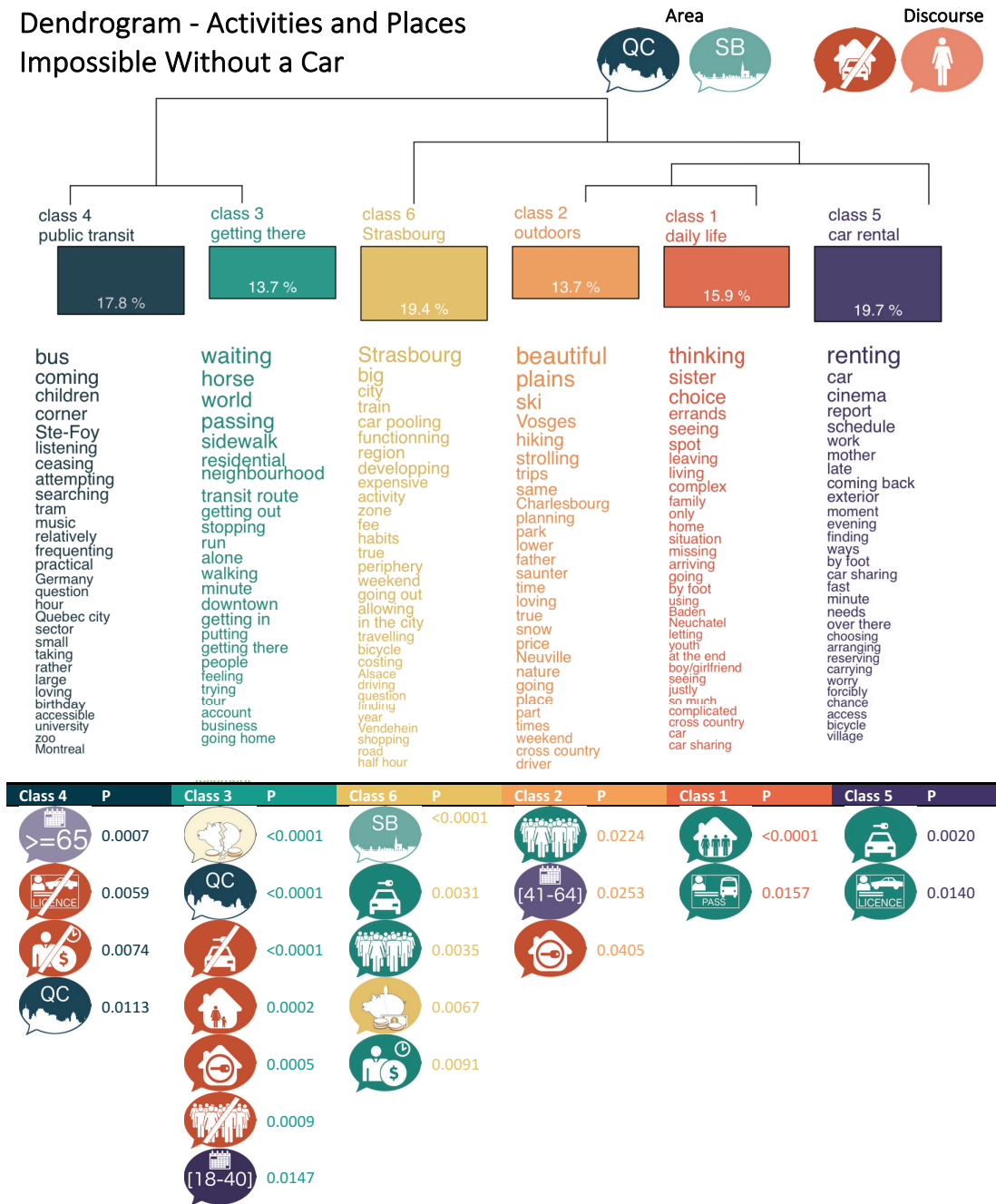
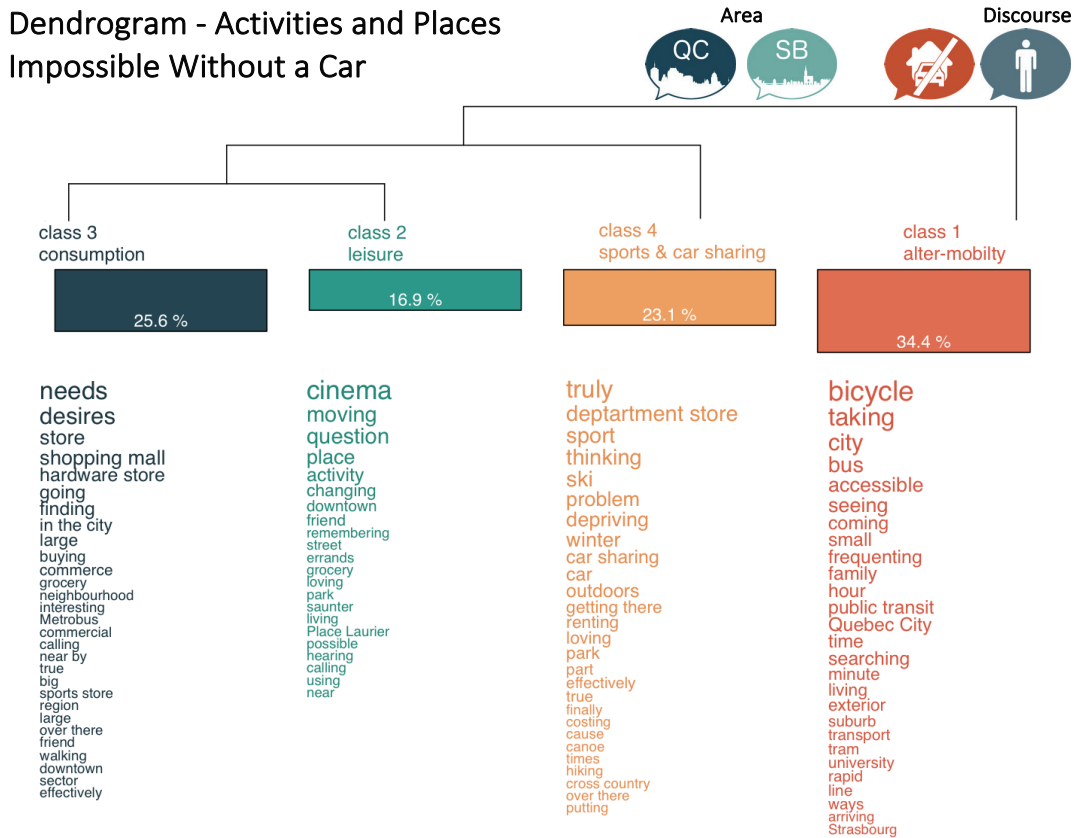


Figure 5:20 Dendrogram - Activities and Places Impossible Without a Car (NMH) - Women Only



Class 3	P	Class 2	P	Class 4	P	Class 1	P
	0.0358		0.0007		0.0018		0.0017
			0.0036				0.0021
			0.0084				0.0160
			0.0314				0.0248
			0.0411				

Figure 5:21 Dendrogram - Activities and Places Impossible Without a Car (NMH) - Men Only

When comparing the dendrograms of women and men, I notice that Women have a class of discourse about public transit (class 4) while men have one about alternative mobility (class 1) including the bicycle as the top most mentioned mode while the bicycle is only included at the bottom of class 5 for women. Demonstrating that as with the general population, women from NMH tend to rely on cycling less than men and more on public transit. This is in line with the results of the OD survey and from other research comparing the daily mobility between the genders. For example, Krizek et al. (2005, p. 33) found that in the USA, “men are more than twice as likely to complete their trip by bicycle than women”

while Vandersmissen (2007, p. 52) found that women in the Quebec City area relied on public transit more than men. In the case of active mobility, the reasons appear to be related to infrastructure problems that affect women more than men as we will show in the next chapter that analyzes policy requests by NMH members. For example, as described in section 6.7.1.1 on p. 470, women are asking for improvements to the cycling infrastructure significantly more than men, demonstrating a latent demand for usage of this mode by women from NMH.

The fact that the dendrogram representing the women discourse is more complex than the one for men is also in line with the mobility literature stating that women have more complex mobility patterns. For example, see (Rosenbloom & Burns, 1993, p. 84; Scheiner & Holz-Rau, 2017).

As with other parts of the discussion, I also performed a specificities analysis by gender to highlight words specifically associated with each gender (see Figure 5:22).



Figure 5:22 Specific Discourse on Accessibility Issues by Gender

Women more often mention the train as a way to work around accessibility issues but cost is an issue and access to villages in the country side. Waiting is also an important issue for women:

Absolutely not, because in Alsace we have the chance of having **trains**, express regional **trains** (TER) which serves the area extremely well at extraordinary [affordable] prices.

(248-W) Céline, 44 - Strasbourg area (Gare) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

For sure, like you know, the *village* of Neville where I'd like to go for a walk.

(150-W) Caroline, 46 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

There are some transit routes sometimes you see a lot of people *waiting*. Have you been *waiting* a long time? Yeah we have been *waiting* 20 minutes. When it's cold like today, -27° Celsius, those are long 20 minutes [laughs].

(176-W) Martine, 55 - Quebec City area (Montcalm) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

While for men important issues exists around access to the movie theatre (only in Quebec City) and issues with grocery shopping, especially in larger store offering better prices but located outside the downtown area and the outdoor activity of hiking.

Let's say that we don't make it an obligation to go every Sunday at RONA [hardware store] or at IGA Extra [bulk grocery chain] or something like that, we go closer by and less often.

(66-M) Moise, 40 - Quebec City area (St-Jean-Baptiste) - Revenue level: Intermediate - Household type: Family - Household size: 6 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Yes, like going to the *cinema*, like I was telling you earlier, I'd like to go to the *cinema* but I cannot go.

(176-W) Martine, 55 - Quebec City area (Montcalm) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

It's more the weekends, we say well it could be nice to go **hiking** and then we start looking at the buses and as soon as we want to go a little bit far, we say well then, we'd have to go by hitchhiking ... now it'll be complicated.

(274-M) Samuel, 24 - Strasbourg area (Contade) - Revenue level: Intermediate - Household type: Couple - Household size: 2 persons - Car-sharing: No - Doesn't feel socially excluded.

5.3.1.2 Urban Area Specific Discourse on Accessibility

When analyzing the responses with a specificities analysis (see Figure 5:23), between both urban areas where I met with NMH. I find that in the Quebec City area, the specific lack of downtown or transit accessible cinema comes up, while in Strasbourg the train and bicycle are more often mentioned. The bus and the tram, each area's own transit backbone is also strongly correlated to the area in the discussion. As mentioned in the methodology section, sometimes the slight language differences between the Quebec City area and the Strasbourg area version of the French language do appear in the analysis. The word “effectively” in the lower center of the Strasbourg bubble is such an example, as it is a frequently used words in France with a relatively low usage in the Canadian province of Quebec.



Figure 5:23 Specific Discourse of NMH on Accessibility by Urban Area

For Quebec City's urban area NMH accessibility problems revolve around the movie theatre, going to parks and surprisingly hardware stores. The bus being the most preminent transport mode mentioned there, with participants 5.6 times more likely to mention the bus there. This is not surprising considering it is the only public transit mode available there.

I go there anyway at Place Laurier [large shopping mall on the outskirts of the city], it takes an hour and a half by bus, you take 2 buses. I go there once a year maybe, it's beautiful Place Laurier and with someone else coming along, I chat on the way there.

(54-W) Stéphanie, 74 - Quebec City area (Notre-Dame des Laurentides) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Well, going sometimes going for visits in outdoor places, parks, that if we had a car maybe we would have gone. We have discussed many times going to the Jacques Cartier Valley [provincial park]

(151-M) Félix, 70 - Quebec City area (Vieux Limoilou) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

For a large hardware store and all, well we would take a car-sharing vehicle and we would go and that's all. If we really need to go there, we know that we can go, but we can't go without a car.

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

In Strasbourg NMH mention the train, the tram and the bicycle much more than in Quebec City. Strasbourg's many local, national and international train connections doesn't compare with Quebec City's dismal national railroad connections offering only a few daily departures. The French city also benefited from strong investment in cycle infrastructure by transport policies there. But accessing 'stores' seem more problematic in the Strasbourg area since they have a probability factor of 2.7 compared to the -2.7 of the Quebec City sample.

[...] my parents live in the country side, well my mom. I go there by **train**, she picks me up at the **train** station or I go to her place from the station by foot, but, there is a but ... it's that it takes me 30 minutes of **bicycle** to get to the **train** station.

(337-W) Ines, 58 - Strasbourg area (Port du Rhin) - Revenue level: Affluent - Household type: Single parent family - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

If I had a car I would go more than this, that's for sure. Because without a car it's restrictive anyway for travelling. If you want to go somewhere, it's by **tram** or you have to get other people to accompany you [by car].

(314-W) Lucie, 43 - Strasbourg - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Doesn't feel socially excluded.

[...] that I no longer go to? No, no not at all, well anyway we have the **tram** which is very practical and well, me, I have my **bicycle**!

(376-W) Laurence, 63 - Strasbourg area (Gare) - Revenue level: Modest - Household type: Single parent family - Household size: 2 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Yes, well for sure yes, there are all those zones that are a little peripheral where the big **stores** are located, for example furniture **stores** or to buy appliances in fact, you know big **stores** like that!

(309-W) Geneviève, 31 - Strasbourg area (Homme de fer) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

5.3.1.3 Revenue Level Specific Discourse on Accessibility

Performing the specificities analysis, based on the revenue level of participants (see Figure 5:24), I find that the modest revenue group specifically mentioned find 'access' (factor: 2.6) to be 'difficult' (factor: 2.2) and 'complicated' (factor: 1.3). They are also more likely than other revenue groups to mention the 'bus' (factor: 1.6) and 'waiting' (factor: 4). The intermediate revenue group were more likely to mention having a hard time to go 'ski' (factor: 3.3) or enjoy a 'weekend' (factor: 3) getaway. Finally, the affluent revenue group is more likely to mention using the 'car-sharing' (factor: 1.3) system and 'renting' (factor: 1.2) a 'car' (factor: 1.4).



Figure 5:24 Specific Discourse on Car Dependence by Revenue level

Waiting is an issue related in particular by modest revenue level households who were 4.6 times more likely to mention waiting than the other groups.

It would be nice to take a bus from here without having to get off and **wait** at the Zoo [bus terminal] for the next bus. Although, we generally don't **wait** long for the 801 [en route to the city] it goes every 15 minutes while for us [in the reverse direction] it's only once an hour [connecting local bus].

(54-W) Stéphanie, 74 - Quebec City area (Notre-Dame des Laurentides) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

They also more often than other group mention experiencing difficulties:

I try to hitch a ride when she [my sister] finishes work or university rather than taking public transit because I find it complicated the transit system of the South Shore. There are many required transfers and I find it **difficult** to understand compared to the North Shore.

(111-W) Nadine, 27 - Quebec City area (St-Sauveur) - Revenue level: Modest - Household type: Roomates - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

But yes, clearly there are sectors of the city for which it's more **difficult** to access by bus. All those suburb areas, Charlesbourg, Lebourgneuf, all the periphery...

(105-W) Arianne, 33 - Quebec City area (Vieux Limoilou) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Ski and weekends are the two most frequent words associated only with the middle revenue group.

It's maybe more going out on **weekends**. hmmm... Maybe we would go **skiing** more often you see, going for a **weekend** to **ski**, yeah, we would do it more. There, going out of Strasbourg if we had a car.

(274-M) Samuel, 24 - Strasbourg area (Contade) - Revenue level: Intermediate - Household type: Couple - Household size: 2 persons - Car-sharing: No - Doesn't feel socially excluded.

Not surprisingly, the affluent revenue group seems more inclined to bypass the issue of access by referring to the use of alternative motorized modes of transport. They discuss 3 of those modes: the tram, 2 times more likely than other groups, the car, 1.4 times more likely and car-sharing at 1.2 times more likely than other groups.

[...] we have relatives a little around [Strasbourg] and also in the Eurometropole but it's accessible by tram except for one case, my wife's mother it's accessible by tram but faster by car.

(247-M) Martin, 36 - Strasbourg area (Gare) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Because I have always said I don't have a car, not because I can't afford a car, it's because I chose not to own one, so I take the car-sharing system and I pay it's not much.

(155-W) Pauline, 65 - Quebec City area (Faubourg St-Jean) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

By once again referring the negatively significant analysis we can see what words are avoided by each group in Figure 5:25. I notice that the group with modest revenue significantly less likely to mentions some transport mode: 'car-sharing' (factor: -3.4), 'car' (factor: -2.6), 'train' (factor: -2.2), 'tram' (factor: -1.7), 'by foot' (factor: -1). In their discourse, it appears the only options are the bus seeing as this mode was the only one positively significant (positive factor of 1.6) with the 'bicycle' (positive factor of 1.1). It is also interesting to note that the most affluent mention less often waiting or finding things 'difficult'. They seem to have no problem going to the 'cinema' (factor: -2.4), to 'work' (factor: -1.9) or 'downtown' (factor: -1.5).



Figure 5:25 Specific Discourse on Car Dependence by Revenue level - Words Avoided

5.3.1.4 Specific Discourse on Accessibility by Membership in the Car-Sharing System

After having these discussions with the two groups, I was wondering how access to the car-sharing system¹³⁷ in particular was shaping the experience of access. Having such a variable associated with to the answers, I was able to perform a specificities analysis and compare the discourse of members and non-members of the car-sharing schemes. Figure 5:26 shows the resulting word clouds. These two bubbles paint a remarkable picture for NMH where access to the car-sharing scheme is indicative of car usage to alleviate some of the accessibility problems, like getting to the shops or specifically the hard to reach hardware stores, the elusive Vosges weekend getaways while, on the other hand, non-members seem to be also less likely to rent a car, rely more on alternative mobility but face waiting, complications and difficulties.



Figure 5:26 Specific Discourse of NMH on Accessibility by Membership in Car-Sharing System

Non-members of the car-sharing system rely or try to rely on the bus:

In the corner of Chauveau Street behind the Galleries de la Capitale [shopping mall] I have a friend who lives there. I really love going to visit him and then in fact the transit is just rotten in that corner. It takes like an hour and a half to get there by bus when a car takes 15 minutes. And on the weekend, there is not even a bus, it's ridiculous!

(88-M) Philippe, 38 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

¹³⁷ Respectively *Communauto* in the Quebec City urban area and *Citiz Alsace* in the Strasbourg area.

They also rely on the bicycle:

Well, after, maybe I was not super mobile but hum even the other day, even to attend a cocktail and going to see friends with my daughter, I put her on the **bike** and it's true, off we go!

(226-W) Béatrice, 38 - Strasbourg area (Place de Haguenau) - Revenue level: Intermediate - Household type: Family - Household size: 3 persons - Car-sharing: No - Doesn't feel socially excluded.

Members of the car-sharing system in both urban areas talk more about cars in general (4.1 times more) often mentioning they don't have one:

Yeah maybe if I had a **car**, maybe I could, I can, I can rent a **car** from the **car-sharing** system but it requires more planning and more organization you don't just go on a whim...

(105-W) Arianne, 33 - Quebec City area (Vieux Limoilou) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Doesn't feel socially excluded.

They often mention specific desires (twice as often) that the car-sharing system enables them to fulfil:

For example, I have a sister who lives near Chambéry so in Savoie. Well if I **want** to go see her there is a car-sharing car available at the Chambéry train station.

(341-W) Naomi, 38 - Strasbourg (Wihrel) - Revenue level: Intermediate - Household type: Single parent family - Household size: 3 persons - Car-sharing: Yes - Feels socially excluded.

I regularly **want** to go to the Jacques Cartier sector [provincial park north of Quebec City] and I find a way to get there it's true when I **want** to go outdoors.

(147-M) Yvon, 32 - Quebec City area (St-Jean-Baptiste) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Even though car-sharing was not a topic in the discussion and at this point in the interview protocol it had not been brought-up at all (I only asked about it after the interview with the questions for a demographic purposes) the discourse held by member and non-members differ greatly, showing the important difference that membership in such a system can do

to improve accessibility in car-dependent areas. The findings are also in line with previous research showing that car-sharing trips are more likely to be for leisure than routine trips like commuting to work, as Cervero (2003) found, car-sharing is popular for trips like shopping at unusual locations or going to recreational places not well served by transit. In this case car-sharing appears an important enabler, allowing households with a membership the possibility of accessing car-dependent destinations, certainly playing a role in curbing the mobility-related social exclusion. I notice that the non-members specifically mention facing difficulties and complicated mobility solutions when car-sharing is not an option.

5.3.1.5 Specific Discourse on Accessibility by the Feeling of Being Socially Excluded or Not

There are many differences in the discourse between those that feel socially excluded because of mobility and those that don't (see Figure 5:27). Some of the differences are attributable to the fact that my sample from Strasbourg felt less excluded socially than the Quebec City sample, so for example, the tram, a Strasbourg only mode of transport is the more likely to be mentioned by those not feeling excluded as a coincidence. And the bus (3.5 times more) which is more associated to Quebec City is the most frequent mode of transport mentioned by those feeling excluded¹³⁸. Of the words that are not specific to either urban areas, those not feeling socially excluded will mention stores 1.5 times more and car 1.4 times more than those who do feel excluded.



Figure 5:27 Specific Discourse of NMH on Accessibility by Feeling Socially Excluded or Not

Mention of stores and the car by those not feeling excluded:

¹³⁸ This is should not be seen as indicative of the bus lens to the feeling of social exclusion or alternatively that the tram is an antidote to social exclusion.

[...] downtown there are decoration and furniture stores that survive in the city and we systematically go there in fact.

(247-M) Martin, 36 - Strasbourg area (Gare) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Doesn't feel socially excluded.

[...] that's why I say for me no car equals freedom. I'm in a voluntary simplicity group [...] discovered freedom without a car.

(151-M) Félix, 70 - Quebec City area (Vieux Limoilou) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

For those who do feel socially excluded because of their mobility, time is a recurring theme, since they are 2.2 times more likely to mention 'waiting', 1.46 times for 'minute', 1.27 times for 'hour', and 1 time more likely to mention 'long'.

The place I can no longer go is "Les Rivières" [neighbourhood]. I have to take the bus but it's almost ... it takes a lot of time but I'm able to go almost anywhere.

(195-M) Tobias, 37 - Quebec City area (Vieux Québec) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Maybe some would go there but then they say to themselves there is one [a bus] every two hours, if we are tired and it has just gone by we will wait two hours or one hour.

(54-W) Stéphanie, 74 - Quebec City area (Notre-Dame des Laurentides) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Well, since I have been living in Beauport the activities are less spontaneous. I would not go ... let's say when I was living downtown it was easy to say to my friends we'll go for a drink, it would take five *minutes*.

(217-W) Mireille, 34 - Quebec City area (Beauport) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

[...] then I have 25 *minutes* by train and then after I have another 35 *minutes*, so, it's ... there is a good way to go compared to the car it's 3 quarter of an *hour* extra.

(337-W) Ines, 58 - Strasbourg area (Port du Rhin) - Revenue level: Affluent - Household type: Single parent family - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

Sometimes it happens there are some events that I would want to participate and that I dropped because the trip by *bus* was just too *long* like a board game event with the kids.

(109-M) Denis, 41 - Quebec City area (Villeneuve) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: No - Feels socially excluded.

5.3.1.6 Specific Discourse on Accessibility By Household Type

As I mentioned previously, while recruiting participants, I made an effort and succeeded in enlisting respondents from various household types in both urban area (see section 4.4.1.1.1 on p. 126 and Figure 4:10 on p. 129). This allowed to use the type of household as a variable in the lexicometric analysis. The discourse analysis by household types reveals different issues which can probably be associated with the different life stages related with each type of household (see Figure 5:28). Although many studies compare the mobility and accessibility of households based on the various household types¹³⁹, they are quantitative and fail to really look into the perceived differences from the household's perspective, even

¹³⁹ See for example (Dieleman, Dijst, & Burghouwt, 2002; Lee, Hickman, & Washington, 2007; Páez, Scott, & Morency, 2012; Scott & Horner, 2008; Strathman, Dueker, & Davis, 1994; Sun, Wilmot, & Kasturi, 1998; Vanco, 2011)

if some types of households warrant special interest due to their multiple difficulties (e.g. single-parent households).

I have included this households type analysis here but in general it hasn't provided much sensible results and has been challenging to resolve. As such, I have refrained from including this kind of analysis in the rest of the chapter. Nevertheless, in this instance, the specific case of families and single-parent families remain of interest with the added complexity of the challenging mobility of children for these NMH.



Figure 5:28 Specific Discourse of NMH on Accessibility by Type of Household

The mobility constraint on a single-person household revolves more around leisure destinations as participants from single-person households are the most likely to mention ‘village’ (factor: 1.9) or ‘parks’ (factor: 1.8). They also most likely mention issues with finding things ‘expensive’ (factor: 1.6) and ‘costing’ (factor: 1.1). Not sharing other living expenses with roommates or partners can be a factor in this issues with expenditure.

Because in Strasbourg in the city in Strasbourg [sic], it's a little complicated I find with a car. So, it would be rather to go to the other villages, leaving Strasbourg to go to the other villages, let's say I would need a car.

(314-W) Lucie, 43 - Strasbourg - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Doesn't feel socially excluded.

I loved going there, the birds and everything, the nature, it was so beautiful, here, well, I rediscovered Les Plaines [large downtown park] again, well there are other parks, the Maizeret Park as well.

(213-W) Rose, 60 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

The results from the roommates' household type respondents is more problematic to make sense of. 'Difficult' and 'transport' are their most specific word (factor: 3.8) but it's hard to synthesize the reason for this. For example, they sometimes associate the word transport with public transit or the transit pass, sometimes it is followed by the word 'mode' which is generic or sometimes it is preceded by the word 'active' to mean walking or cycling. What is apparent from the analysis is that these respondents find many aspects of accessibility to be rather difficult. One specific difficulty clearly associated with this household type is that they feel constrained with visiting family which is an important issue for these younger respondents.

Text segment characteristic of roommate households:

The airport for example, if one day I want to take a plane, or if I want to go to the local health centre up north it's more difficult to access.

(94-M) Benoit, 44 - Revenue level: Modest - Quebec City.

For example, here Michel uses transport to mean public transit:

My **family** yeah, one of my sisters I go less often see her because it's by **transport** it sucks and well it's still 40 minutes by bicycle.

(296-M) Michel, 30 - Strasbourg area (Neudorf) - Revenue level: Intermediate - Household type: Roomates - Household size: 2 persons - Car-sharing: No - Doesn't feel socially excluded.

The specificities analysis result for couples is also hard to decipher. Their most specific word being 'true' (factor: 2.8), 'city' (factor: 2.5) and 'tram' (factor: 2.1). In their answers to question of activities and places they cannot reach for a lack of car, respondents from couple's household often seem to come to the realization of their limitations while answering, hence their use of the word 'true' as if they hadn't thought about it before. It appears that these respondents might be less affected by this accessibility problem than other household types. It is also difficult to synthesize their usage of the word 'city' as they use it to either say that they concentrate their activities in the city or have trouble accessing destinations outside the city.

Text segments characteristic from a participant from couple households:

Maybe sometimes for exceptional errands but mostly to leave the **city**, for leisure, but I would also say aside from leisure there are still some necessities.

(185-W) Cassandre, 35 - Revenue level: Modest - Quebec City.

Yes, there must be some areas, if they are not properly served by **tram** or bus, if it takes an hour, an hour and a half, we do not go there.

(396-W) Sabine, 28 - Strasbourg area (Neudorf) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

Participants from family households are the ones mentioning the most places of consumption: 'grocery' (2.7 times more likely), 'hardware store' (2.6 times more likely) and 'store' (1.1 times more likely). They also are the top ones to mention outdoors activities like going to the 'Vosges' mountain range (3.2 times more likely), 'ski' (2.4 times more likely) and 'hiking' (1.2 times more likely). Having to make purchases for more people, these larger

households experience more problems with shopping destinations, either for lack of being able to reach less expensive options or simply concentrating on local shopping options.

[...] I think about zones like him, Hautepierre, a commercial zone where there is a supermarket
[...]

(359-M) Loïc, 34 - Strasbourg area (Hypercentre) - Revenue level: Intermediate - Household type: Family - Household size: 6 persons - Car-sharing: Yes - Doesn't feel socially excluded.

At the hardware stores, [we're missing] a neighbourhood hardware store, there is a hardware store near her office but those big stores if you don't have a car you just can't go.

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Like Auchan [supermarket] or Carrefour [supermarket] that allow you to order your products online and in fact you go to the store with your car and someone there takes care of loading it in your trunk, no need to do your shopping in the store.

(384-M) Gustave, 36 - Strasbourg area (La Robertsau) - Revenue level: Affluent - Household type: Family - Household size: 3 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Going for a hike, you put some bread and cheese in a bag, we make sandwiches once there, but skiing, that's more constraining.

(359-M) Loïc, 34 - Strasbourg area (Hypercentre) - Revenue level: Intermediate - Household type: Family - Household size: 6 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Participants from single-parent families are the ones most discussing the residential location, where they 'live' (3.2 times more likely) as an issue. This result is in line with findings from Páez et al. (2013, p. 816) looking at residential location and accessibility to job

for single-parent households in Toronto, Canada that indicates “[i]n addition to economic hardship, individuals in single-parent households may also face nontrivial accessibility challenges, arising from an increased tendency to carry the joint burden of generating employment income while maintaining household and childcare responsibilities”. Participants from single parent family also more often mention all the alternative transport. mentioning the ‘train’ (2.8 times more likely), going ‘by foot’ (1.7 times more likely), the ‘bicycle’ (1.6 times more likely) and the ‘bus’ (1.3 times more likely):

It's for sure that, if eh, I lived in a suburban area like Vendenheim or another it's more complicated to go by train or bus. I'm not sure I would have let go of the car.

(326-W) France, 51 - Strasbourg area (Les Quinzes) - Revenue level: Intermediate - Household type: Single parent family - Household size: 4 persons - Car-sharing: Yes - Doesn't feel socially excluded.

[...] the train, all that is too expensive and there are too many transfers so for that type of activity, it's true that for five years, I once, twice, but it was in car pooling and it was simpler end to end.

(227-W) Élise, 56 - Strasbourg area (Port du Rhin) - Revenue level: Modest - Household type: Single parent family - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

You know, I don't know who's the prick civil engineer that did the timing on the traffic lights, but sometimes, waiting a whole set of lights when going by foot, you know the cars are complaining, but I have been in other cities!

(194-W) Mélanie, 35 - Quebec City area (La Cité) - Revenue level: Modest - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

5.3.1.7 Overall Look at Accessibility Issues Encountered by NMH

After looking at the interview material with the lexicometric analysis from the perspective of different variables, like the gender, the urban area of the household type, I did an overall qualitative analysis, looking for discussion passages that appear intuitively significant, for

expressing an interesting point of view from the NMH perspective on accessibility issues they encounter. This is a specific contribution of my research as most literature on accessibility is based on quantitative research. In this section I present issues that seem important from an overall look at the interview transcription material. For example, the fact of needing the help of friends, facing restriction in public transit coverage or schedule, frustration with the land planning based around automobility and some area simply not being interesting destinations for NMH.

For some things, participants mentioned that they simply cannot go on their own. While it is satisfactory to go with friends, participants seem to feel they are losing a part of their autonomy as expressed by Mireille:

Hey well for sure skiing ... er hiking, I do when I'm with my friends only but alone it's a little more complicated. Same thing with snowshoeing. In fact, everything that is done mostly outdoors.

(217-W) Mireille, 34 - Quebec City area (Beauport) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Elise also expressed this idea of relying on friends but likewise brings to life the aspect of the limitations of public transit coverage in terms of area, and additionally, in terms of schedules:

Oh yes. For example, going a little outside the city in the villages, well I can no more do that. I can no longer do that [since I got rid of my car] because there is not enough public transit. And then there are the time table constraints. The little [service] that there is, is [sic] very constrained by schedule. So, I guess if I do not have a car, if I do not go with a friend, friends who go there, I can no longer go. There are also some shopping centres. For example, now I am doing renovation work. I need paint or material, I would have preferred... I want to stay as natural [e.g. organic] as possible that I can, doing the painting, well in Strasbourg there is none. So, I have to go outside, with a car [laughing] that's real constraints.

(227-W) Élise, 56 - Strasbourg area (Port du Rhin) - Revenue level: Modest - Household type: Single parent family - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

Viviane talks about problems in the car-dependent land planning, with shopping malls located near highways and not accessible by other means:

Yeah, well, there are all the business areas, big shopping centres, so, located on the outskirts, close to the highways which are ... there to go by bike it is extremely painful you know, often there is no bike path to go there. So, I rely on stores in the centre, shops that are downtown eh.

(402-W) Viviane, 29 - Strasbourg area (Robertsau (Cité universitaire)) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

It also appears that some parts of the city are just not enticing to NMH which might explain why they don't access them:

Uh, there are areas of the city that I frequent very seldom but I would not say that there are areas of the city that I do not frequent. But everything that is for example industrial sector of Ste-Foy, it's very rare that I go there, hum what else is there? Everything to the north I would say of the boulevard which was called Louis XIV [...] Hum yep, there are nevertheless some sectors that are... one could say deserts of active transport because the distances are really very big and then that there is not much, there is not so much interest ... that's it. That, I do not know if the fact of not having a car comes with a way of seeing life or if it is this way of seeing life that makes sure we don't have a car, but there is not much interesting for me in these areas it seems that it is the kingdom of the suburbanites and then it doesn't particularly attract me [laughing]...

(209-M) Bruno, 36 - Quebec City area (Lairet) - Revenue level: Modest - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

5.3.2 Top-Down: Territorial Accessibility for Public Servants

Due to the smaller corpus formed by all the answers related to this question the quantitative analysis is limited in regard to public servants' discourse regarding this aspect. Nonetheless, the word network (see Figure 5:29) produces an interesting result, with the issue of accessibility but with longer access 'time' and the limitations imposed by 'schedules' at the forefront of civil servants' discourse. This analysis is skewed to be more representative of Quebec City as only two public servants in Strasbourg had the time to answer that question, while all the five public servants from Quebec City answered it.

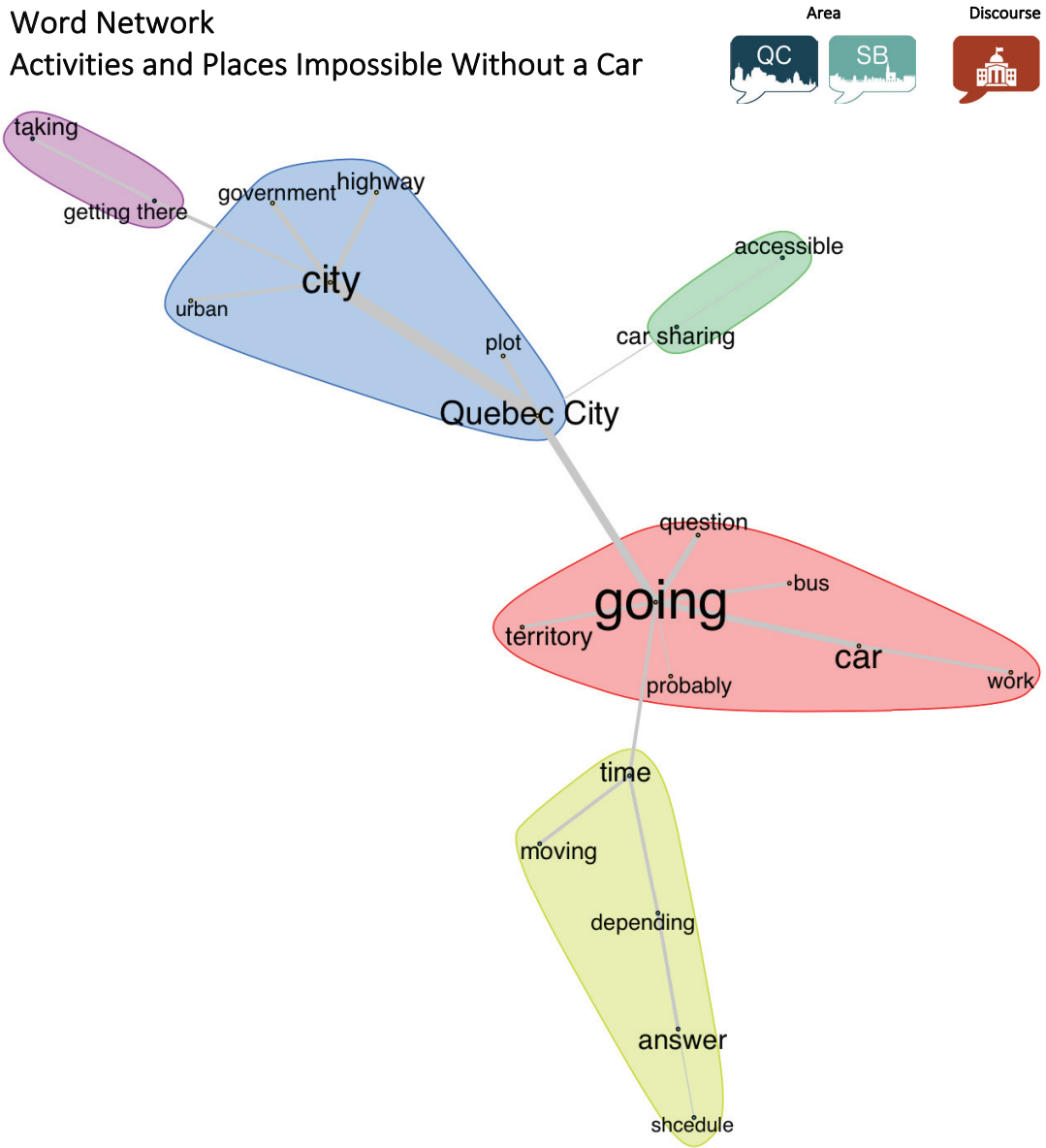


Figure 5:29 Word Network of Activities and Places Impossible Without a Car (Public Servants)

Examples of comments from civil servants about the time difference when trying to access the entire territory without a car:

I would say you can probably do everything you want but there is probably a heavy price in terms of travel ~~times~~, but there are exceptions, you know for example it's still impossible to get to the airport by public transit.

(350-M) James, >50 - Civil servant in Quebec City.

One can go everywhere but it will depend on the time one wants to put in and if one accepts to walk a little. The question is, you must think in terms of travel ~~time~~ and well if you have ~~time~~, no problem!

(406-M) Yann, >50 - Civil servant in Strasbourg.

5.3.2.1 Qualitative Analysis of Accessibility Issues for Public Servants

In Strasbourg, public servants seem to consider that NMH can access the whole urban region but at a price, either all the time available or using an active mode of transport. But the question of time is top most...

One can go anywhere in the world, but it depends on the time one wants and can spend, and if one agrees to walk a bit. The question is... must reason in terms of travel time.

(406-M) Yann, >50 - Civil servant in Strasbourg.

Things that you cannot do if you can move to the public transportation: if I live in the south or the north of the Eurometropole and want to go to the opera and the opera ends at Midnight I cannot go home. If I have somewhat atypical work schedules in a number of cases if I do not have a car I cannot.. Therefore, in any case, at least on the hourly dimension the answer is clearly no. On the Territorial dimension at rush hour the answer is probably yes.

(424-M) Sébastien, [30-50] - Civil servant in Strasbourg.

The answers from Quebec City are very similar...

I would say one can probably do whatever one wants but ... there is probably a big price to pay in time. [Silence] You know there are a few exceptions to that, but you know, it's impossible to go to the airport by public transport, for example. But otherwise, if you are willing to adjust your schedules, starting earlier, to accept travelling times that are ... which can often be important, I think you're ... you can move around all over the area.

(361-M) Mathieu, >50 - Civil servant in Quebec City.

But for this public servant there are even more conditions having access to car-sharing and the financial means:

Not just in Quebec City, almost everywhere it's very difficult, in fact you have to subscribe to car-sharing. OK you have to have these options anyway that I may have a little overlooked because it is true that a non-motorized person has access to car-sharing, if one wants to take a day out in nature one can do so. When you consider this lifestyle, car-sharing, there I speak from personal experience, but it is enough ... you know, me I never had a problem to find a car, it is very accessible. If one takes from that point of view there, perhaps not everything is within reach, it is accessible to those with the financial means.

(386-M) Julien, [30-50] - Civil servant in Quebec City.

In both cases, civil servants are cognizant of the extra time requirement for accessibility of the entire urban area without a car. In Quebec City, as Julien presented it, it's not even conceivable, the region is very large and car-sharing is considered a requirement for regional wide accessibility. This fact becomes important in the next chapter when I look at mobility related social exclusion. Car-sharing indeed appears as a solution to both car dependence and mobility related social exclusion, but it is only available to certain individuals, those with the financial means to afford it who also have a driver licence. For individuals without those two components, car-sharing is less effective a solution.

5.3.3 Bottom-Up vs Top-Down: Similarities & Differences

When discussing the territorial accessibility of their respective regions, both the representatives of NMH and the civil servants provided answers agreeing as to the existence of the non-accessible destinations or activities for motorless households. This is demonstrated by the qualitative analysis of the civil servants' responses and the segments

which I quoted. However, the small number of respondents on the part of civil servants renders the comparison difficult as few equivalent analyses were performed on both groups. For example, it was impossible to perform any specificities analysis (e.g. city-specific topics of discussion) on the answers from civil servants due to the limited size of the corpus generated with the answers. The only lexicometric analysis which is available for comparison is the similarities analysis. In comparing them, the word network of non-accessible area for NMH (see Figure 5:18 on p. 216) is much more complex and includes a great number of frequent answers, while the word network for civil servants is not so specific (see Figure 5:29 on p. 247). Even when seemingly at different scales, the two word networks share a few topics. The common transport modes discussed are the same: ‘car’, ‘bus’ and ‘car-sharing’. In both instances a part of the discussion was about ‘getting there’ or time-related aspects of the journey. Finally, while the NMH word network included many destinations, only one was also mentioned by the civil servants: ‘work’.

5.4 Car Dependence and Public Policy

5.4.1 Bottom-Up: Public Policy from The Perspective of NMH

During my interview with members of NMH we discussed public policy that could be helpful for them¹⁴⁰, I asked their perception of existing public policies and how they could be improved. Figure 5:30 shows the resulting word network produced by IRaMuTeQ based on that discussion showing the most frequent words¹⁴¹ and their associations. The seven groups of words are all linked to the central element of ‘going’. All the discussion revolves around mobility embodied by this verb. Then six groups intersect with the main group. These words mostly appearing with the verb ‘going’ as either modes or destination. Although the word car stands on its own with a small constellation around it. The ‘car’ constellation is interesting as it pits the ‘car’ against ‘cyclists’ and ‘pedestrians’ and relates to the conflict between modes which was clearly present in the conversations. It is interesting to note that ‘sidewalks’ made it into this word network, as many NMH discussed issues with absence of sidewalks, narrowness or sidewalk snow plowing issues. The common-sense wisdom around the need for new ideas for public transit and the fact that it’s closely related to politics is remarkable in the green blob¹⁴².

¹⁴⁰ See questions 19, 20, 22 and 23 from the NMH interview protocol in Appendix 1.

¹⁴¹ Appearing 25 times or more in the transcript.

¹⁴² The colours are randomly assigned by IRaMuteQ and are not related in any way to my icon colour scheme.

revenues and are not employed. Finally, the discourse in class 1 is about active mobility and how it cohabits space with the car. This discourse is strongly associated with being in the Strasbourg urban area, having a driver's licence and not having a public transit pass. It is also associated with not feeling socially excluded, being a member of the car-sharing system, and being between 18 and 40 years old.

The strong correlation between the bus (class 3) and the groups feeling socially excluded might be an effect of the fact that respondents from the Quebec City urban area which is also strong correlated to this class generally felt more excluded than their Strasbourg urban area counterparts (see Figure 6:61 and Figure 6:62 on p. 412).

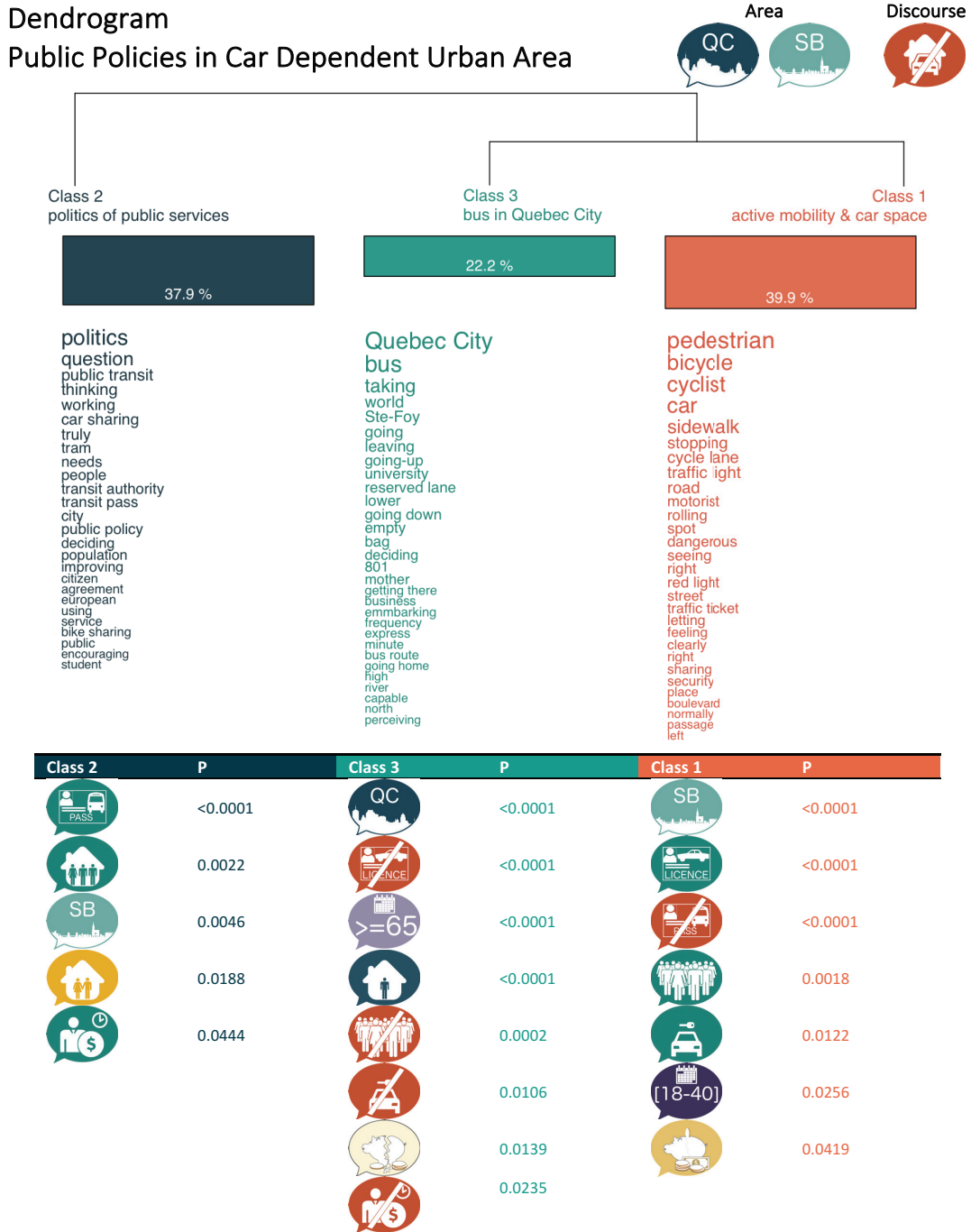


Figure 5:31 Dendrogram - Public Policies in Car Dependent Urban Area (NMH)

There are cars everywhere. I think it ruins the landscape, you see I would prefer, for example, having larger sidewalks to put, for example trees in my street, rather than cars. It's a question of landscaping yeah!

(243-M) Maxime, 35 - Strasbourg area (Contarde) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Men also often mention of accidents, for example Tobias who is afraid of being hit by drunk drivers when he uses his bicycle on Saturday nights:

But I know that Friday night, Saturday night, sometimes it does not tempt me to ride my bike because I know there are people who are putting in 0.07 [blood alcohol rate] which is legal but on the street then I don't feel like riding. Heum... I think the accidents should be investigated. When there is an accident, it should be taken seriously [...]

(195-M) Tobias, 37 - Quebec City area (Vieux Québec) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

5.4.1.2 Urban Area Specific Discourse on Public Policy

When analyzing the responses with a specificities analysis (see Figure 5:33), between both urban areas where I met with NMH, the first thing that becomes obvious is that even considering only the words that have a factor greater or equal to 2.5, the number of words that are specific in this case is greater than in many other analysis. This can be explained by the high number of specific territorial references in the discourse which bear different names in the two areas. Some other differences are attributable to accent and vocabulary differences between the Canadian French and the French spoken in Alsace.



Figure 5:33 Specific Discourse of NMH on Policies by Urban Area

The same graphic generated this time without the local place names from each urban area shows more clearly the differences (see Figure 5:34).

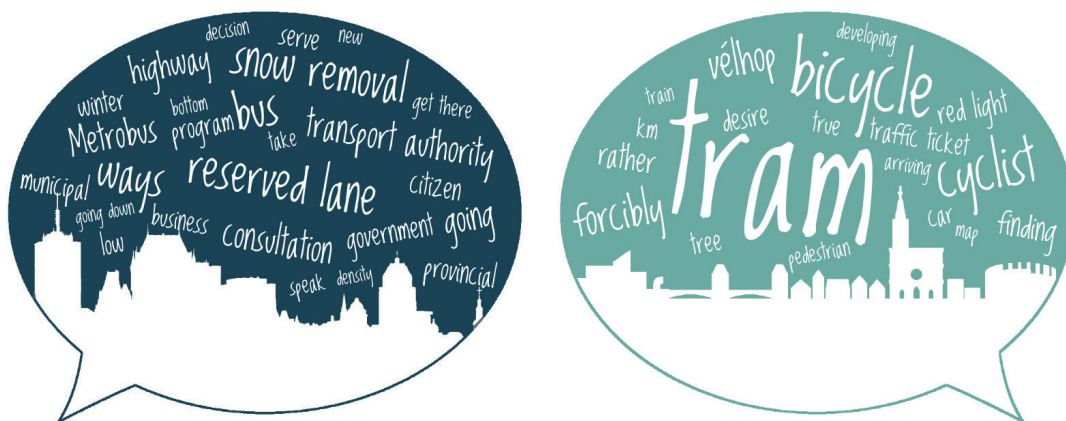


Figure 5:34 Specific Discourse of NMH on Policies (Without Local Plane Names) by Urban Area

In analysing the differences, some real policy issues specific to each area do surface from the specificities analysis. For example, discussions significantly likely revolved more around the following themes in the Quebec City area: 'reserved lanes' (factor: 6.8), the 'bus' service (factor: 6.7) 'snow plowing' (factor: 6.1), [public] 'consultation' (factor: 4.4), 'Metrobus', the frequent bus service (factor: 4.4) and 'highways' (factor: 4). While in Strasbourg the following policy issues were top of mind in comparison: the 'tram' service (factor: 24.9), 'bicycle' (factor: 13), 'cyclists' (factor: 7.6), the bike-sharing system called 'vélohop' (factor: 6.4), red 'traffic lights' (factor: 3.5), 'traffic tickets' (factor: 3.2), 'car' (factor: 3), 'pedestrians' (factor: 2.8), 'train' (factor: 2.6), 'urban planning' (factor: 1.8), 'cycle lanes' (factor: 1.8), 'transit pass' (factor: 1.5), 'car-sharing' (factor: 1.4).

NMH respondents in the Quebec City urban area considered the public transit network to be the most important policy for them, so reserved lanes, for the bus network which have been controversial and highly visible on some stretch of local provincial highway system were an important topic of discussion, the closure of the bicycle network for the winter, (parking is authorized on bicycle lanes during the winter) and the decision to not remove the snow from the cycling network was also a hot topic for NMH who still declared using the bicycle during the snowy months, but repeatedly requested for the snow plowing of the network as well as improved snow removal on pedestrian facilities.

In the Strasbourg area, public transit also come on top of the most specific issues discussed, in the form of the tram. The lack of any such infrastructure in the Quebec City area alone explains this difference, but the tram was still abundantly discussed, with either praise for the quality of the service or request for more late evening service and wider service area. The very developed cycling network was also often mentioned by the respondents in that area. The social pricing of the transit pass in the Strasbourg area and the multiple joint transit pass and other mobility system offerings also explain why NMH considered the pass more often in that area. The issue of traffic violations for cyclists also only came up in the Strasbourg area, and surprised me as the police in the Quebec City area most often leaves cyclists alone.

Excerpt from two of the main issues in Quebec City:

The #7 Ste-Foy Cbus route...I, I took it a lot. It is appreciable and unique since it is the only bus that does this [crosses the city east to west], but it's incredibly long from the west to downtown because there are no reserved lanes, there is nothing there.

(81-W) Virginie, 28 - Quebec City area (Sillery) - Revenue level: Intermediate - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

Ah, I forgot! In winter, snow is not an obstacle [to cycling], they have to snow plow the cycle lanes. Stop it right there, OK! You have the side of the street, the sidewalk and the cycle lane!

(183-W) Héroïse, 43 - Quebec City area (St-Sauveur) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

Excerpts from two of the main issues in Strasbourg, the tram is a hot topic. both for its good aspects but also to criticize it:

Even the trams themselves, they are nice, in the end they decided to make them, hum a little, well less gloomy, they are nice the trams in Strasbourg.

(273-W) Madeleine, 26 - Strasbourg area (Gare) - Revenue level: Modest - Household type: Couple - Household size: 2 persons - Car-sharing: No - Doesn't feel socially excluded.

Maybe I'll surprise you, me I think that our public policy is not so great, even with the tram because, as a matter of facts, it's really nice putting a tram, but in fact it doesn't serve the entire agglomeration...

(289-M) Gervais, 43 - Strasbourg area (Schiltigheim) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

The bicycle is the third word most specifically associated with Strasbourg. There are many aspects discussed, lots of improvement suggestions and many references to other European “bike-friendly” cities like Amsterdam. But a surprising aspect of cycling is the social aspect around it in Strasbourg. For example, this quote from Béatrice:

Now, I meet friends by crossing them on my way on the bicycle. I would never even have believed that in the city I could run across friends, stopping and chatting but yeah, since I see so much more around me when on my bicycle...

(226-W) Béatrice, 38 - Strasbourg area (Place de Haguenau) - Revenue level: Intermediate - Household type: Family - Household size: 3 persons - Car-sharing: No - Doesn't feel socially excluded

5.4.1.3 Specific Discourse on Public Policy by Revenue Level

The specificities analysis according to the three revenue levels is interesting from a positive association with each type as depicted in Figure 5:35 as well as the negative association, revealing words that each group avoids as depicted in Figure 5:36.

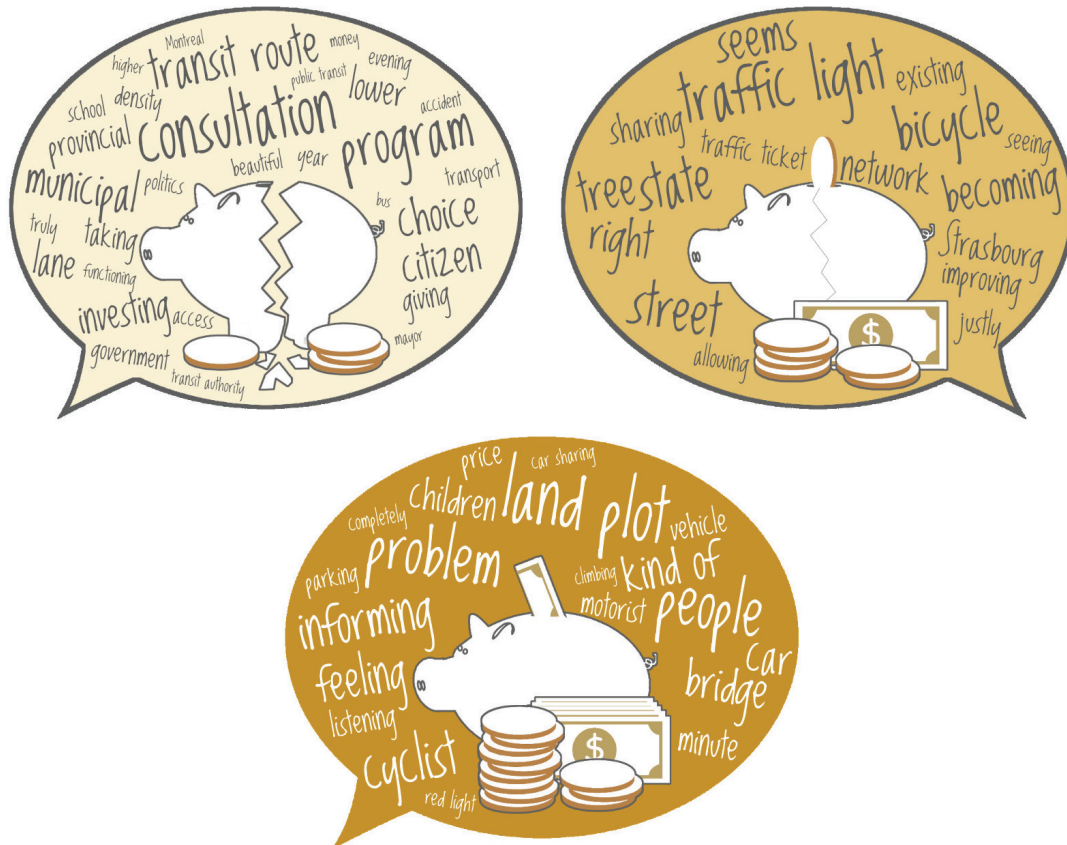


Figure 5:35 Specific Discourse on Mobility Public Policy by Revenue level



Figure 5:36 Specific Discourse on Mobility Public Policy by Revenue Level - Words Avoided

Participants with the lowest revenue level are the most likely to mention the issue of ‘consultation’ (factor: 5.4), problems with ‘transit routes’ (factor: 4.2) while being less likely than other groups of mentioning ‘parking’ (factor: -4.3) and ‘bicycle’ (factor: -4). As I will discuss in the next chapter, the negative feelings about public consultation shared among the lowest revenue group is a factor in explaining their higher feeling of mobility-related social exclusion compared to other revenue groups.

Excerpts from the discussion with participants from the modest revenue level:

These are questions that must be asked. There are *policies* in place for a system of citizen *consultations*, but their implementation is not truly democratic and I think that the ground level improvements to transport *policy* has to come from *consultation*.

(111-W) Nadine, 27 - Quebec City area (St-Sauveur) - Revenue level: Modest - Household type: Roomates - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

Participants from the middle revenue group are the most likely to mention the issue of 'traffic lights' (factor: 4) and 'bicycle' (factor: 3.8) and the least likely to mention 'people' (factor: -4.4), 'cyclists' (factor: -3.3) and the word 'problem' (factor: -3.2).

Excerpts from the discussion with participants from the middle revenue level:

I still received a €90 traffic ticket for an orange traffic light while on my bicycle, I find it's a little abusive hum...

(319-W) Rachel, 39 - Strasbourg area (Neudorf) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Participants from the top revenue group were more likely to discuss 'plots of land' (factor: 4.4), 'problems' (factor: 3.6), 'cyclists' (factor: 2.9). They are also less likely to mention 'traffic lights' (factor: -3.3), 'politics' (factor: -2.6) and 'street' (factor: -2.6).

Excerpts from the discussion with participants from the affluent revenue level:

[...] then they built a bridge, traffic was going well there, but then the plots of land started selling in St-Rédempteur, Charny, St-Apollinaire [municipalities on the south shore of the St-Lawrence river], for very cheap, today it's cluttered there is no appropriate land planning...

(151-M) Félix, 70 - Quebec City area (Vieux Limoilou) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

5.4.1.4 Specific Discourse on Public Policy by Membership in the Car-Sharing System

When analyzing the responses from the perspective of membership in the car-sharing system, there appears to be different priorities unique to each group (see Figure 5:37).



Figure 5:37 Specific Discourse on Mobility Public Policy by Membership in Car-Sharing System

The main specific issues for the car-sharing system members are 'cyclists' (factor: 7.3), 'parking lots' (factor: 6.1) and 'car-sharing' (factor: 4.9). Non-members are significantly more likely to mention the 'bus' (factor: 6.3), 'street' (factor: 5.6) and 'going out' (factor: 3).

Being from NMH, I assume, based on the analysis of mode share comparing motorized and non-motorized households (see on p. 182), that the respondents use the bicycle more than the average area dweller, as member of the car-sharing system, they also drive more than their non-members counterparts. As infrequent driver but frequent cyclists, these respondents were more cognizant of sharing issues and the attention required on the part of drivers to ensure the safety of cyclists. They are also more likely to discuss improper cyclist behaviours that cause safety issues. A lot of them also guessed that the municipal government was subsidizing the car-sharing parking spots since they noticed that they were on public municipal lots. The fact that car-sharing and the parking lots for shared cars was a prominent topic in a conversation about public policies that can be helpful or should be improved show the importance that members NMH confer to the system. I must say that the first few times this was discussed by NMH I was surprised.

Of course, for NMH participants who were not member, the specific reference to the bus which implies that this topic was not mentioned by car-sharing members, show that 1), motorized transport is important in both groups, either individualized (car-sharing) or collective (the bus), but also that 2) for NMH membership in the car-sharing system substitutes the public transit system. The specific association of the word 'street' with non-

members reveals that on the contrary to members of the car-sharing system, many non-members felt that public authorities had to give them more room on the street, they felt out of place and were asking for more pedestrian streets for example. This makes sense when taking into account that all households who are members of the car-sharing system have at least one member with a driver licence while only 61% of non car-sharing households had at least one member with a driver licence. In other words, the non-members of the car-sharing system are also 39% of the time without a driver licence.

Samples of discussions with a member of the car-sharing system:

[...] they must make room for pedestrians and then we find ourselves with conflicts between cyclists and pedestrians and car conflicts, while paradoxically, we are a city where people are used to seeing cyclists everywhere.

(289-M) Gervais, 43 - Strasbourg area (Schiltigheim) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Sample of discussion with non-members:

[...] because sometimes I think that since some bus routes have been created, if they went a bit further, you know into places that are really poorly served, I think it would change even more the quantity of people that could take the bus, that would have access.

(150-W) Caroline, 46 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

Sample response from a participant not feeling socially excluded:

It's the tram, it renews a city, it completely renews a city [sic]. Imagine a city without means of public transit it is grid locked by the cars, it is clogged.

(372-M) Étienne, 70 - Strasbourg area (Des quinze) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: No - Doesn't feel socially excluded.

Sample response from a participant feeling socially excluded:

To file a complaint, there is not a simple system and in the consultation system, you know well ... in the end the representativeness of certain groups is not recognized because there is only one system you must have...

(185-W) Cassandre, 35 - Quebec City area (undeclared) - Revenue level: Modest - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

Hum, there is a system of pass I think where you can use all the transport modes well car-sharing and the tram and the regional trains I believe, well I don't know it because I don't use it but I know such a system exists, I called Pass Mobility I believe.

(337-W) Ines, 58 - Strasbourg area (Port du Rhin) - Revenue level: Affluent - Household type: Single parent family - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

5.4.2 Top Down: The view from City Hall - Car Dependence and Public Policy for Public Servants

In this section I present the results of the qualitative discourse analysis performed on the interview material from the discussion with ten civil servants. Sometimes the differences highlighted here seem large, for example when a subject is discussed many times in one urban area and not mentioned once in the other. In these cases, I do not mean to say that no one in that urban area's public administration works on this issue. The results discussed in this section are representative only of that small sample of 5 civil servants per area, all working on transport policy and land planning. This a small sample, but since the analysis

is based on the multiple segments of texts in the discussion¹⁴³, it is still considered statistically relevant by IRaMuTeQ.

When analysing the civil servants' discussion of car dependence and public policy¹⁴⁴, there are six communities of words in the similitude analysis of the discussion of car dependence with public servants (see Figure 5:39). The central community is the most connected and revolves around the verb 'going'. This community encloses 'public policy' as a terminal node and 'public transit' on a link to the 'city' community. 'City' is at the centre of a community that includes many land planning concepts and links to a sub community related to space which includes alternative mobility modes. 'People' is also its own community directly connected to 'going'. It includes the 'car', 'dependence' and links to the 'mobility' word group. Finally, an odd group connected to going by the word 'taking' forms its own community which includes various items.

¹⁴³ 5'535 occurrences totaling 1'055 forms in this instance.

¹⁴⁴ Question six and seven from the public servant's interview protocol (see Appendix 2 for details).

Word Network - Car Dependence & policy from Public Servant Perspective

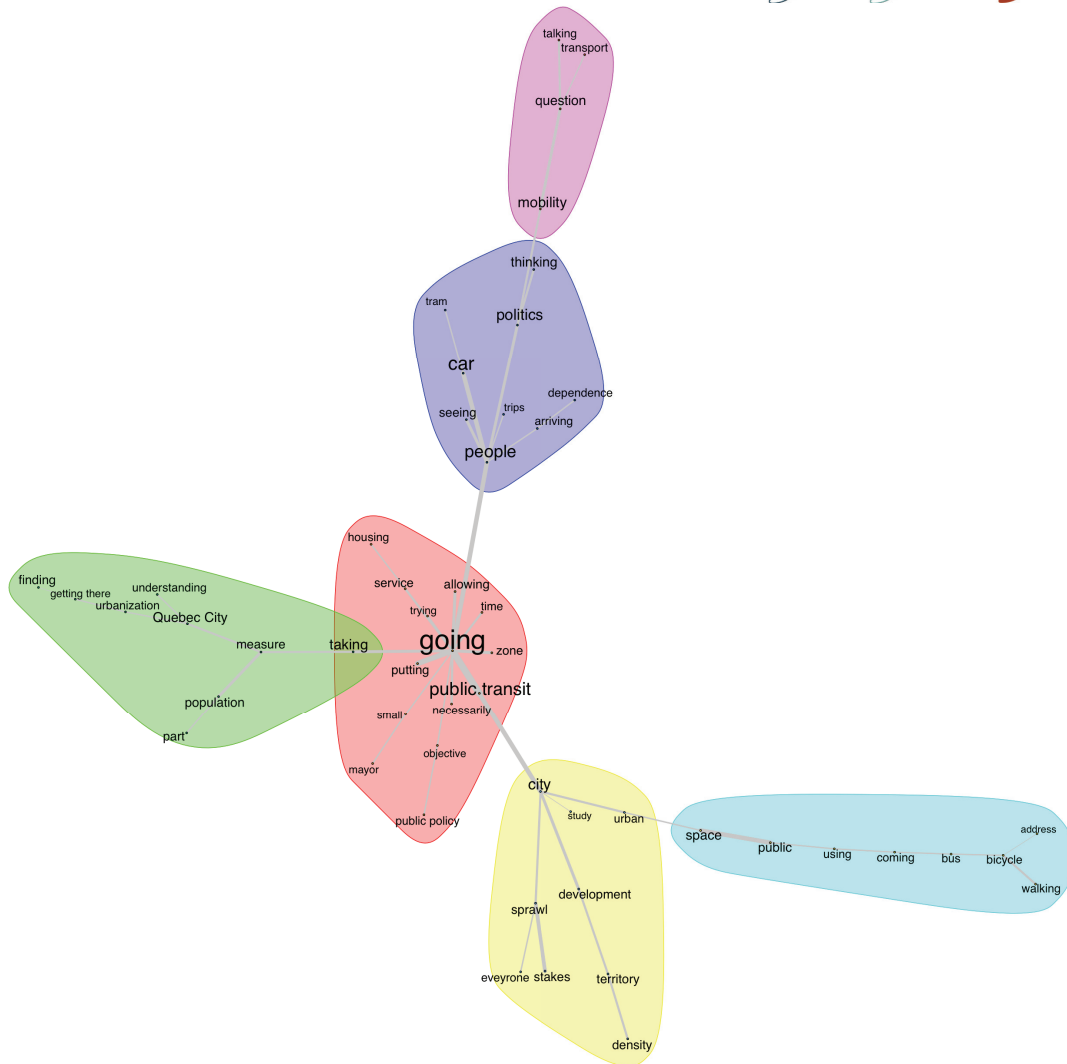


Figure 5:39 Word Network of Car Dependence & Policy - Discussion with Public Servants

5.4.2.1 Urban Area Specific Discourse on Car Dependence by Public Servants

When analyzing the responses with a specificities analysis between civil servants in the Quebec City area and in the Strasbourg area (see Figure 5:40), looking for words more likely to be said by each group. I see for example that many public servants in Quebec City mention 'space' and 'city' in their answer. While in Strasbourg the words 'question' and 'car' often come to mind of the public servants while addressing car dependence.



Figure 5:40 Specific Discourse of Car Dependence & Public Policy by Urban Area

The specificities association of the word 'city' to the Quebec City area civil servants can be explained by the important role played by the surrounding municipal governments simply referred to as the 'city' in the urbanization process. There is a feeling there that these conterminous municipalities are playing a major role in expanding urban sprawl when the main city is trying to limit the phenomena and this issue was often brought up by the civil servants met in that area.

The presence of the specificities of the word 'mobility' with the Strasbourg area civil servant can be explained by their frequent references to the different types of mobility, sometimes referring to 'active' mobility or 'sustainable' mobility. Unfortunately, this might simply represent a vocabulary difference between the two populations which can also explain their specificities associated with the word question. On the other hand, in the case of the word 'policy' this is indeed a difference in that the civil servants met in the Strasbourg urban area more often referred to specific policies.

Example from Quebec City:

*We simply see a swap of the development towards suburban **cities** and that is where the stakes are for urban sprawl and the challenges of public transit issues will worsen.*

(350-M) James, >50 - Dept.: Transport - Quebec City.

Example from Strasbourg:

*After that, the **question** is who pays? Well, even though we have the chance here in France to have the transportation contribution [tax on employers] which allows to capture some of the business wealth to drive these **policies** isn't it extraordinary?*

(406-M) Yann, >50 - Dept.: Land Planning - Strasbourg.

5.4.2.2 Qualitative Analysis of Car Dependence and Policy Issues for Public Servants

The advantage of the qualitative analysis is that it can reveal not only the words but the topics discussed and whether from a positive or negative perspective. As shown in Figure 5:41, I have identified nine different topics in the discussions. This chart and all the similar charts based on the qualitative analysis are formed from the proportional number of words associated with each topic, as coded in Atlas.ti¹⁴⁵. The topics are listed in the order of importance for the overall discourse, by the number of words associated with the topic.

In the case of topics discussed, the analysis shows that the political aspects are more often discussed by public servants in Quebec City while they are seldom mentioned by Strasbourg public servants. Quebec City civil servants also discussed more about intergovernmental aspects, urban sprawl and public policy, while economic aspects were only addressed by Strasbourg civil servants and the subjects of urban planning was much more discussed by them.

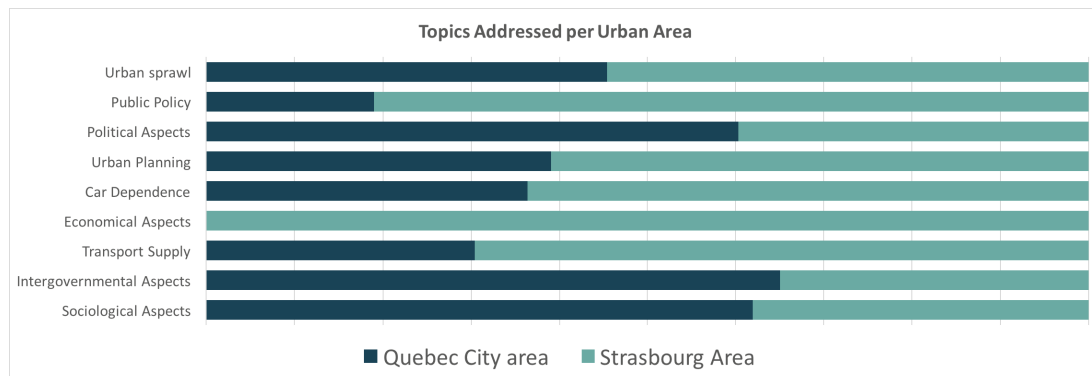


Figure 5:41 Specific Topics Addressed by Public Servants by Urban Area

Within each category, the specific topics discussed are also interesting. In this section I present the different topics for each category and the focus of each urban area using the same method of analysis from Atlas.ti. Most topics appear to be the unique focus of one of the other urban areas. This reveals a real difference in focus as this qualitative analysis is not influenced by vocabulary differences. However, I must recall the small sample size limited to five civil servants per area which prevents any generalization of the results.

Having presented the various topics in the previous chart, I now present the different items that formed each topic and also provide the comparison between the two different groups of civil servants.

¹⁴⁵ This is performed using the code table analysis from Atlas.ti based on the inductive qualitative reading and coding of the material.

5.4.2.2.1 Urban Sprawl and Car Dependence

Urban sprawl was the most common topic during the discussion with respondents regarding the public policies concerning car dependence. Figure 5:42 shows the various issues discussed and the distribution between the two urban areas. All these bar charts are ordered from the most discussed issue at the top to do least discussed topic at the bottom.

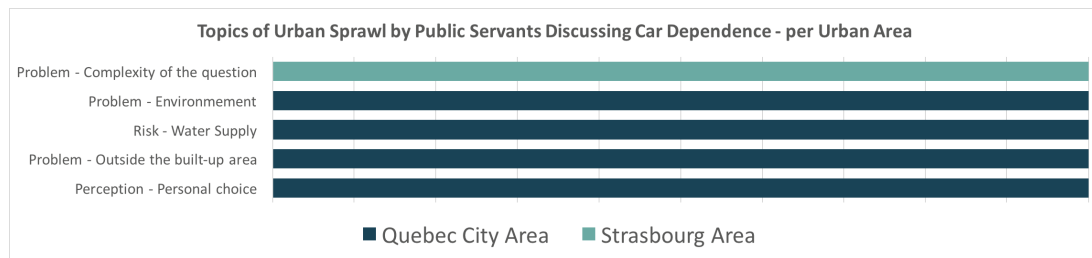


Figure 5:42 Topics of Urban Sprawl by Public Servants discussing car dependence

Text segment about the complexity of urban sprawl:

Here is a simple example, a mayor of a small municipality, so we do not want him to develop because he is far from everything. So, we would not want him to build his fourth lot. Well yes, but at the same time, if you take his point of view, his local school will close if there are no new people coming in [...] OK it would require in planning to have maybe a few new tenants, except that the rental tenants they have no desire to go there. So, bah at some point he says if I, if I don't open the urbanization with new owner residents my school will close. [...] And so here he is thinking about that scale and he is elected by that level. So, there is ..., totally legitimate, so we find ourselves ... and at the same time we have big documents that say we should limit the peri-urbanization.

(424-M) Sébastien, [30-50] - Civil servant in Strasbourg.

Text segment characteristic of Quebec City area civil servant:

The other aspect, uh, is that if everyone has their vehicle, whether it is electric or combustion, it favors, it can favor to some extent, urban sprawl. Now, is urban sprawl bad? Does everyone need to?, Does everyone have the same need and must necessarily live in a city centre? I think it's a personal choice.

(350-M) James, >50 - Civil servant in Quebec City.

Civil servants in both area discussed attempting to curb urban sprawl. While in Strasbourg, the main discussion was about the complexity of the issue and finding solutions that have the fewest adverse effects as I show in the sample quote above.

In the Quebec City area, urban sprawl was associated with other regional scale policy problems. Environmental and water source protection issues were often associated with the discussion of urban sprawl in relation to car dependence. Similarly to the overall discussion, the topic of the surrounding municipal governments' role on the regional urbanization was often mentioned in association to car dependence and urban sprawl. The issue of drinking water source protection has been a hot topic in Quebec City's regional politics for the last few years as the rapid growth of urbanization in the surrounding municipalities, in close proximity to the region's drinking water sources represent an increased water supply contamination risk. Some also questioned whether urban sprawl was a problem and suggested it might be a freedom of choice issue.

5.4.2.2.2 Public Policy and Car Dependence

Public policy was the second most common topic during the discussion with respondents regarding the public policies concerning car dependence. Figure 5:43 shows the diverse issues discussed and the distribution between the two urban areas.

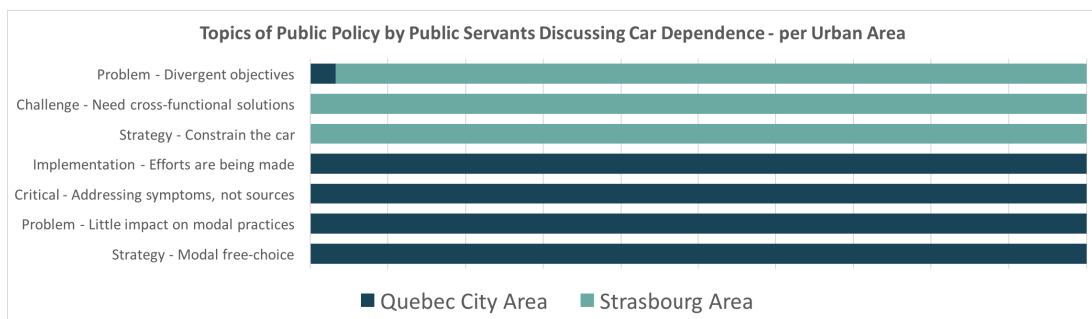


Figure 5:43 Topics of Public Policy by Public Servants Discussing Car Dependence

Various public policy strategies were discussed but both urban areas have different strategies and they don't broadly share any specific discussion topics. Quebec City public servants mention implementation and various problems with the current policies. The discourse often took a critical turn, with civil servants deprecating their own policies for not going far enough, being tamed down¹⁴⁶ in order to remain acceptable to the vastly motorized majority. I also came to the same conclusion when analysing the actual policy documents. Some of the civil servants, less critical were advocating the same "free choice" approach defended by the policies. As was found by Scanu (2014, p. 355) sustainable mobility and reduction of car use is a contested issue on the Quebec City urban area. It appears that policies dealing with car dependence face a social acceptability problem¹⁴⁷ as Banister (2008, p. 76) puts it: "[p]ublic acceptability drives political acceptability, and it is only when there is sufficient public support for change, that action will take place".

Strasbourg area civil servants discussed the situation at another level, identifying gaps in policy objectives where cross area policies were set on opposite objectives and discussing difficulties with implementing cross sectional policy solutions. But the most important difference remains the civil servant's willingness to call for and enforce restrictions on car use in their urban area.

This major divergence where in the Quebec City area, civil servants feel that policy addressing car dependence has to be toned down and refuse to constrain the car, whereas in the Strasbourg area, the situation is reversed is an issue of social acceptability of public policies. The problem of acceptability of transport policy is not unique to the Quebec City area, as many research discusses the issue of social acceptability of transport policy, for example (Eriksson, Garvill, & Nordlund, 2008; Faburel, Grenier, & Charre, 2007; Raux & Souche, 2012).

Sample critical quote from a public servant about policies not addressing the sources of car dependence:

No, no no we do not address the causes [of car dependence], we address the symptoms

(386-M) Julien, [30-50] - Civil servant in Quebec City.

¹⁴⁶ See section 5.4.2.2.3 in particular.

¹⁴⁷ For a general discussion on social acceptability of public policy see (Barbier & Nadaï, 2015; Bramley, Brown, Dempsey, Power, & Watkins, 2008; Gendron, 2014).

Text segment characteristic of a Quebec City civil servant about the “free choice” approach to modal split:

We are much more about the principle of free choice. The people of Quebec are pretty much right-wing rather than left-wing. And I think politically they [elected officials] have understood this concern there, people and politicians are going in that direction there.

(350-M) James, >50 - Civil servant in Quebec City.

Text segment characteristic of the strategy of constraining the car:

The constraint that is placed especially on parking and on the sharing of roads in the communities has thereby an immediate effect on the modal choice that people will be able to make.

(441-M) Guillaume, >50 - Civil servant in Strasbourg.

5.4.2.2.3 Political Aspects of Car Dependence

Whereas the issue of social and political acceptability of public policies was touched on by civil servants when discussing policy itself, it was an important part of the political aspects mentioned during the conversation. Figure 5:44 shows the various issues discussed and the distribution between the two urban areas. This is mostly a topic brought up by the Quebec City area civil servants.

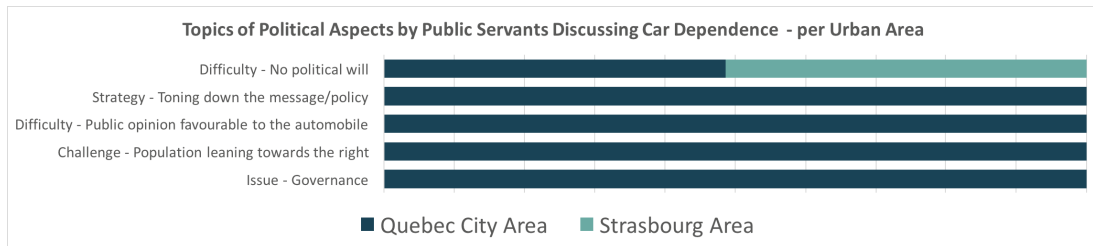


Figure 5:44 Topics of Political Aspects by Public Servants Discussing Car Dependence

As mentioned, political aspects are predominately discussed by Quebec City public servants. They discuss the difficulties of public opinion favourable to the car and a lack of political will to fight the issue head-on which forces them to strategize to fight car dependence while keeping the policies palatable to the local voters. As was reported by Leung et al. (2017, p. 9) for Australia, “it is more common to see driving ‘as a right’ which is built into voting preferences. This makes it very difficult to for decision-makers to

implement policies that can effectively address the problem of car dependence [...]” it appears “motorists vote with the wheels” in the Quebec City area:

The elected official, he can... Maybe he thinks that it would be better to have fewer cars but at the same time when he knows that there is a part of the population that thinks otherwise, well he has to bring change more gently, more subtly. So in fact, you know, we have to consider that

(337-W) Mélanie, >50 - Civil servant in Quebec City.

Text segment characteristic of the difficulty of dealing with a public opinion widely in favour of the car:

What I also find in Quebec City, then, is that you know, when you talk about sustainable mobility, it's always the carrot and the stick. But with the carrot there everyone is in favour. And you know in Quebec City we are setting up a bus rapid transit, improving the public transport, we create exchange nodes, you know we take nice measures... We create reserved lanes, but when it comes to the stick, well then, it's not even a question. It is not true that we are going to attack the cars, it is not true that... Yes, we will put a BRT, but we will not remove any car lanes, so we don't put in place all that is needed to reach the objectives.

(386-M) Julien, [30-50] - Civil servant in Quebec City.

While the lack of political will to fight car dependence was a shared consideration between the two groups of civil servants, the issues seemed far more contested to the Quebec City civil servants. This is also reflected in the actual policies put in place where the Strasbourg policies are more restrictive on the car mobility than the policies of the Quebec City area¹⁴⁸.

¹⁴⁸ See section 5.4.4.1 The Car in Public Policy on p. 305 for more details.

5.4.2.2.4 Car Dependence and Urban Planning

Urban planning was mentioned twice as often in Strasbourg than in Quebec City. Strasbourg public servants discussed strategies for fighting car dependence via urban planning while in Quebec City the discussion focussed on problems and disadvantage of their region¹⁴⁹. Figure 5:45 shows the various issues discussed on the topic of urban planning and the distribution between the two urban areas.

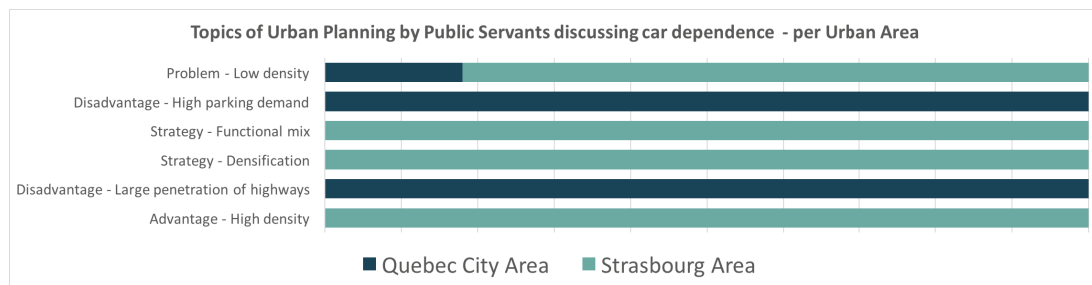


Figure 5:45 Topics of Urban Planning by Public Servants Discussing Car Dependence

Text segment characteristic of the problematic relation between car dependence and low density:

Where we have been able to do things, where there has been the clientele we have public transit, everything is going well, we do not have a satisfactory answer in the less dense, less densely populated areas. And in the second crown area there is a real demand to find solutions that would also ... reduce this [car] dependence in places where the urban situation is more complicated, given the lower density.

(406-M) Yann, >50 - Civil servant in Strasbourg.

Text segment characteristic of mentions of the large penetration of highways:

There is a very important highway penetration in Quebec City, there is something deeply rooted.

(389-W) Isabelle, [30-50] - Civil servant in Quebec City.

The two groups of civil servants showed different attitude about urban planning. It seems the Quebec City area civil servants felt this was out of their control as they rather extolled the difficulties they face in the current setup of urban planning of the region rather than

¹⁴⁹ Both groups of civil servants knew at the time of interview that the research was comparative and I communicated to them what area they were being compared with.

discuss potential improvements or strategies. While the Strasbourg area civil servants seemed more in control of this issue, demonstrating a stronger focus on the changes that urban planning can bring to the issue. For example, while the Quebec City area has much lower density than the Strasbourg area, the issue of low density and how to address it was much more frequently the subject of discussion in the later, already denser urban area.

5.4.2.2.5 The Phenomenon of Car Dependence

Figure 5:46 shows the various issues discussed on the topic of car dependence itself and the distribution between the two urban areas.

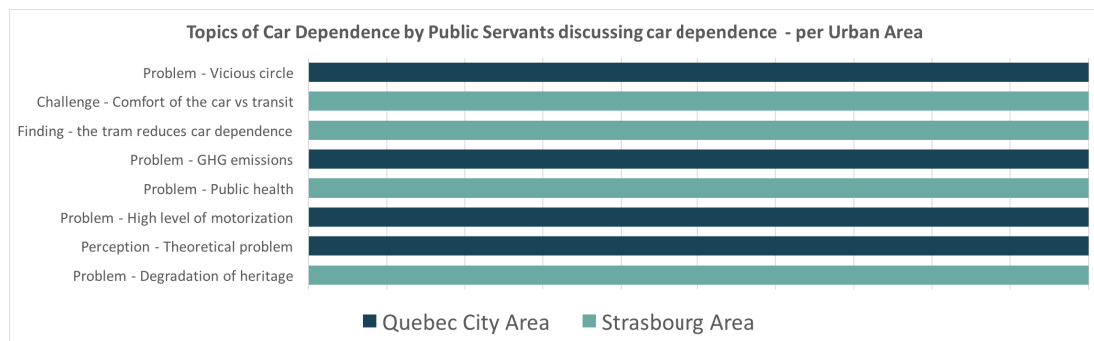


Figure 5:46 Topics of Car Dependence by Public Servants Discussing Car Dependence

The various subjects discussed when describing car dependence is completely different between the two urban areas. The list is still representative of what was discussed, but the lack of shared topics simply reflects the small number of respondents and the shortness of the discussion as each topic was discussed by one single civil servant.

5.4.2.2.6 Economic Aspects of Car Dependence

Figure 5:47 shows the various issues discussed on the topic the economic aspects of car dependence and the distribution between the two urban areas.

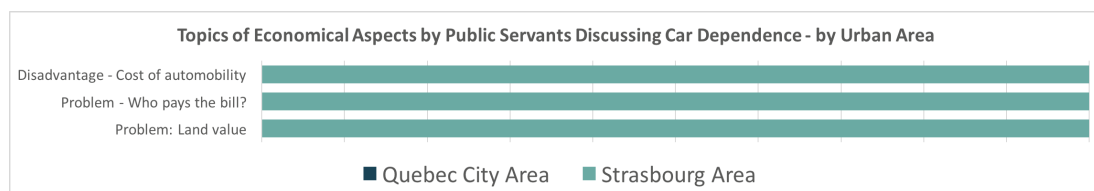


Figure 5:47 Topics of Economic Aspects by Public Servants Discussing Car Dependence

Interestingly, only public servants in Strasbourg mentioned economic aspects when discussing car dependence. The top issue being the cost related to automobility:

On the other hand, if all the people who are in the tram were in their cars, we do not measure what a health policy would cost, policies to prevent facade collapse because of pollution, so here it is, in fact the calculation is complicated to do because you also have to see what you do not spend.. By spending there, you don't need to spend somewhere else.

(406-M) Yann, >50 - Civil servant in Strasbourg.

Strasbourg area civil servants also brought up the issue of land value with the lower priced and more easily accessible, from a financial perspective, lands in less dense area. They presented the idea of associating mobility costs with real land value, a challenge that could potentially offer a solution to low density development and car dependence.

The fact that no civil servants from the Quebec City area discussed any economic aspect of car dependence is surprising as the actual policy analysis revealed that economic issues were often discussed in the Quebec City area policies¹⁵⁰. Furthermore, policy story analysis of the Quebec City area sustainable mobility plan by Scanu (2014, p. 353) revealed that the economic aspect was the most important for the *liberal* sustainable mobility policy story he uncovered.

5.4.2.2.7 Transport Supply Aspects of Car Dependence

The following figure shows the various issues discussed on the topic of transport supply related to car dependence and the distribution between the two urban areas.

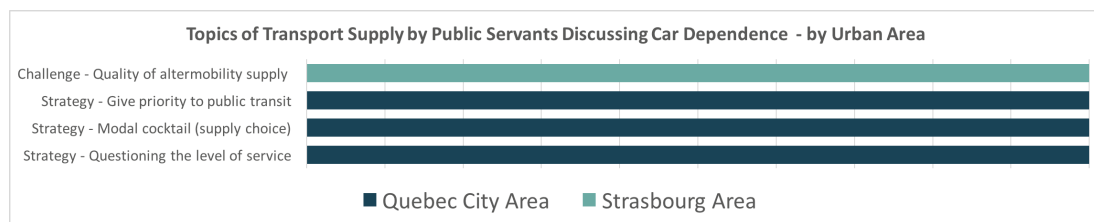


Figure 5:48 Topics of Transport Supply by Public Servants Discussing Car Dependence

Public servants also mention challenges with the transport supply, sometimes degrading their quality:

¹⁵⁰ See section 5.4.4.10 Economic Issues Related in Public Policy on p. 332 for further details.

[...] I do not have public transit but ultimately, I have a bike with roads that are suitable for cycling. I am a pedestrian and I can walk 10 minutes to get to the street and get public transit with good performance then it is also a thing that works. But all this will depend on the quality of the infrastructure that will be used at the time. Being a cyclist, being a pedestrian on badly landscaped areas, badly lit, unpleasant, it also reinforces the interest or the will to take the car.

(441-M) Guillaume, >50 - Civil servant in Strasbourg.

In Quebec City, one of the civil servants described the “free choice” approach while discussing the transport supply of the area where he sees transport policy offering multiple options without constraining the users in choosing a particular one:

The vision is much more to say I offer people a cocktail of transport modes and people will choose depending on the trips they have to make the mode of transportation that is most effective for them.

(350-M) James, >50 - Civil servant in Quebec City.

As it was with the car dependence topics, the singularity of topics here is related to the small size of the sample as each topic was mentioned by only one civil servant in one or the other area.

5.4.2.2.8 Intergovernmental Issues Related to Car Dependence

Figure 5:49 shows the various issues discussed on the intergovernmental aspects related to car dependence and the distribution between the two urban areas.

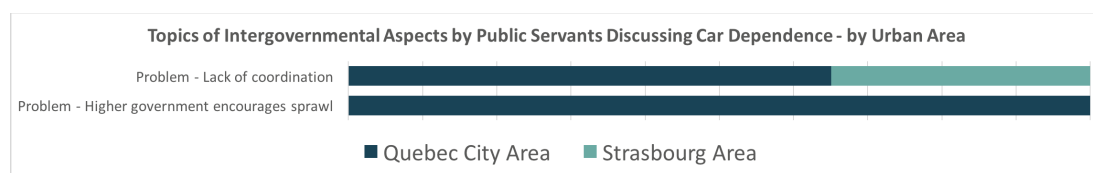


Figure 5:49 Topics of Intergovernmental Aspects by Public Servants Discussing Car Dependence

Even though France is often perceived as a single unitary state, municipal affairs encompass multiple orders of government, from the municipal, agglomeration, department, regional and national levels. In Canada, the federal model necessarily implies intergovernmental interactions. The municipal level is the most problematic since it doesn't exist at a constitutional level, but only at a provincial level, giving that order of government strong control over municipal affairs (Chiasson & Mévellec, 2014, p. 2). Although it was more often

mentioned in Quebec City both groups mentioned problems between different orders of government or different public organizations.

Sample citations about the lack of coordination between different orders of government:

The three-in-one integration in our local urbanization plan so that the link between transport and urbanism is reinforced compared to what was done until now. So, there is in discourse a coherence between transport and urbanism, everyone there, everyone says it, all the time. But between discourse and reality, sometimes there are very important gaps.

(462-M) Lorris, [30-50] - Civil servant in Strasbourg.

5.4.2.2.9 Sociological Aspects of Car Dependence

The last group of topics mentioned by public servants while discussing were sociological aspects. Figure 5:50 shows the various issues discussed and the distribution between the two urban areas.

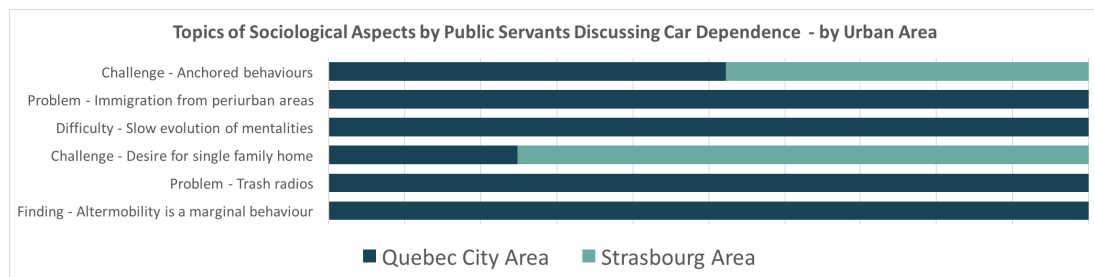


Figure 5:50 Topics of Sociological Aspects by Public Servants Discussing Car Dependence

While urban planning was mostly a subject in Strasbourg, sociological aspects were the opposite. Public servants in the Quebec City area seem to face various challenges in fighting car dependence which they attributed to sociological aspects of the population.

Text segment characteristic of the deep rootedness of car dependence and the desire for sparse surroundings or the individual home, an anchored, or deeply rooted behaviour both in the Quebec City area:

*I do not know if it's our collective inner *courreur des bois*¹⁵¹, it's so [laughing] strong this attraction for sparse land. Then we see it, in some studies you know children who were raised in cities, who are more likely to stay in cities, well etc ... So, this is it ... So, uh ... The collective memory and imagination is strong ...*

(389-W) Isabelle, [30-50] - Civil servant in Quebec City.

And in the Strasbourg urban area:

It is necessary to be aware of it, the dream of the pavilion [individual family home] is still very present in the head of the French, so suddenly it pushes some to go farther away to find their home.

(462-M) Lorris, [30-50] - Civil servant in Strasbourg.

Once again, the singularity of topics is related to the small sample size. One specific issue mentioned by a Quebec City civil servant is worth further discussion, the trash radios:

There is a lot of debate, even in the population there. Then ... You know here in Quebec in addition we have a lot of opinion [trash] radios. It's not that they are anti otherness, it's that they want to keep their place, motorists, me I do not hear that they are against it [alternative mobility], but it's like don't undress me to dress the others. You know... that yes, eh if you want to encourage the bus, the pedestrian, the bike, no trouble, but do not bug with it, don't come and not deprive me of my right to drive... But there is a lot of talk about it. Want it or not, it puts political pressure anyways because these people represent a part of the population.

(337-W) Mélanie, >50 - Civil servant in Quebec City.

As Mélanie puts it, in the Quebec City area these popular, even populist radios wield political influence and often target cyclists, pedestrians or public transit services and users. The NMH participants in the area also mentioned they felt these radios were at cause for their mobility-related social exclusion, that their message had a negative influence in the

¹⁵¹ Literally runner of the woods, a mythical reference to the French-Canadian voyageurs and independent fur traders of the 17th and early 18th century who traveled in New France (present day Quebec, Labrador, Ontario, parts of Manitoba and a wide area surrounding the great lakes all the way to New Orleans at the Gulf of Mexico) and the interior of North America, venturing into the woods usually to trade various European items for furs with the natives, operating in a grey market.

ways they were treated and perceived¹⁵². The fact that these were mentioned without prompt by a Quebec City civil servant corroborates the discourses of the NMH participants.

The phenomena of these Quebec City trash radios labeled as the “Quebec Mystery” by national media outlets represents a real issue and a unique situation in the Canadian context and as such has been the subject of multiple research in communication and discourse studies: (Barbeau, 2012; Fauré, 2013; Marcoux & Tremblay, 2005; Turbide & Laforest, 2015; Turbide, Vincent, & Laforest, 2010; Vincent, Laforest, & Turbide, 2007, 2008); in law and ethics: (Grégoire, 2016; O’Neill, 2012; Taylor & O’Hagan, 2017); in political science: (Gingras, 2007, 2008; Nieguth & Lacassagne, 2009); and in sociology (Cloutier, 2008; Couture & Fiset, 2005; Demers, 2010; Gaulin, 2017; Langlois, 2007; Turbide, Vincent, & Laforest, 2008; Vincent, 2008). Without discussing the question of car dependence directly, these studies generally agree that these radios play a political and exclusionary role in the region.

5.4.3 Top-Down: The Overall Public Policy Perspective

In order to investigate public policy’s perspective on car dependence and mobility-related social exclusion I analyzed 39 policy documents¹⁵³ from the two urban areas and four orders of governments. In the chapter dedicated to car dependence and the next one dedicated to understanding non-motorized households I look at specific parts of the policy corpus. However, before going into the specifics, it is interesting to take an overall look at the corpus of policies dealing with the two matters.

The overall quantitative analysis reveals three classes of discourse which are consistent with the corpus content (see Figure 5:51). Class 1 is about social aspects dealing with priority neighbourhoods, poverty reduction policies including some ecological and economic topics. The class is correlated with the Strasbourg corpus and the departmental or provincial order of government as well as the national government. Class 2 is all about mobility and land planning, including the various transport modes and urban planning. This class is associated with the agglomeration or regional level as well as the municipal level. Class 3 is very formal and often judicial in terms. It is associated with the Quebec City corpus and documents from the departmental or provincial order of government as well as the national government.

¹⁵² See section 6.5.3.8 The Role of Quebec City Trash Radio on p. 449.

¹⁵³ See Appendix 6 and Appendix 7 for a complete list of analyzed documents.

Dendrogram - Mobility and Social Exclusion policies

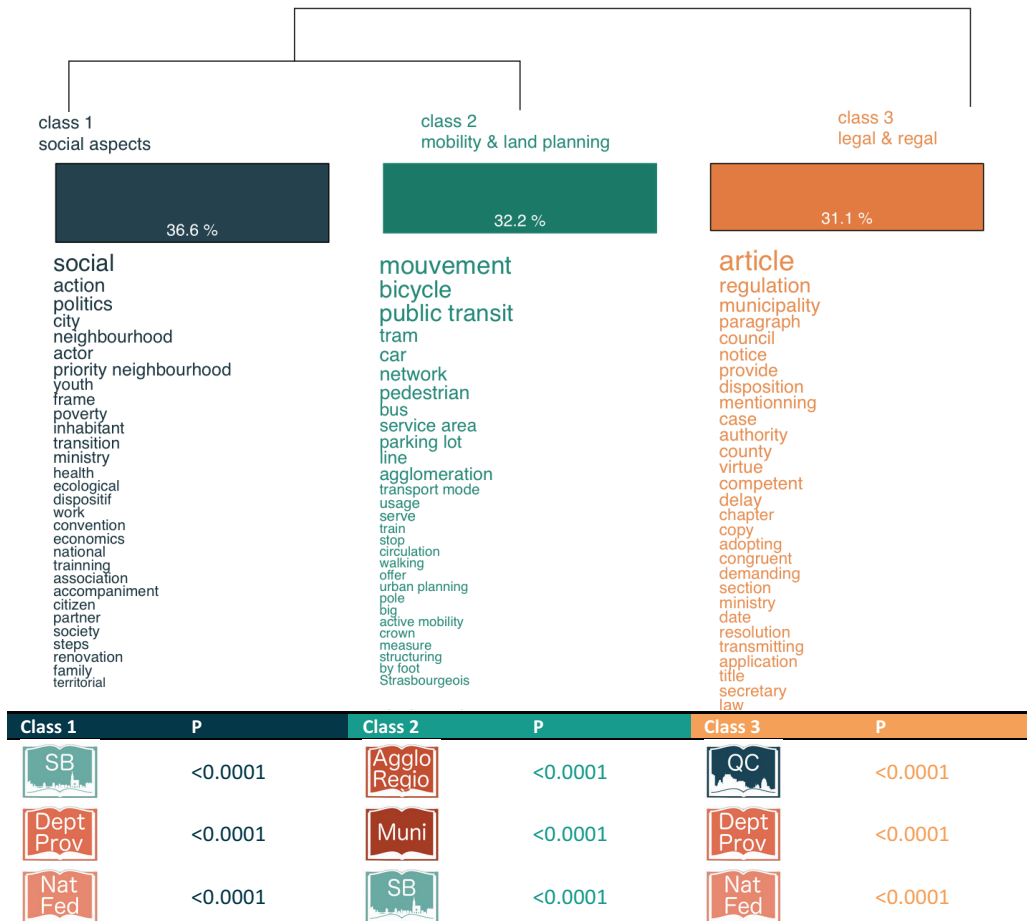


Figure 5:51 Dendrogram – Overall Discourse of Mobility and Social Exclusion Public Policies

5.4.3.1 Overall Policy Discourse of Mobility and Social Exclusion Public Policies by Urban Area

When performing a specificities analysis based on the urban areas (see Figure 5:52), it appears that in both cases a lot of the specific words stems from local institutions like the CMQ (Communauté métropolitaine de Québec) or Eurométropole, its Strasbourg equivalent. Other broad differences emerge that are of interest. For example, the focus on poverty and sustainable mobility of the Quebec City corpus and the French focus on rail-based transport, especially in the Strasbourg urban area. But also, the French focus on priority neighbourhoods, a policy concept not existing in the Quebec City corpus. This important policy focus and coordination on priority neighbourhoods might help explain the relatively low feeling of social exclusion felt by the participants from NMH in the Strasbourg area.

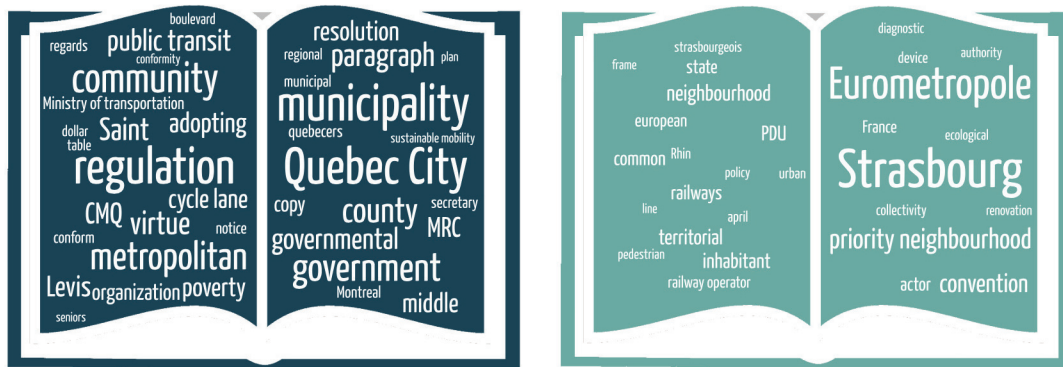


Figure 5:52 Specific Discourse of Public Policy by Urban Area

Sample policy excerpt with specific words from each urban area:

To complete the concept of linking the Samuel de Champlain promenade and the Saint-Romuald neighbourhood by a crossing to facilitate **cycling paths** and pedestrian routes between the two banks of the Saint-Lawrence river¹⁵⁴.

Le Plan métropolitain d'aménagement et de développement du territoire de la Communauté métropolitaine de Québec, CMQ, 2013

¹⁵⁴ All policy excerpts have been translated from French, own translation.

The TER **Eurometropole** network is structured by a five-branch **railway** star with 14 stops served by the TER network in the Alsace region.

SCHEMA DIRECTEUR DES TRANSPORTS COLLECTIFS 2025
CUS, 2010

When analyzing the different classes of discourse for each urban area separately (see Figure 5:53 and Figure 5:54), a similar picture emerges. Logically, in both cases a class of discourse specific to mobility policy aspects (class 3 in Quebec City area and class 2 in the Strasbourg area) appear. In both cases this discourse is strongly correlated with policies from the municipal or regional order of government. The 2 sets of policy documents also contain a separate class of discourse related to social aspects (class 4 in both areas). Both dendrograms contain a class for judicial aspects (class 2 and class 1 respectively). Also, both urban area's corpus of policies contains a class of discourse relating city politics (classes 1 and 3 respectively). The only important difference is an additional class related to environmental issues appearing only in the French case, attesting the strong focus of the French national government on transportation environmental issues.

Dendrogram - Mobility and Social Exclusion policies - Quebec City

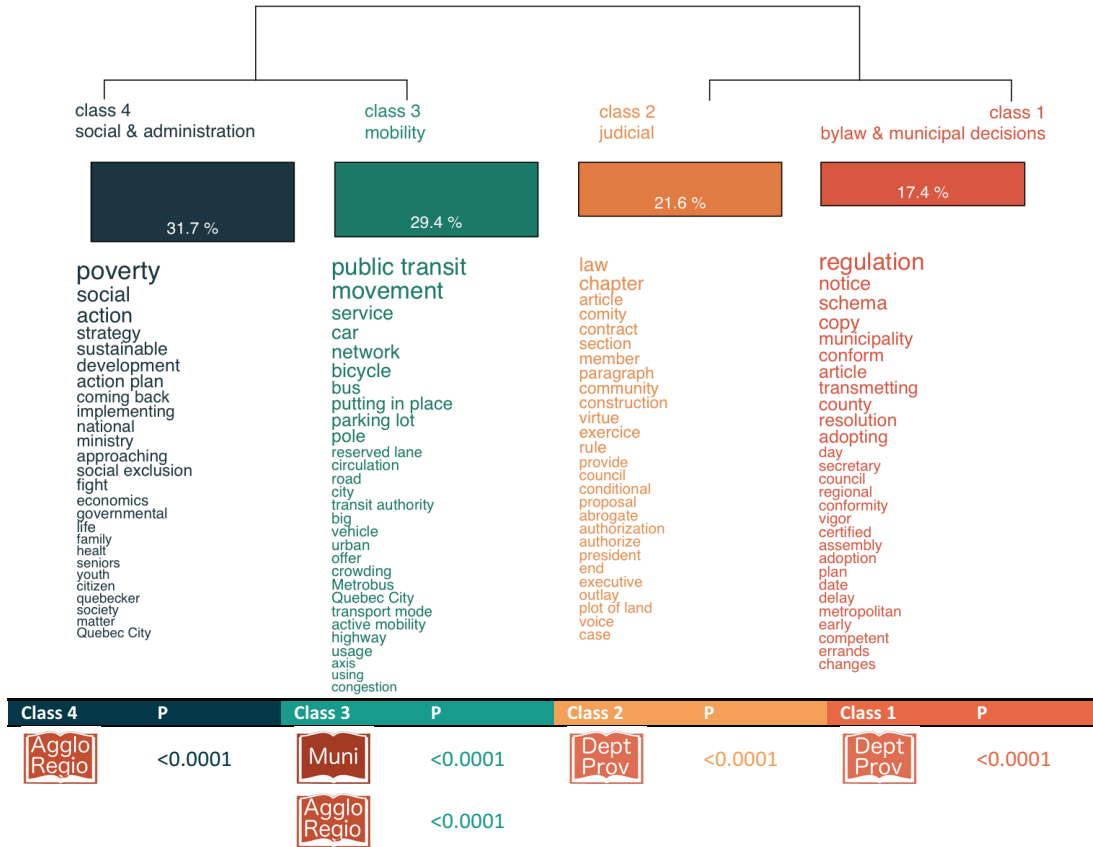


Figure 5:53 Dendrogram - Quebec City Area Public Policies

Dendrogram - Mobility and Social Exclusion policies - Strasbourg

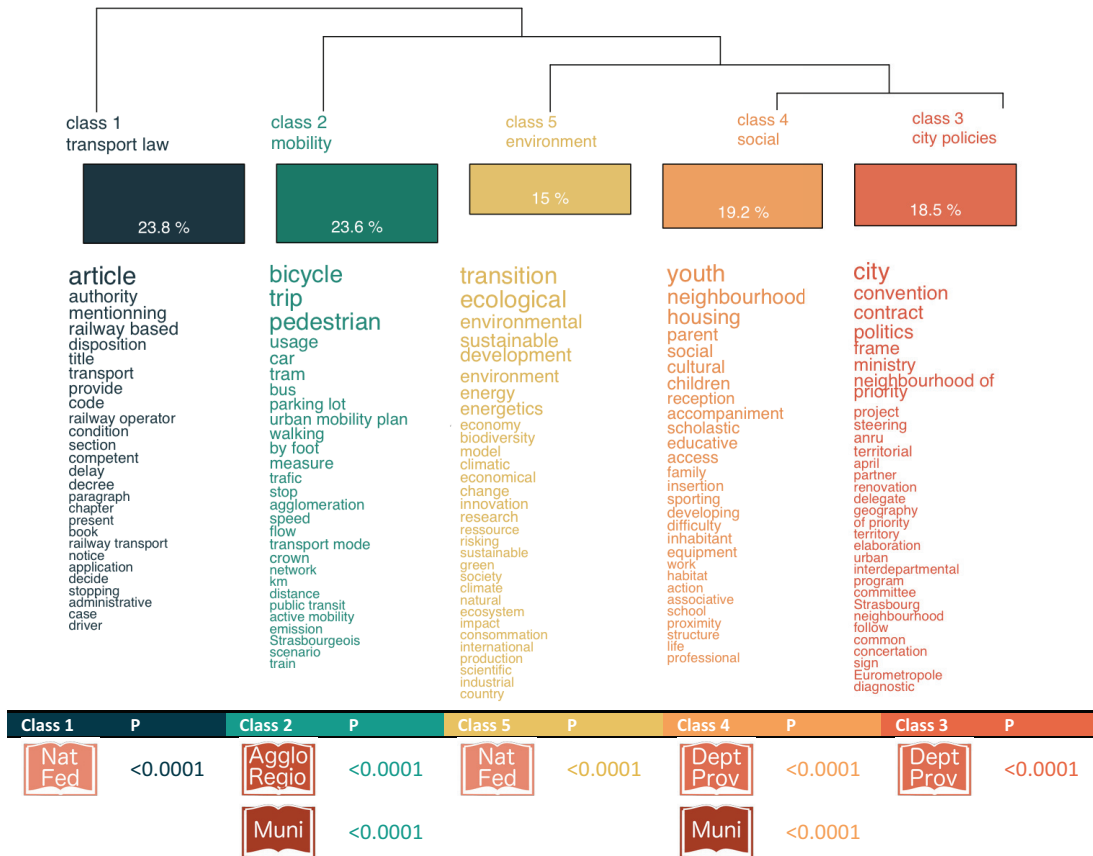


Figure 5:54 Dendrogram - Strasbourg Area Public Policies

5.4.3.2 Overall Policy Discourse by Order of Government

Even in the unitary system of French government, where the national order of government is omnipresent, public policies are a mix of different levels and policies that can be coordinated or not. In this section I look at the different orders of government and their respective focus (see Figure 5:55). It appears that the municipal order of government (communes in France) is specifically focussed on all aspects of active mobility: ‘pedestrian’ (factor: 225), ‘cycle lane’ (factor: 206), ‘bicycle’ (factor: 84), and ‘cyclists’ (factor: 55). They are also the most likely to discuss roadways: ‘boulevard’ (factor: 126), ‘street’ (factor: 113), ‘roadway’ (factor: 93), ‘highway’ (factor: 60), ‘reserved lane’ (factor: 44) and ‘avenue’, (factor: 41).

The regional governments (the CMQ in the Quebec City area and the Eurometropole in the Strasbourg area) show their focus on land planning as they are likely to discuss regional

land planning tools like ‘urban development plan (PDU)’ (factor: 196), the ‘metropolitan planning and development plan (PMAD)’ (factor: 68). Their policy documents are also more likely to mention certain land planning concepts: ‘crown’ (factor: 81), ‘space’ (factor: 80), ‘density’ (factor: 71), ‘peri-urban’ (factor: 60), ‘landscape’ (factor: 56), ‘urbanization’ (factor: 53), and ‘constructing’ (factor: 44). Finally, they also contain specific references to their role as transport planners: ‘tram’ (factor: 74), ‘trip’ (factor: 66), ‘line’ (as in transit line, factor of 66), ‘parking’ (factor: 60), ‘usage’ (factor: 55), ‘bicycle’ (factor: 52), ‘transit service area’ (factor: 47), ‘network’ (factor: 45), ‘train’ (factor: 45) and ‘stop’ (factor: 44).

The provincial government of Quebec and the Bas-Rhin Departmental representatives of the national government in France are the first order of government to specifically mention judicial items in their policy corpus: ‘regulation’ (infinite factor), ‘resolution’ (factor: 87), ‘convention’ (factor: 80), ‘notice’ (factor: 72), ‘conform’ (factor: 70), ‘adopting’ (factor: 69), ‘repeal’ (factor: 55), ‘paragraph’ (factor: 55), and ‘assembly’ (factor: 43). The second most specific word to this order of government is ‘municipality’ with an infinite factor. This might appear as a mistake to those unfamiliar with Canadian constitutional matters, as this is not to municipal order of government, but makes complete sense in the proper context as the municipal order of government is inexistent in the Canadian constitution and thus municipal government are creations of their respective province or territory and as such are under their “control” jurisdiction¹⁵⁵. This order of governments’ policies focus on some social issues as is the case with ‘priority neighbourhoods’ (factor: 163), ‘poverty’ (factor: 98), ‘community’ (factor: 43) and ‘youth’ (factor: 42).

The last order of government, the national/federal government is only applicable for France as no policy documents from the Canadian federal government were included in the corpus. The federal government is working on transportation issues but through one-off financing programs which usually disburse the funds to the provinces and interprovincial rails passenger service not pertinent in my corpus dedicated to daily mobility policies. This is not surprising and in line with what Perl & Newman (2012, p. 91) state since they found that “[f]or the past 25 years, increased market competition and decreased government regulation have become the core principles of federal-level policy in transportation”. In my corpus of policies related to mobility and social exclusion, the French national government is focussed on issue pertaining to rail based transportation for people and goods: ‘railway’ (factor: 198), ‘railway operator’ (the SNCF in this case, factor of 129), ‘rail-based transport’ (factor: 70), ‘delivery’ (factor: 65), ‘modality’ (factor: 56) and ‘driver’ (factor: 46). This corpus also contains a few judicial or regal terms: ‘State’ (factor: 186), ‘authority’ (factor: 183), ‘article’

¹⁵⁵ See Chiasson & Mévellec (2014) for details.

(factor: 134), 'title' (factor: 90), 'setting' (factor: 55), 'investigating' (factor: 52), 'ministry' (factor: 50), 'sanction' (factor: 48), 'decision', 'decree' (factor: 47) and 'provisions' (factor: 42).



Figure 5:55 Car in Public Policy by Order of Government

The next series of analysis looks at the discourse of the different orders of government for each urban area separately. Figure 5:56 shows the dendrogram for the Quebec City municipal government. Class 5 is about cycling and roads. Class 4's discourse revolves around public transit, an important municipal area of responsibility. Class 1 is related to the body's planning exercises, especially the sustainable mobility plan and its various action plans. Class 2 comprises a diverse array of urban related themes. Class 3 refers to the mobility related discourse and relates some policy objectives.

When compared with its French equivalent (see Figure 5:59), the Canadian city's focus on public transit is distinct from its European counterpart where public transit is integrated in a more general alternative mobility discourse. The comparison also draws the attention to Quebec City's lack of focus on social housing matters in the mobility and social exclusion policy corpus.

Dendrogram - Mobility and Social Exclusion policies - Quebec City - Municipal

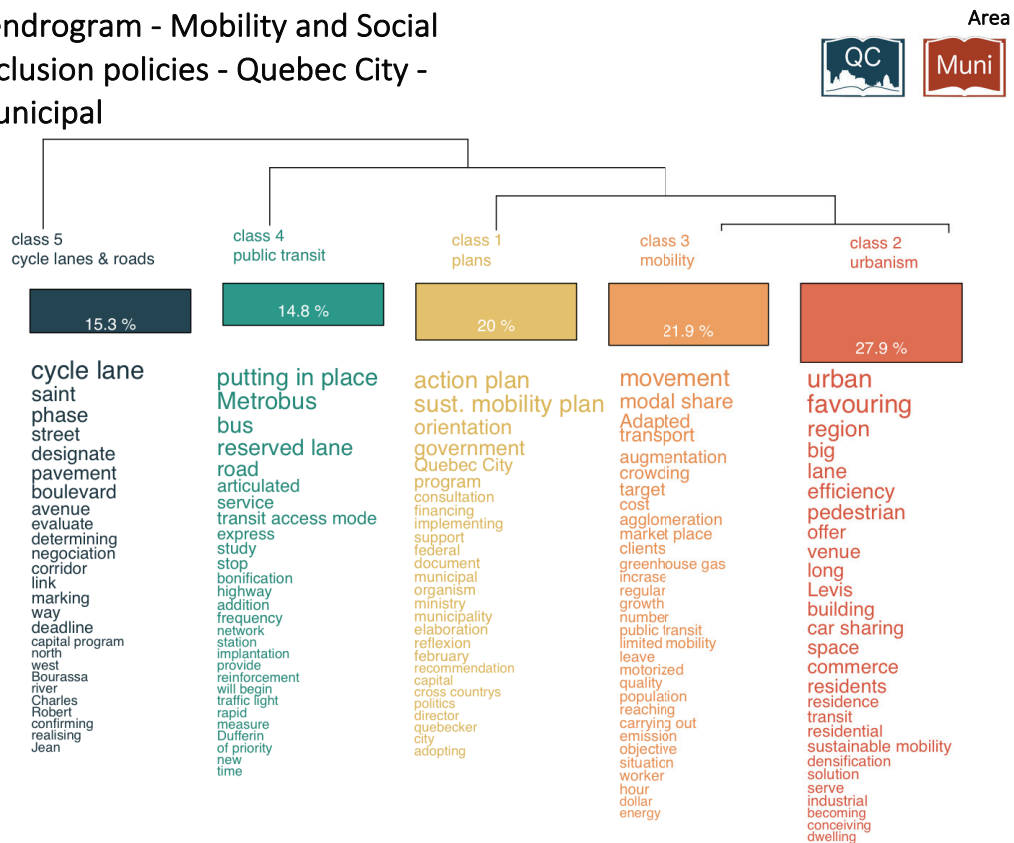


Figure 5:56 Dendrogram - Quebec City Area Public Policies - Municipal level

The Quebec City area’s regional policy corpus highlights four classes of discourse (see Figure 5:57). Class 3 revolves around the contentious regional issue of water management. Class 2 comprises the various elements of metropolitan oversight which are the responsibility of this CMQ. are hard to distinguish as they both pertain to judicial terms. Class 1 discusses the community and its territory. Class 4 is about the various urban planning matters under the oversight of the regional body.

The dendrogram for the CMQ is very different from its French equivalent Eurometropole (see Figure 5:60) with different focus. Mobility is a much stronger focus in the discourse of the French agglomeration’s policy documents.

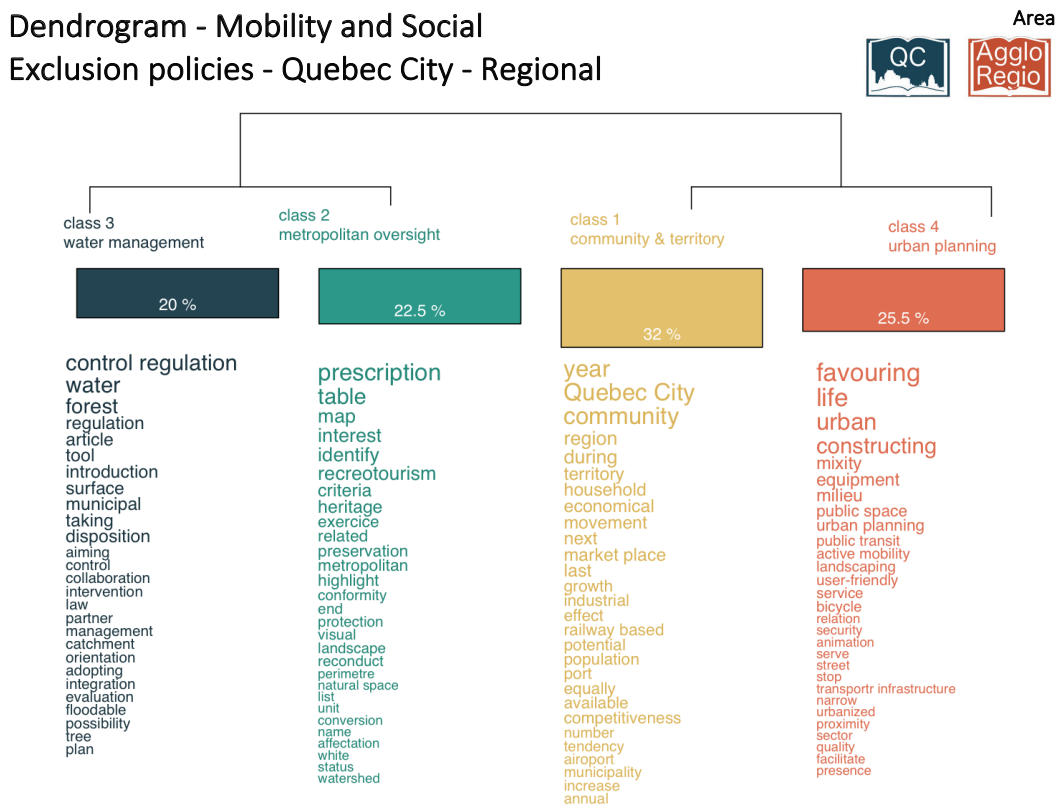


Figure 5:57 Dendrogram - Quebec City Area Public Policies - Regional Level (CMQ)

Quebec provincial government’s policies quantitative analysis reveals five classes of discourse (Figure 5:58) which are in line with the government’s role and responsibility on the matter. Class 4 is around social issues including social exclusion and its link to poverty. Class 1 is about public transit and transport which the purview of the provincial government from a financing perspective. Class 5 is judicial in nature. Class 3 is about administrative aspects. Finally, class 2 is about land planning, also something the province oversees for the regions and regional municipalities (MRC). Comparing this dendrogram to the Bas-Rhin department (see Figure 5:61), I notice many differences but the levels are not exactly matched, preventing any further analysis.

Dendrogram - Mobility and Social Exclusion policies - Quebec City - Provincial

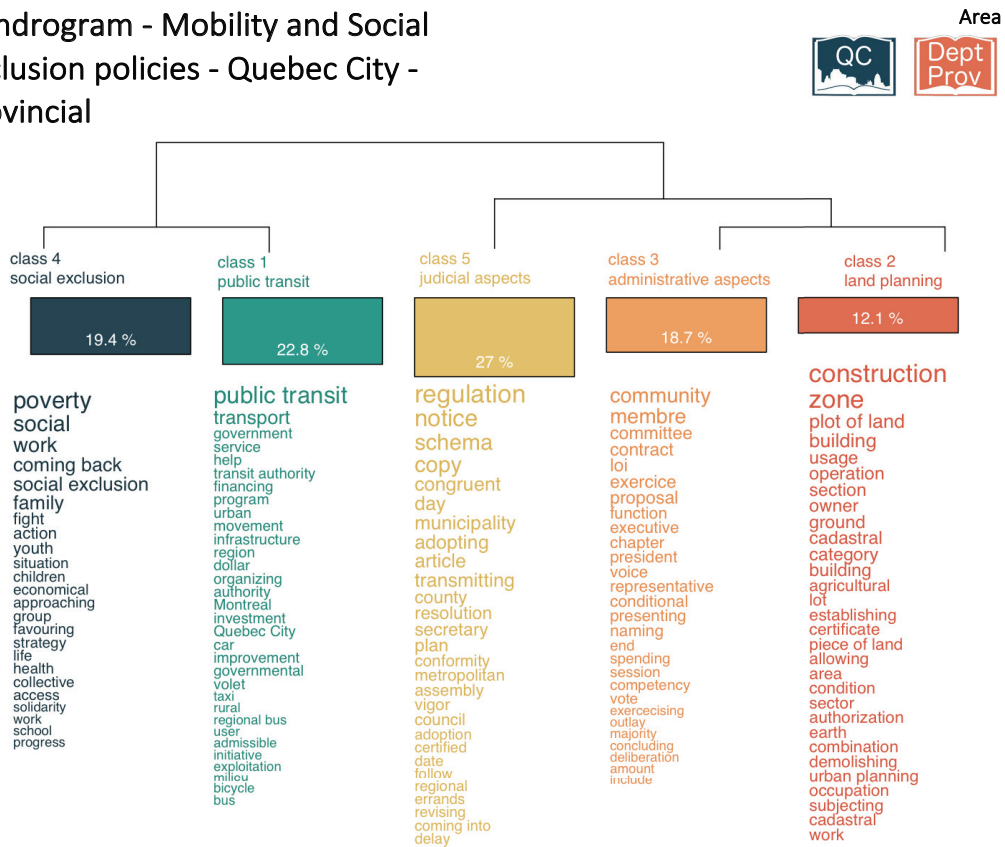


Figure 5:58 Dendrogram - Quebec City Area Public Policies - Provincial (Province of Quebec)

There is no dendrogram for the federal order of government in the Quebec City urban area as no policy from this government were included in the corpus.

The quantitative discourse analysis of the policies from the Strasbourg municipal government (see Figure 5:59) shows four different classes. Class 4 discusses issues related to the proximity of the neighbourhood, with a focus on housing. Class 3 regroups the issues with a social aspect. Class 1 is walking and public transit while class 2 is about cycling and users of the roads. Compared to the Quebec City municipal government (Figure 5:56) this analysis reveals a clearer focus on active mobility as walking and cycling each getting their own class of discourse. It also shows a stronger focus given to the bus network in the Canadian municipal government. An important difference between the two urban areas is that in Strasbourg, the municipality and regional administration are combined into a single administration.

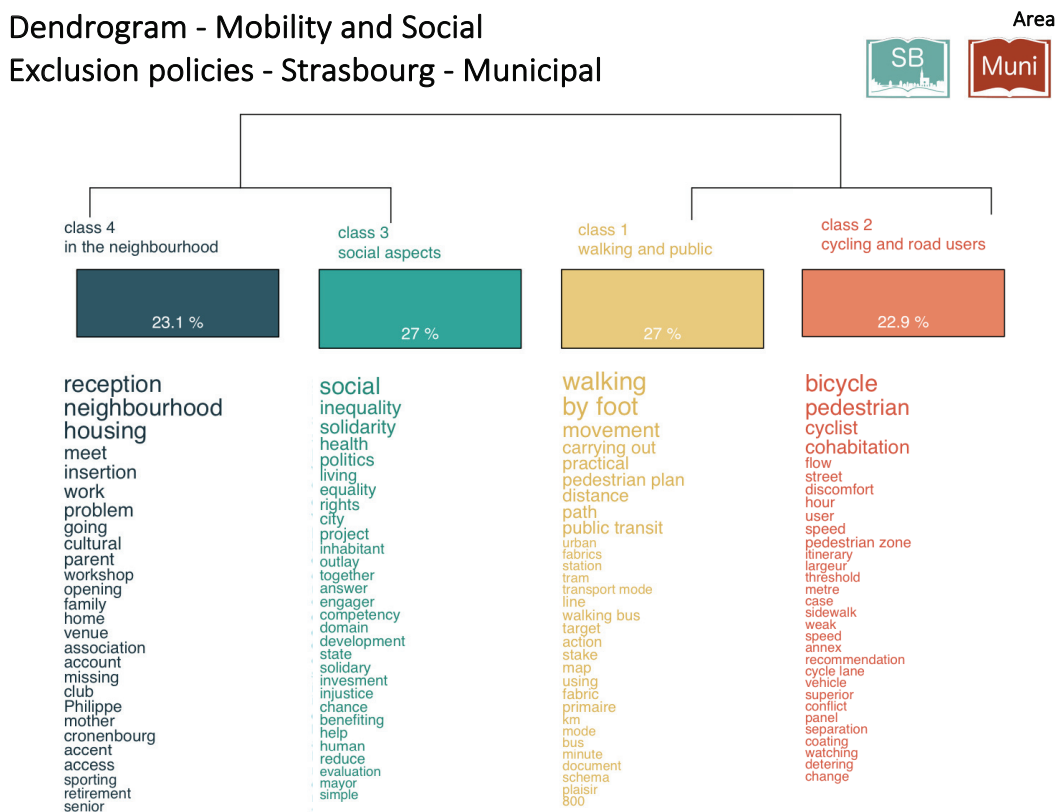


Figure 5:59 Dendrogram - Strasbourg Area Public Policies - Municipal level

The Strasbourg area regional dendrogram (Figure 5:60) shows four classes of discourse. Class 3 is about the planning exercise. Class 2 is about public transit. Class 1 is a mixed bag of mobility-related words. Finally, class 4 is about land planning objects. These categories of discourse are completely different than to the ones used by Quebec City’s CMQ (Figure 5:57). For example, the distinct focus on water management shown in the CMQ’s analysis isn’t present in the Eurometropole policies. Different focus between the orders of government is also apparent. For example, while the Quebec City municipal government showed a greater focus on the public transit network, for the Strasbourg urban area, this is the focus of the Eurometropole level of governance.

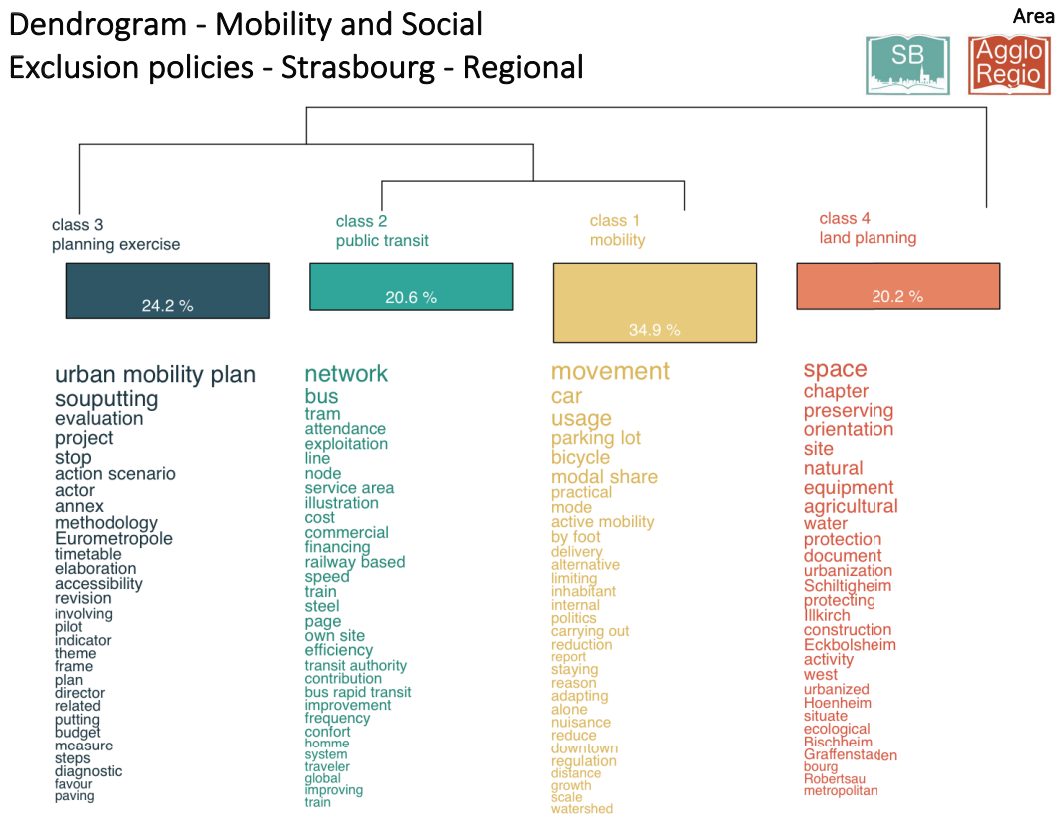


Figure 5:60 Dendrogram - Strasbourg Area Public Policies - Regional Level (Eurometropole)

The analysis of the Bas-Rhin policies (see Figure 5:61) reveals five classes of discourse. Class 5 introduces the first class of discourse dedicated to fiscal and economic aspects. Class 2 is about social housing. Class 1 revolves around the theme of families. Class 4 encompasses many administrative aspects while class 3 discusses the oversight of the department over the agglomeration level of Eurometropole. The department and province not being exactly matched orders of government, I do not compare directly between them.

Dendrogram - Mobility and Social Exclusion policies - Strasbourg - Department

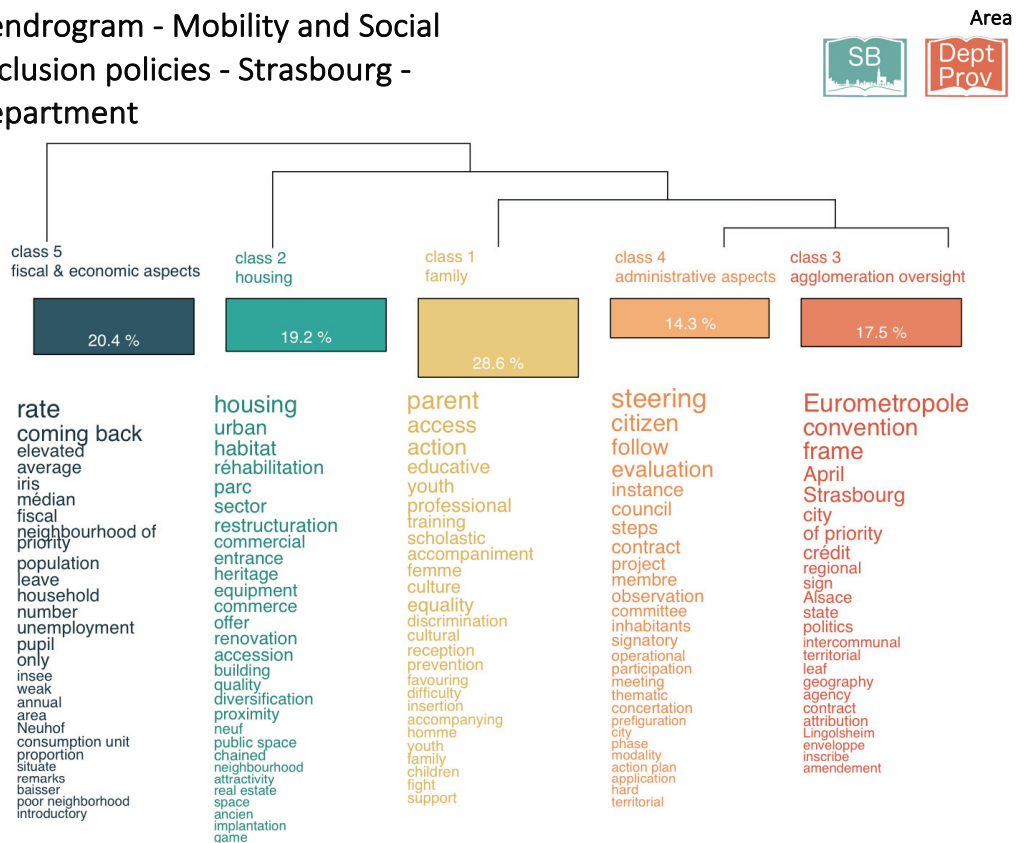


Figure 5:61 Dendrogram - Strasbourg Area Public Policies - County (Bas-Rhin)

The French national policies pertaining to mobility and social exclusion are decomposed into four discourse classes (see Figure 5:62). Class 3 is stemming from the transport law and class 4 is about the “politique de la ville” or city policy, including setting-up the priority neighbourhood initiative. Class 2 is related to the environment. Class 1 is about the state exercising pollution control.

Dendrogram - Mobility and Social Exclusion policies - Strasbourg - National

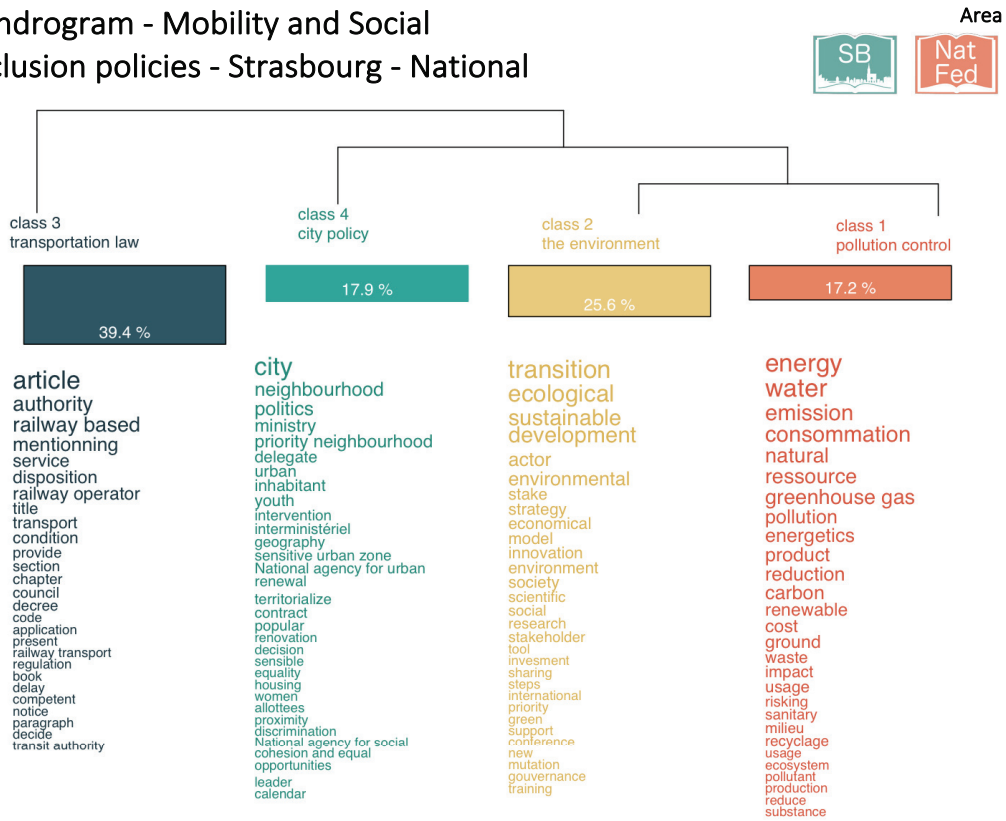


Figure 5:62 Dendrogram - Strasbourg Area Public Policies - National (France)

5.4.4 Top-Down: Car Dependence in Public Policy

Although car dependence was a concept with which public servants were familiar, it appears very little in the public policy analyzed. In total, the term only appears 9 times (compared with 937 for the lemma car without dependence attached to it) 7 times in the Quebec City urban area corpus and 2 times for the Strasbourg urban area. Of the few times it is mentioned it is directly associated with reducing, sprawl, producing, work and favouring as shown in Figure 5:63. This confirms my suspicion that car dependence is not considered an important issue by public policy. The small size of the sub-corpus formed by all segments containing car dependence prevents any further lexicometric analysis.

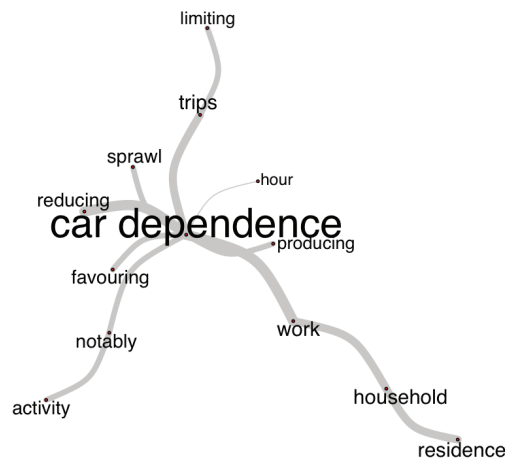


Figure 5:63 Word Network of Car Dependence in Policy

When mentioning car dependence, policy text is mostly descriptive, or cite it as part of an objective without description. For example, where it appears in a list of objectives for the sustainable mobility plan:

Make public transit more attractive, more comfortable and more efficient, reduce **car dependence**, and promote the efficient use of freight transport modes, depending on the portion of the route for which it is most suitable.

Plan de mobilité durable, 2011
Quebec City's municipal government

Whereas in Strasbourg the text is more descriptive of the phenomena:

[...] peri-urban sprawl increases individual **car dependence** on home-work commuting, often requiring multiple equipment and extending the kilometres travelled by households [...]

Stratégie nationale de transition écologique vers un développement durable 2015-2020, 2015
French government

This is a subject where an advantage of qualitative discourse analysis over quantitative analysis appears. While car dependence was seldom mentioned, the qualitative analysis reveals that it is mentioned indirectly in the policy documents. It was mentioned in 20 different passages from the Quebec City corpus and in 16 distinct passages from the Strasbourg corpus.

For example, sometimes policy refers to the obligation of having a second car to fulfill the household mobility needs:

[...] a loss of purchasing power of households which often have to have a second car to meet their travel needs.

Le Plan métropolitain d'aménagement et de développement du territoire de la Communauté métropolitaine de Québec, 2013
CMQ (Quebec City metropolitan community)

Or in describing current mobility problems and side effect of the over reliance on the car:

However, the over-exclusive development of the car as a means of transport has many disadvantages: the tendency towards saturation of the network, high energy consumption, contribution to the greenhouse effect, pollution and various nuisances.

Schéma de cohérence territoriale de la région de Strasbourg - Projet d'aménagement et de développement durable, 2013
ADEUS (Strasbourg area urbanism and Development Agency)

But the observation remains, car dependence is not the focus of the various policies dealing with mobility and social exclusion. When comparing which order of government mentioned car dependence as shown in Figure 5:64, close to half the mentions were found in regional level policies while only one was from the national order of government.

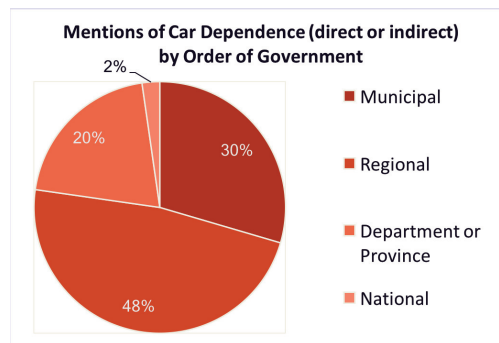


Figure 5:64 Number of Quotations on Car Dependence per Order of Government

As shown in Figure 5:63, 'sprawl' is associated with 'car dependence' in the corpus of policies analyzed. As such I thought interesting to also include a word network analysis of concepts associated with sprawl¹⁵⁶ as shown in the word network of Figure 5:65. There are three main constellations: 'peri-urban', 'urban' and 'periphery'. In the peri-urban cluster I note the issue of providing 'public transit' to the area which seems more central (larger font) and the 'structuring' 'axis' associated constellation which is often suggested in the policy documents as a way to counter urban sprawl. The 'peri-urban' cluster also highlights the specific focus on the phenomena of peri-urbanization by the Eurometropole agglomeration. The 'urban' cluster associated with the Quebec City area shows their focus on limiting the urbanization within the built area and their multiple observation of 'sprawl' itself in their policy document. Finally, the 'periphery' cluster shows that policy recognizes the high usage of the car for multiple trips and the need to work on improving the public transit 'service area'.

¹⁵⁶ The words included are sprawl, peri-urban, peri-urbanization and periphery.

Word Network - Urban Sprawl in Policy

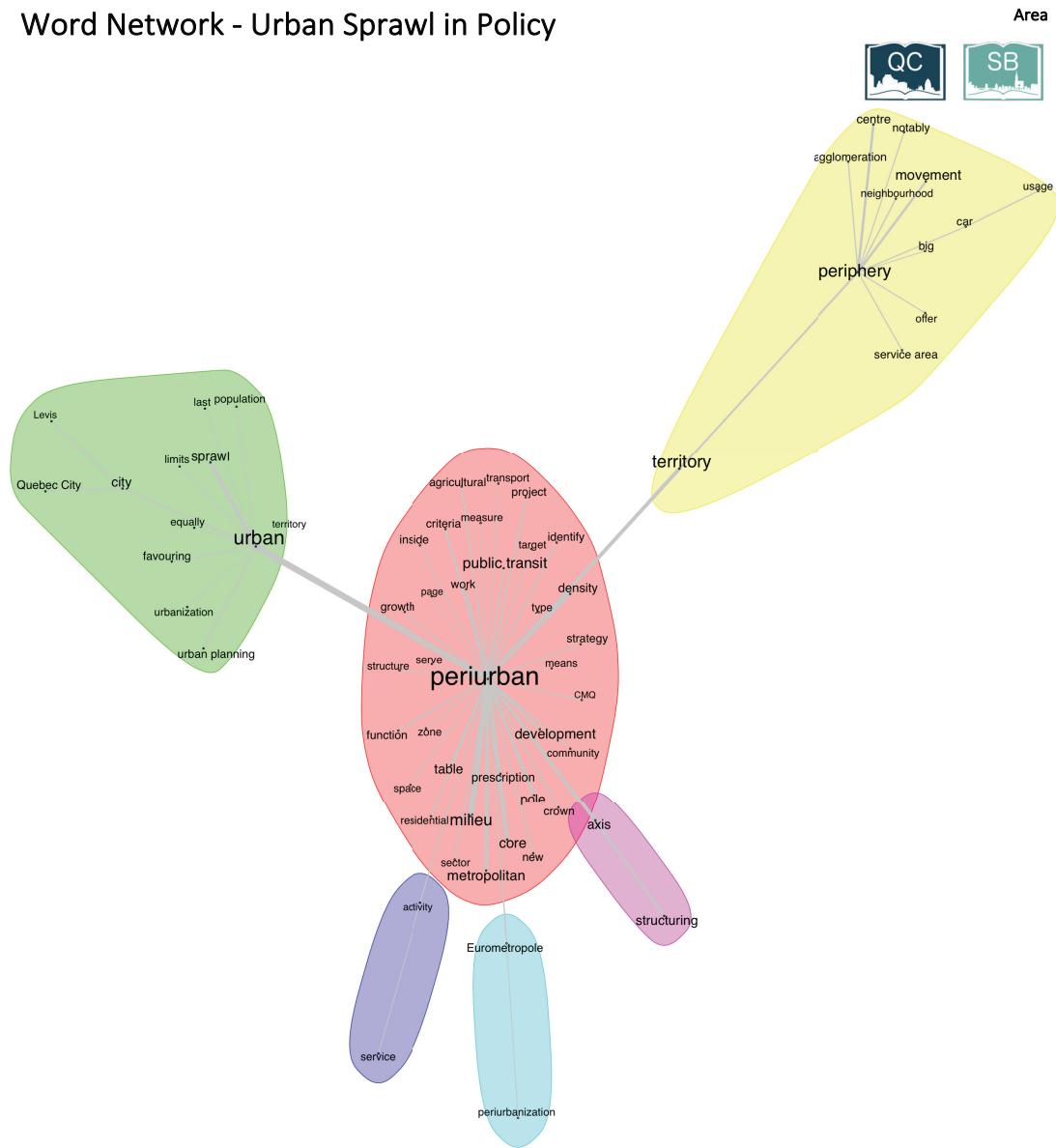


Figure 5:65 Word Network of Urban Sprawl and Associated Terms in Policy

While comparing the sprawl discourse between the two urban areas (see Figure 5:66), their specific regional bodies show up, respectively CMQ and Eurometropole while the issue of urban planning and residential only land use is associated with Quebec City, while peri-urbanization and the various levels of crowns associated with it in the Strasbourg policies. These differences are not substantial and depicts different vocabulary used by policy makers which are similar in meaning.

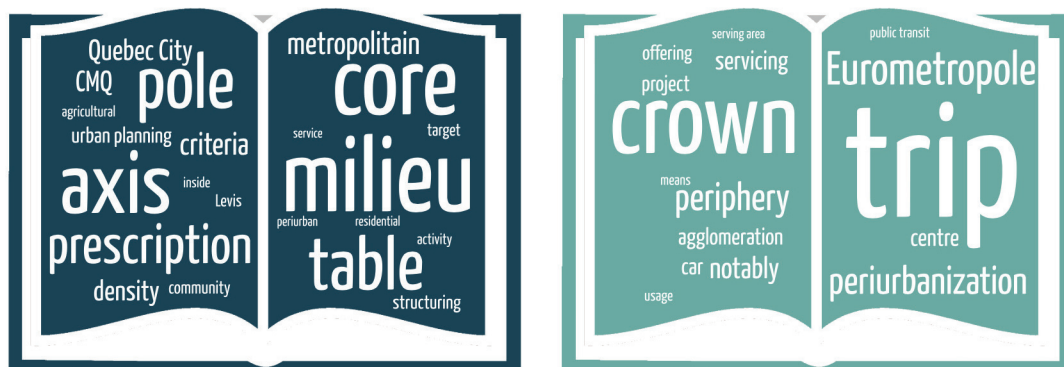


Figure 5:66 Policy Specific Discourse on Sprawl by Urban Area

The qualitative reviewing and analysis of the corpus of policies related to mobility and social exclusion highlighted many land planning themes to fight social exclusion and potentially reduce car dependence or, at least improve alternative mobility. The chart in Figure 5:67 shows these themes and the relative focus between the two compared urban areas. All the similar charts in the analysis contain the most cited topics for a theme and the lines in the chart are ordered with the most often mentioned topic at the top, going down to the least often mentioned topic that is still mentioned enough times to show a relative importance.

The analysis shows that the Quebec City urban area's planning policies place emphasis on improving the mobility to employment zones, with a focus on increased densification of those as well as residential zones in order to keep a strong and lively city centre¹⁵⁷. For Strasbourg, the main focus of policy makers revolves around improving the living environment¹⁵⁸, focussing the urbanization around structuring poles created by public transit infrastructure and a strong emphasis on the so-called priority neighbourhoods¹⁵⁹.

¹⁵⁷ This has been a weakness of many North-American cities faced with the so-called phenomenon of doughnut city; see Kain (1968a).

¹⁵⁸ "Cadre de vie" in the original.

¹⁵⁹ "Quartiers prioritaires de la ville" in the original. For more details on priority neighbourhood in French urban policy see (Champion & Marpsat, 1996; Damamme & Jobert, 1995; Dikeç, 2007; Estèbe, 2001).

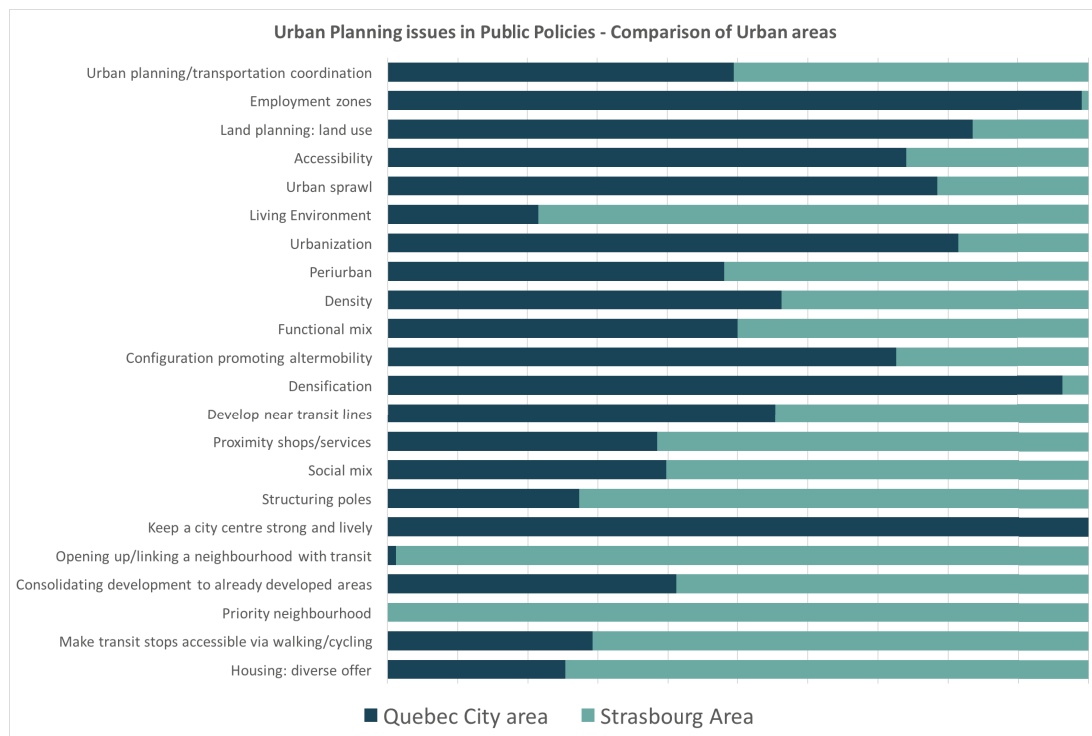


Figure 5:67 Most Frequent Themes About Urban Planning in Public Policy by Urban Area

The comparison also leads to the conclusion that there seems to be a stronger/more enforced coordination between land planning and transport planning in the Strasbourg area than in the Quebec City area as is demonstrated by this quote from the *Territorial Coherence Scheme for the Strasbourg Region* indicating that the development of new recreational facilities near a lake will have to wait until proper transit access has been put in place:

However, in order to enhance the exceptional natural area of the Plobsheim waterway, it will be possible to construct on the site of the body of water or in the vicinity a **large recreational equipment as soon as it is served by the public transit.**

Schéma de cohérence territoriale de la région de Strasbourg
ADEUS, 2013

When comparing the topics addressed by the four different orders of government (see Figure 5:68), the most active order of government on planning issues are the regional and municipal governments which is logical seeing as this land planning is one of their main responsibilities; they produced large land planning and transit planning documents which are included in the corpus. Nonetheless, the departmental/provincial governments and the national government have their own planning agendas and intervene in the matter. The main focus of the municipal governments in the study is on land-use planning, which is shared by all other governments. Also on creating land configurations which lends

themselves to promoting the uses of alternatives to the car. The Quebec City municipal government is the only one with policies calling out for maintaining an active and attractive downtown in order to avoid becoming another doughnut city with an empty core. The regional government bodies are focussed on planning issues dealing with peri-urban areas and the topic of accessibility. They are promoting urbanization centred around structuring poles and focussing development around public transit lines. The only strong planning topic for the department or province is the development of employment zones. The French national government's main planning focus has been the opening-up and linking of segregated neighbourhoods with a strategy of developing rapid transit lines on their own right of ways to these neighbourhoods.

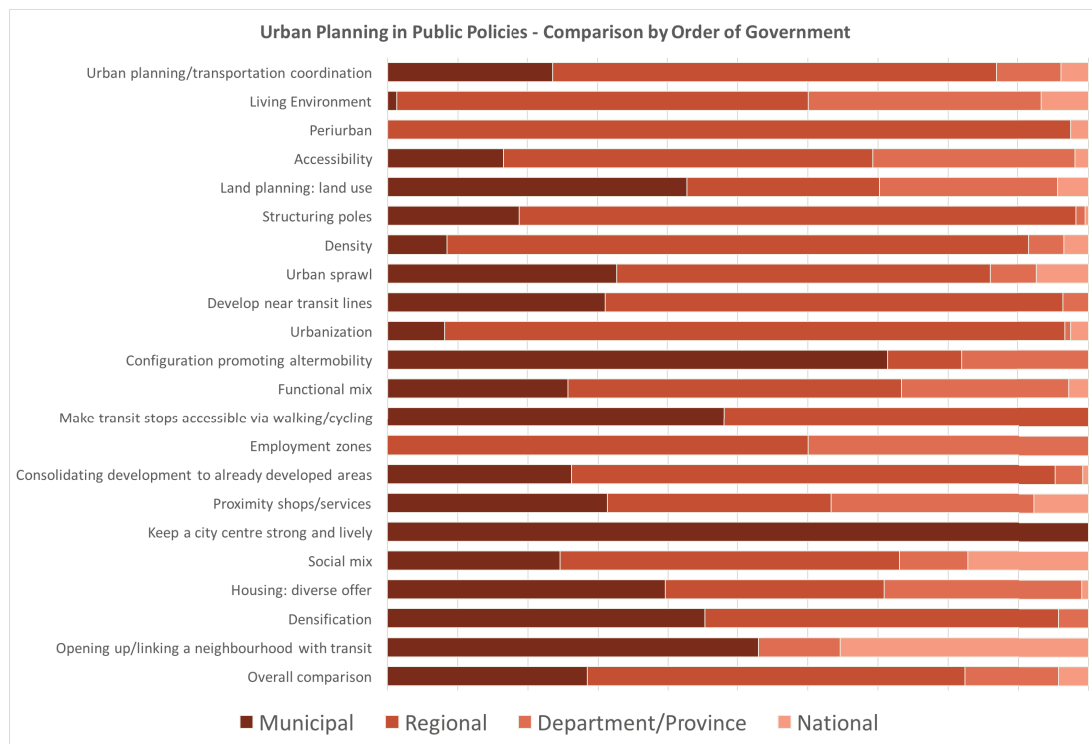


Figure 5:68 Most Frequent Themes About Urban Planning in Public Policy by Order of Government

Since car dependence is not often mentioned while the various transport modes are, I also performed further analysis on each car based mode discussed in the policy: car, car-sharing and carpooling. This made sense since part of car dependence is about the performance differential between the car and all other alternative modes of transport. In the following sections I also look at the depiction of the non-motorized modes in mobility and social exclusion policies. In all cases transport modes and other related words are often linked together. Ride-sharing was not mentioned in the policies included in the study.

5.4.4.1 The Car in Public Policy

The word network around the car in public policy (see Figure 5:69) shows its connection in the discourse with other transport related subjects ('parking lot', 'driver', 'vehicle', 'public transit', etc.). There are also some words from policy objective formulations around the car ('favouring', 'number', 'using', 'reducing').

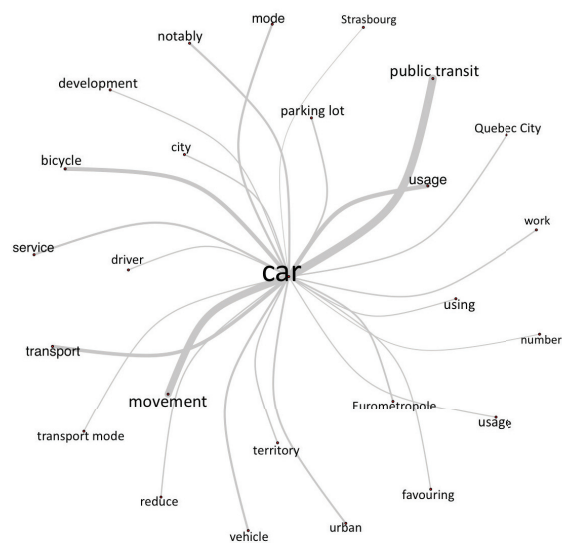


Figure 5:69 Word Network of the Car in Public Policy

Looking specifically in my qualitative analysis at the focus of each urban area on the many topics related to automobility (see Figure 5:70), it appears that the most important topic, in terms of mention and space used in the policy documents, is that of making improvements to the car infrastructure. This might be surprising but highlights that the car system still benefits from public policies as is evoked by Dupuy's car dependence vicious circle. In Strasbourg this mostly revolves around the new highway bypass to go around the city without having to go into the city centre. For the Quebec City area, many highway improvement projects, and now discussion of a third bridge or tunnel linking the cities of Quebec and Levis are in talks.

Examples of policy statements about improving the car system:

The **road projects** necessary for the development of the Strasbourg region must make it possible to **improve road access** to its main poles, to link up with neighbouring regions and to improve the living environment and safety in built-up areas. A **motorway bypass**, the Great Western bypass (GCO), of which all the possible alternatives must be thoroughly examined beforehand, aims to make the **flow of transitory traffic** more easily **compatible with car travel** within the Strasbourg region.

Schéma de cohérence territoriale de la région de Strasbourg - Document d'orientation
générales
ADEUS, 2013

Although there is a need to increase the use of public and active modes of transport, **the automobile will remain the most important mode of transport** within the Community. To this end, the MTQ has already planned investments to improve the functionality, **fluidity** and safety of its road network. Over the next 20 years, it will devote several billion dollars. Concerning the **rehabilitation and optimization of the motorway network**, the MTQ plans to carry out the following projects [...]

Le Plan métropolitain d'aménagement et de développement du territoire de la
Communauté métropolitaine de Québec, CMQ, 2013

The other important topics for the Quebec City area policies are indirect references to car dependence where without naming it the policies clearly describe a similar concept. This is followed by a concern over the cost of petroleum and a constant increase in car ownership in the area. The Strasbourg policies' main topics around automobility are improving the safety of the road network, reducing and limiting the speed of the car, which is never the case in Quebec City's area policies and regulating the fluidity of car flows.

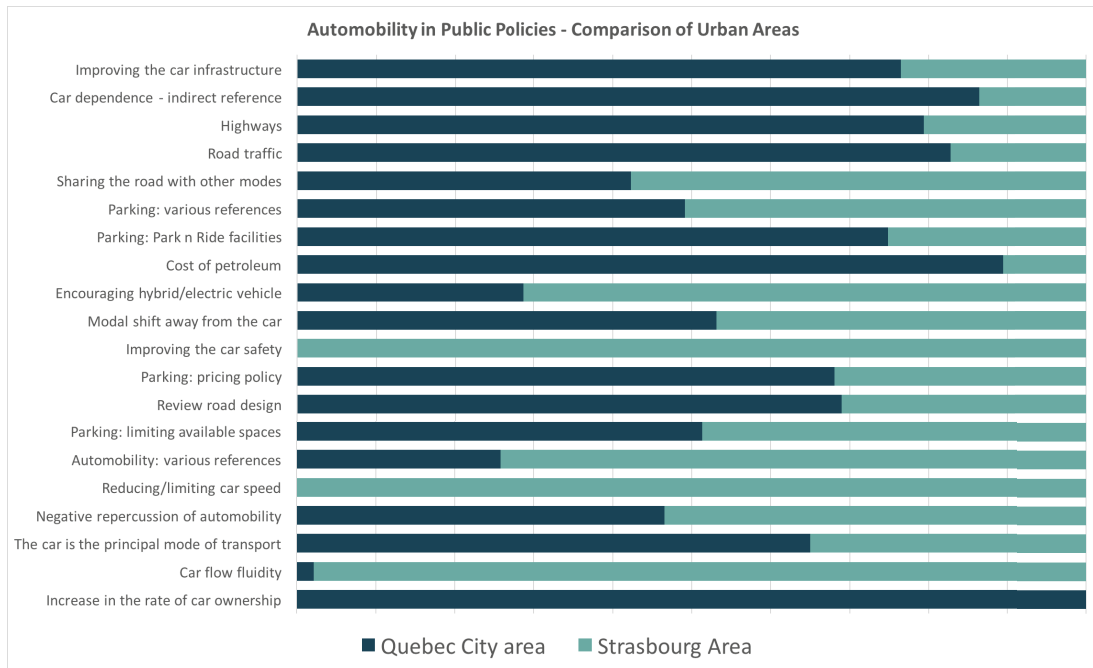


Figure 5:70 Most Frequent Themes About Automobility in Public Policy by Urban Area

To illustrate what I mean by indirect references to car dependence in the policy documents I provide a few examples of such policy segments for both urban areas:

Quebec City urban area examples of indirect car dependence segments:

Showcasing the increasing distances resulting from a car-dependent urban area development, this quote from the *Sustainable mobility national plan* is exemplary:

In the metropolitan areas of Montreal and Quebec-Levis, travel is increasingly over **long distances**. The territories of urban **agglomerations are increasingly large**.

Stratégie nationale de mobilité durable une approche responsable et novatrice.
 Québec, Province of, 2014

Describing recent urban developments, the *Transit strategic plan* mentions many items from the car dependence cycle:

Neighborhoods and centres of activity where **the automobile is favoured**. Between 1996 and 2001, the majority of population growth took place in the **outlying districts of the city**. However, the residential development of these neighborhoods **remains low density and mono functional**. In addition, the infrastructure in place **favours automobile travel**. In addition to this, there are the numerous supermarket shops that have been established at the **intersections of highways**. There is ample **free parking**, which favours the use of cars, but there is **little pedestrian infrastructure** and facilities to facilitate the use of public transport.

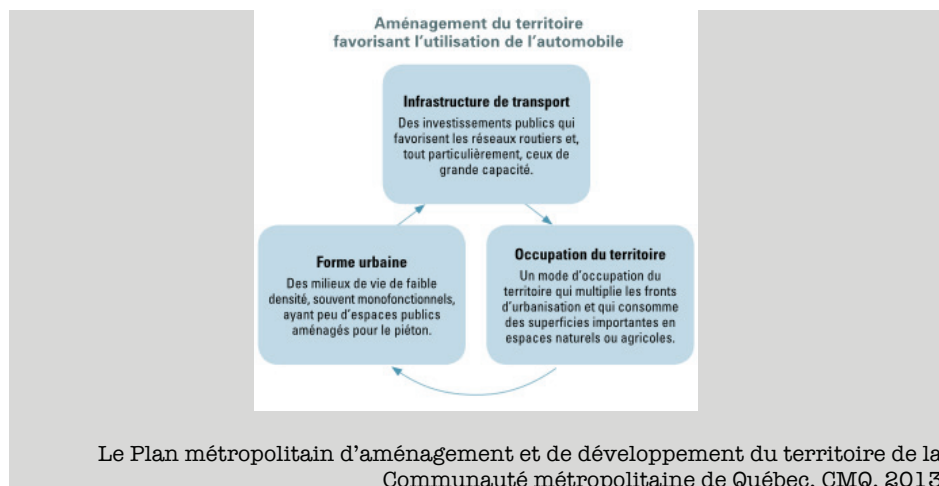
Le transport collectif à Québec : pour mieux vivre la ville : plan stratégique de développement des services 2005-2014, RTC, 2005

The sustainable mobility plan is critical of past “car-dependent” development without naming them as such:

It is unacceptable that certain places of employment (industrial parks, entertainment centres, hospitals, shopping malls, airports) **are practically accessible only by car**, which creates a situation of exclusion for non-motorized persons working there or that would like to work there, as well as for clients.

Plan de mobilité durable
Quebec, City of, 2011

Finally, the land planning regional plan even includes a chart describing a cycle very similar to car dependence vicious cycle:



Strasbourg has fewer indirect references to car dependence but these two illustrate the fact that a similar cycle exists in France as well.

This quote from the *diagnostic annex* of the *Urban mobility plan* is exemplary:

An increasing weight of the crowns of the Eurometropole which modifies the structures of travel. In recent decades, the peripheral territories of the agglomeration have become increasingly heavily influenced by **“centrifugal” urbanization**. The share of the population of the agglomeration residing in Strasbourg thus decreased from 68% to 58% in 40 years. Employment followed the same trend by contracting from 78% to 67% in 30 years, in favour of peripheral specialized zones. [...] **Trips are overwhelmingly made by car** in the second crown because of the **lack of sufficiently attractive alternatives** and they weigh significantly on the “balance sheet” of the agglomeration: while 17% of the population resides in the second crown, it **generates 28% of the automobile trips for the agglomeration**.

PDU:Annexe 1 – synthèse du diagnostic
CUS

The phenomena at work are the result of heavy, old trends, particularly related to peri-urbanization, and are based both on urban development and on the lifestyle choices of the inhabitants. They have led to a **high use of the automobile**, whose consequences (noise, pollution, but also saturation of the public space and the travelling system) have led local authorities to act.

Plan de Déplacements Urbains (PDU) de la Communauté Urbaine de Strasbourg,
CUS

From a global perspective, the two urban areas seem to be heading in different directions. In Quebec City, policies reassure motorists that the goal is not to restrict car usage in any way but to make alternative choices available to motorists, while the Strasbourg area policies from all levels reinforce the message that restrictions are required to be imposed for the greater good. The following excerpts from various policies demonstrate this point.

For example, from the Quebec City Sustainable mobility plan reassuring car users this plan is not against them:

It should be recalled that the proposals made in this report does not rely on an antagonism between motorists and public transit users.

Plan de mobilité durable
Quebec, City of, 2011

The plan also indicates that the transport mode must remain an individual choice:

The City does not have to choose the best mode of travel instead of the citizens. But it has the responsibility to develop, with the help of governments, the infrastructure and services that **allow citizens to exercise a real choice** of mobility.

Plan de mobilité durable
Quebec, City of, 2011

Or this selection criteria for new cycling projects ensuring that the projects do not constrain motorists:

Criteria: Does the project require the removal of parking spaces?

Plan d'action du Plan directeur du réseau cyclable
Quebec, City of, 2008

Nonetheless, some policy documents tentatively shift from this direction as is the case with the local Public transit development plan which calls for a more equitable sharing of the roads between the various transport modes:

[...] plans to improve the **sharing** of public roads between **pedestrians, cyclists, public transit** and motorists.

Le transport collectif à Québec : pour mieux vivre la ville : plan stratégique de développement des services 2005-2014, RTC, 2005

Strasbourg often seems to take the opposite approach. For example, this comprehensive statement from the Territorial Coherence Scheme for the Strasbourg Region:

[...] a policy of controlling the demand for motorized travel by **limiting** and **regulating** public parking as well as **reducing** the supply of parking at the workplace and **lowering** the average speed on certain roads.

Schéma de cohérence territoriale de la région de Strasbourg
ADEUS, 2013

The Urban mobility plan clearly states that offering alternatives alone is not enough and set the tone:

The mere **realization of alternatives to the automobile is not sufficient** to draw the full measure of the modal shift and make acceptable the consequent investments related. A certain amount of **constraint seems essential** to change habits.

PDU : Annexe 2 – méthodologie, scénarios d'actions et leur évaluation
CUS

Sometime the policy promoted a systematic reduction of speed limits and lanes for motorists in the major regional highway from the Urban Mobility Plan:

Achieving the objectives involves **optimizing** the use of the highway and **reducing the road capacity** of the A35 on today's three-lane sections.

Plan de Déplacements Urbains (PDU) de la Communauté Urbaine de Strasbourg
CUS

And this last example, also from the Urban Mobility Plan stating that new projects must not contribute to increasing road capacity for motorists:

In coherence with the SCOTERS (PADD), road projects should **not contribute to increasing overall road radial capacity** to Strasbourg. For example, the introduction of new bypasses can be envisaged by joint requalification with reduction of car capacity on access radials (clean site, enlargement of the bicycle / pedestrian areas).

Plan de Déplacements Urbains (PDU) de la Communauté Urbaine de Strasbourg
CUS

In the comparative perspective of the four orders of government in the corpus (Figure 5:71), the vast majority of topics are in the domain of the regional or municipal governments in the sample. The main themes for the municipal government are the sharing of the roads between the various transport modes and the implementation of park n' ride type facilities. The regional bodies focus specifically on parking facilities, improving car safety, reducing/limiting car speed and controlling car flows.

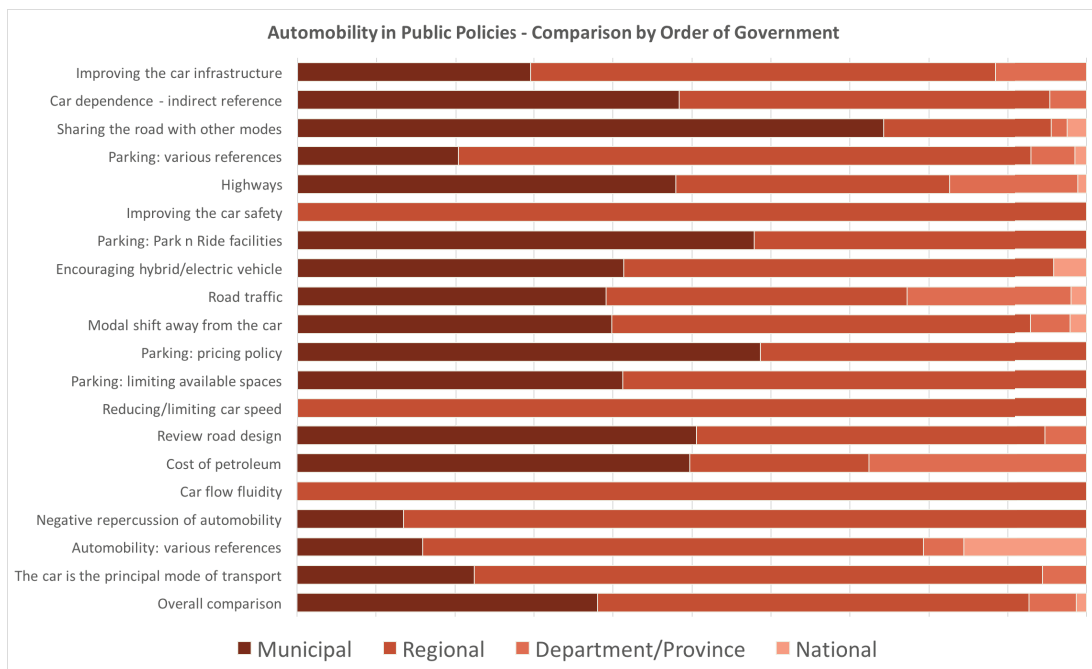


Figure 5:71 Most Frequent Themes About Automobility by Orders of Government

5.4.4.2 Car-Sharing in Public Policy

As was the case for the car on its own, the car-sharing discourse (see Figure 5:72) is also linked to other transport-related themes ('public transit', 'trips', 'bicycle', 'parking', 'mobility', etc.). Of those, the most often mentioned is 'carpooling'. Interesting this reveals the fact that the two "shared" versions of the car are often mentioned together in policy. Policy documents also mentioned a more environmentally friendly version of the car with the words hybrid and electric associated with car-sharing in policy documents.

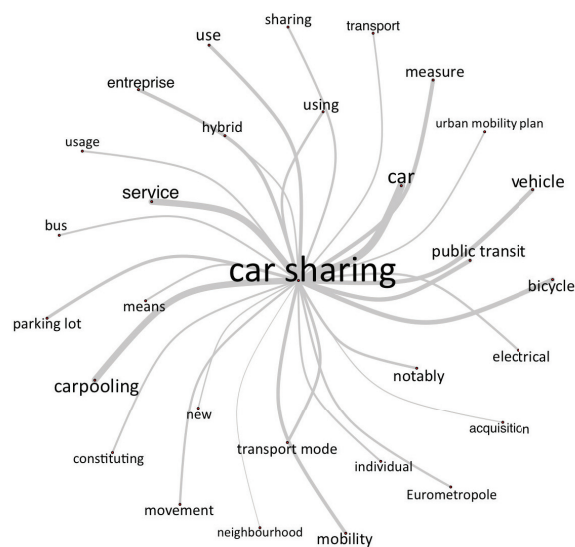


Figure 5:72 Word Network of Car-Sharing in Public Policy

Figure 5:73 shows the various topics about car-sharing and the respective focus of the two urban areas, while Figure 5:74 shows focus of the various orders of government. The Quebec City area policies are the only ones making reference to granting car-sharing user access to reserved lanes and offering preferred parking spots as well as subsidizing parking spots for car-sharing vehicles. The Strasbourg are policies are the only ones to mention a drop-in, drop out mode of operation for car-sharing services.

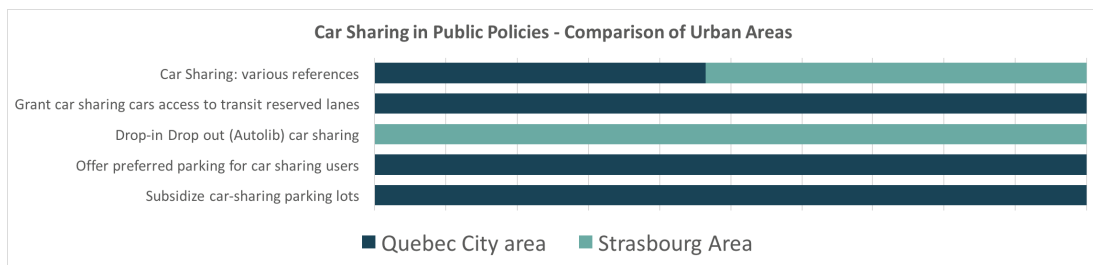


Figure 5:73 Most Frequent Themes About Car-Sharing in Public Policy by Urban Area

Granting car-sharing vehicles access to public transit or car pooling reserved lanes and subsidizing car-sharing parking spots are only discussed by municipal policies. The discussion about drop-in drop-out car-sharing similar to a vélib system for cars was only found in regional policies.

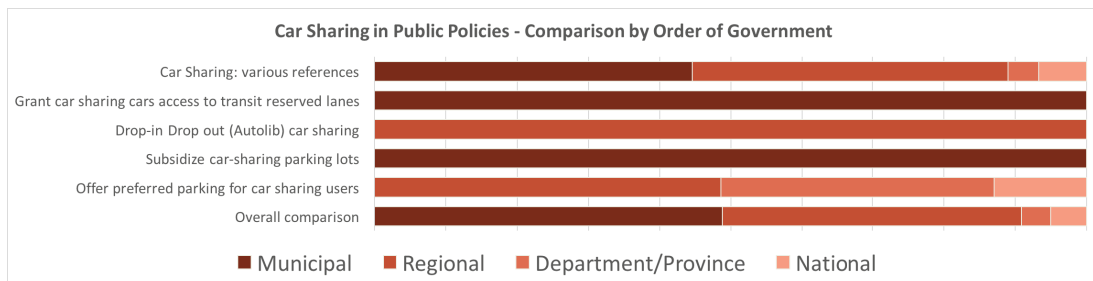


Figure 5:74 Most Frequent Themes About Car-Sharing in Public Policy by Orders of Government

5.4.4.3 Carpooling in Public Policy

Carpooling (see following figure) is also linked to other transport words ('car', 'parking', 'lane', 'A35'¹⁶⁰, 'active mobility', 'reserved lanes', 'highway', etc.). The objective of encouraging carpooling is also part of the word network.

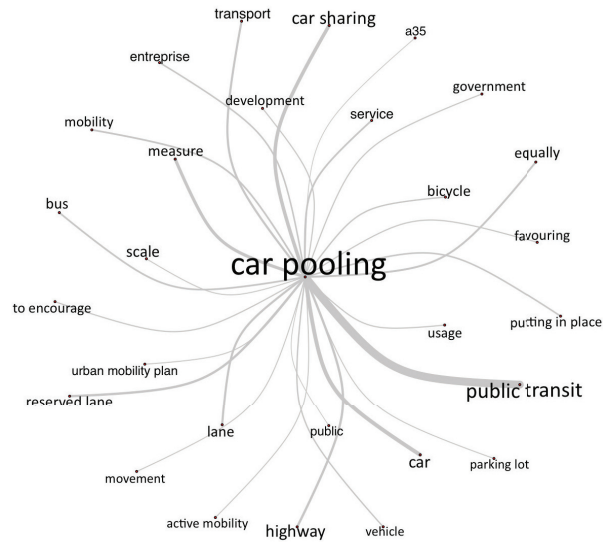


Figure 5:75 Word Network of Carpooling in Public Policy

¹⁶⁰ A35 is a major highway in the Strasbourg urban area.

Figure 5:76 shows the various topics about carpooling and the respective focus of the two urban areas, while Figure 5:77 shows focus of the various orders of government. The various carpooling subjects are generally included in both urban areas and by all orders of government.

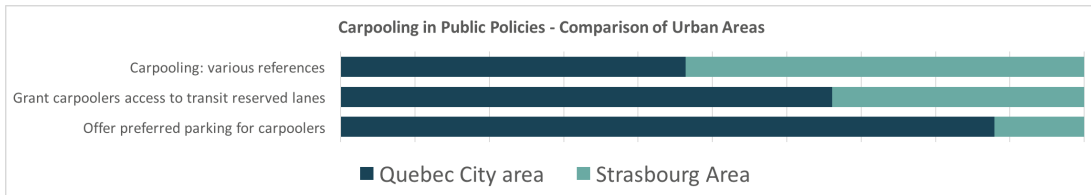


Figure 5:76 Most Frequent Themes About Carpooling in Public Policy by Urban Area

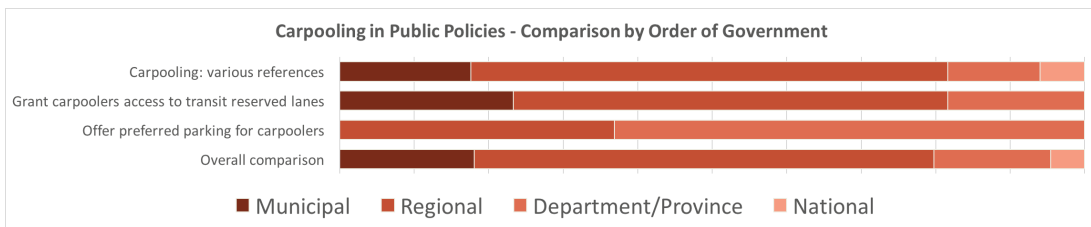


Figure 5:77 Most Frequent Themes About Car-Sharing in Public Policy by Orders of Government

5.4.4.4 Modal Shift in Public Policy

Even though car dependence is seldom mentioned directly it is mentioned indirectly and modal shift away from the car is a declared objective of certain public policies. This modal shift is mainly to public transit but also to active mobility, especially in the case of Strasbourg. The main target of modal shift policy discourse is ‘commuters’ and the main tools are ‘public transit’ and ‘parking’ restrictions.

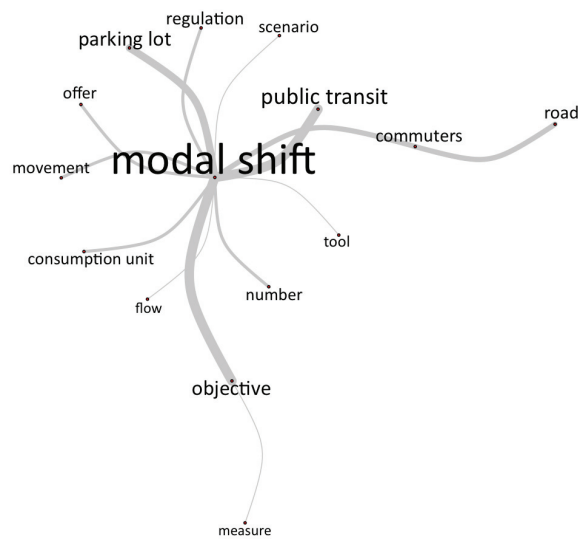


Figure 5:78 Word Network of Modal Shift in Public Policy

Example of modal shift discourse in the Quebec City sustainable mobility plan:

Convincing a large number of people to **move away from the car to public transport**, as often as possible for distances that are more difficult to reach on foot or by bicycle, is a **major challenge**. The conceptual plan of the proposed network aims to **facilitate this transfer** by offering a diversified service that meets all needs.

Plan de mobilité durable
Quebec, City of, 2011

Example of modal shift discourse in the Strasbourg area policies:

To achieve this objective, several tools are available. Firstly, the use of **regulated parking** as a lever of action on modal behaviour. A policy for regulating the use of **parking** is particularly effective in terms of **modal shift**.

Plan de Déplacements Urbains (PDU) de la Communauté Urbaine de Strasbourg
CUS

The modal shift away from the car is a topic discussed by both urban areas (see Figure 5:79) with the Canadian city especially focussing on increasing the modal share of public transit and the French city more geared to offering a real modal choice.

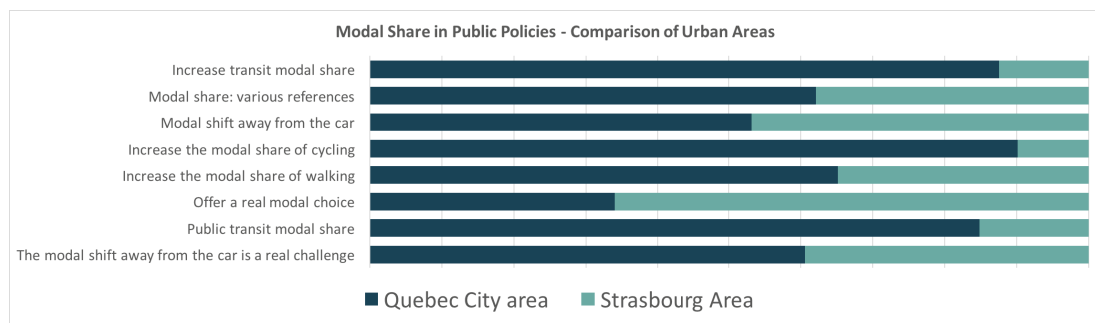


Figure 5:79 Most Frequent Themes About Modal Shift in Public Policy by Urban Area

Most discussion about the modal shift away from the car is from municipal instances followed by regional ones (see Figure 5:80). This is the topic least discussed by the French national government in comparison. Of specific concern to municipal authorities is the increase of the walking and public transit modal shares. The regional bodies are the main voice behind the message of offering a “real” mode choice to compete with the car.

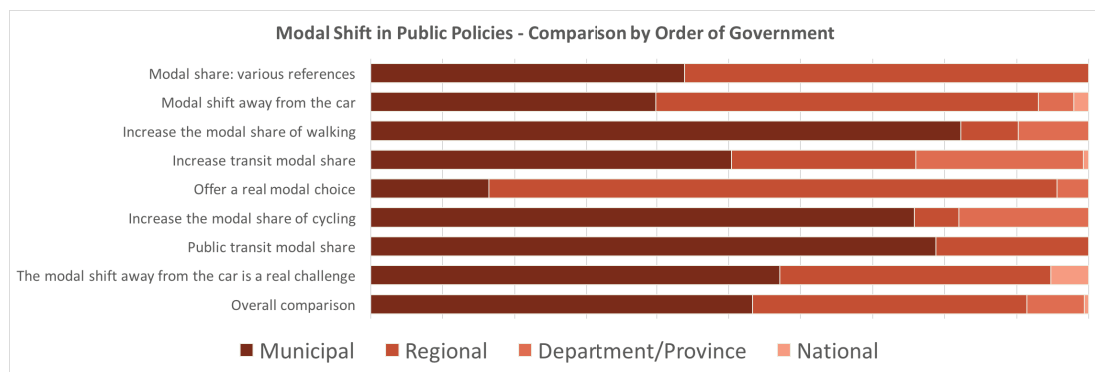


Figure 5:80 Most Frequent Themes About Modal Shift in Public Policy by Order of Government

5.4.4.5 The Bus in Public Policy

The discourse around the bus in the policy corpus (see Figure 5:81) links the bus with other transport modes ('train', 'tram', 'car', 'bicycle', 'pedestrian', etc.). Many policy objectives around this public transit mode also figure in the word network ('reserved lanes', 'efficiency' [increasing the speed], 'improving', 'new' [infrastructure, vehicles, routes]).

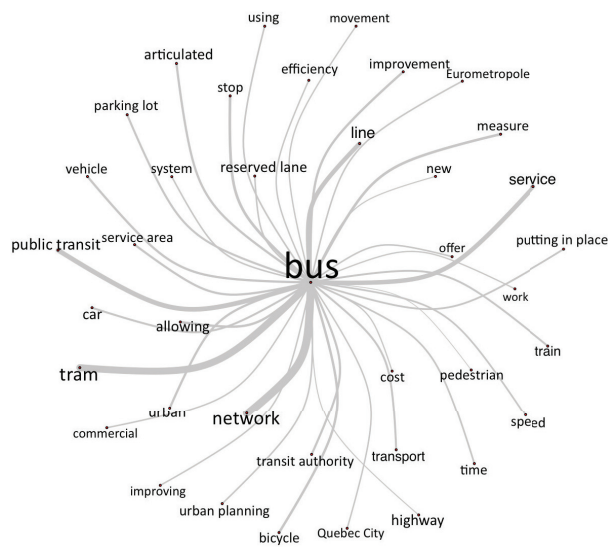


Figure 5:81 Word Network of the Bus in Public Policy

I do not include the comparison of the discussion related to the bus by urban area or by order of government. Instead I included the discussion related to the bus and the tram in a public transit comparison which appears in Figure 5:83.

[...] organized in such a way to serve most of the largest trip generators with the least possible break in load, the **tram** possesses all these characteristics and has demonstrated in several cities its capacities to modify the ways in which the population moves around.

Plan de mobilité durable
 Québec, Ville de, 2011

Other topics of interest for the North-American city were improving and maintaining transit infrastructure and adapting them to enable usage by mobility challenged people. They also referred to the social role of public transit. The policies of the European capital focussed more on affordable¹⁶³ and integrated fares between the various mobility network components¹⁶⁴ and extending the tram network.

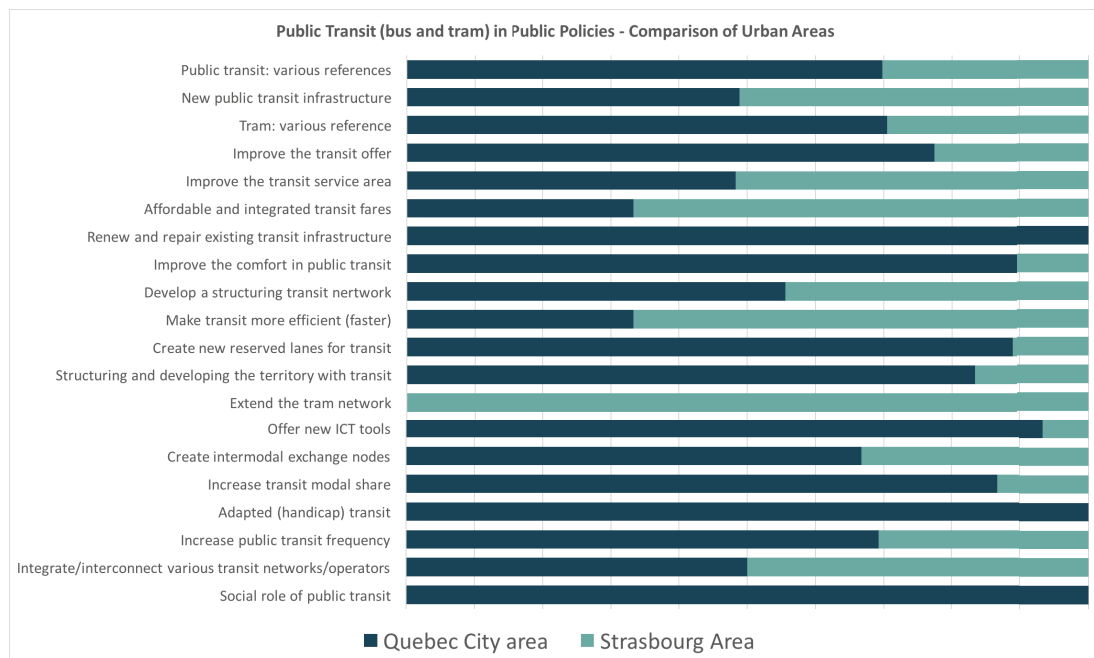


Figure 5:83 Most Frequent Themes About Public Transit in Public Policy by Urban Area

¹⁶³ Reduced for certain individuals, the price of a monthly regional transit pass remains as low 2 € in the Strasbourg area.

¹⁶⁴ Public transit, but also regional trains, park n' ride facilities, car-sharing and bike rental service for example.

The municipal policies often figured in the theme of public transit (see Figure 5:84). I would single out their unique focus on structuring and developing the territory with public transit services, offering mobile and ICT tools for planning transit and alternative mobility journeys, and their call to add or improve transit service to the local airport. The authorities' interest in developing ICT tools for alternative mobility is in line with the findings from Gilliéron et al. (2013, p. 256) which state that tools for these alternative mobility are increasingly being envisaged, especially for pedestrians. The regional governments figured heavily, with a unique focus on extending the tram network, improving the speed of transit services integrating the various transit networks and schedules.

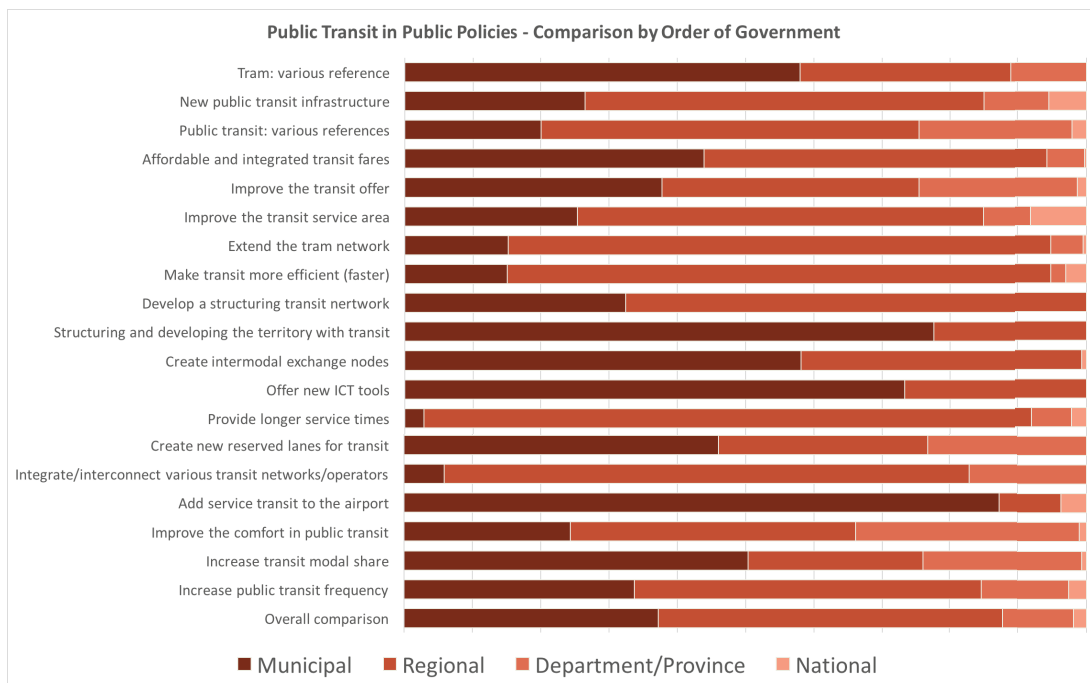


Figure 5:84 Most Frequent Themes About Public Transit in Public Policy by Government Order

5.4.4.7 The Bicycle in Public Policy

The bicycle word network (see Figure 5:85) is also connected to other transportation-related terms ('pedestrian', 'parking lot', 'walking', 'car', 'by foot', 'cycle lane', etc.). It includes words from policy objectives ('favouring', [increase the] 'share', etc.).

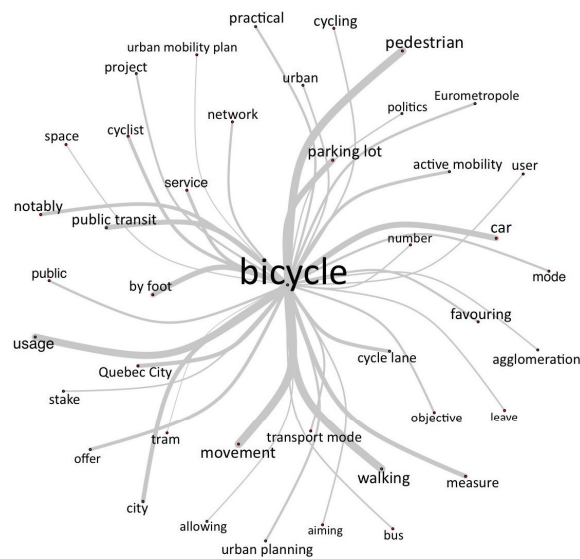


Figure 5:85 Word Network of the Bicycle in Public Policy

To further analyse cycling, I added cycle lane and cyclist to the analysis, producing a more complete word network (see Figure 5:86) comprising three different clusters. The bicycle cluster has the typical other transport-related items but also particular policy objectives for the bicycle ([increase the] ‘usage’, [increase the mode] ‘share’, ‘integrating’ [the various paths], ‘improving’ and ‘adapting’). The cycle path constellation also includes some policy objective terms (‘realize’ [the plan], ‘link’ [places], ‘implement’, [improve the] ‘markings’). The small cluster of words around ‘cyclist’ refers to the policy objective to improve their ‘cohabitation’ with ‘pedestrians’ who often share the same infrastructure.

Of the multiple policy discussions related to the bicycle, Figure 5:87 shows the top 20 topics. It denotes the Quebec City area focus on treating the bicycle as a “real” transport mode, working with employers to provide work based incentive programs and showers on location for cyclists. Quebec City area policies also intends to increase the length of the cycle network. The Strasbourg area is more focussed on its bike-sharing program, public relations with cyclists and improving the intermodal connections of the cycle network.

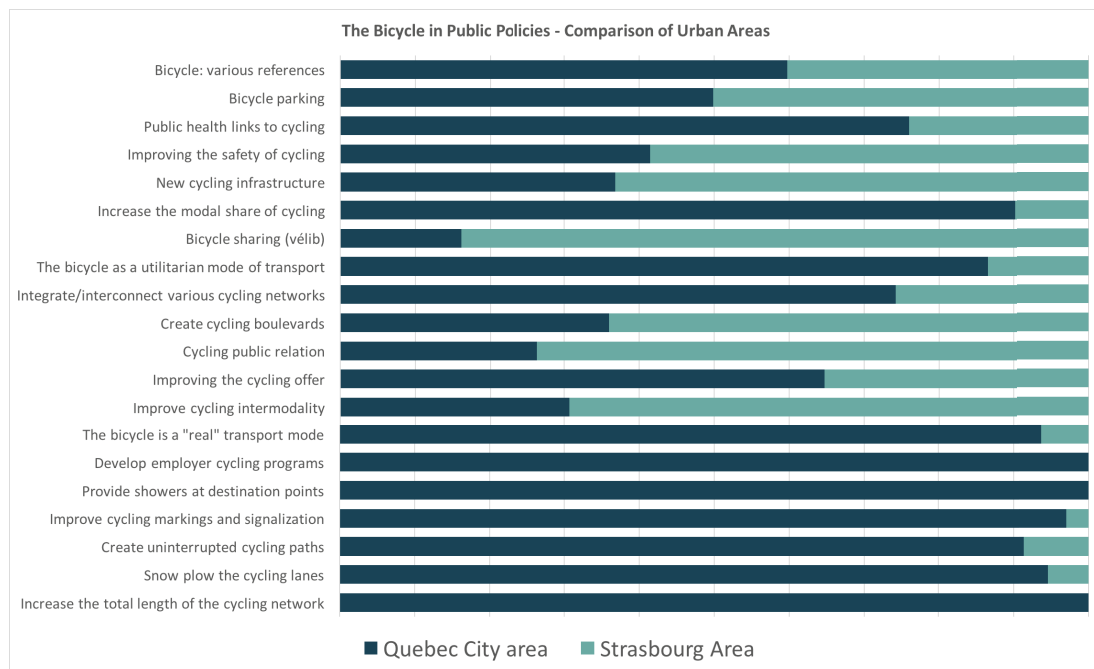


Figure 5:87 Most Frequent Themes About Cycling in Public Policy by Urban Area

As shown in Figure 5:88 cycling is another topic in which the national government shows very little involvement. The municipal and regional bodies share the majority of the discussion with respective focus on bicycle parking, making the bicycle a “real” mode for utilitarian purposes, providing showers at the destination and improving the markings and signage for cyclists. The regional policies and municipal policies share a common concern for bicycle parking and the regional policies specifically target cycling public relations, and the creation of cycling boulevards on their own right of ways as well as improving the connection between the cycle network and other transport modes. In this case the province/department also has topics specific to them: developing cycling programs with employers, removing the gaps in existing cycling networks by connecting them, improving the snow plowing of cycle lanes and increasing the length of the cycling network. The mention of the snow removal on the cycling network is interesting as during my interviews with NMH the issues of lack of snow removal often came-up as an important source of

frustration. It seems that between the intent of policy and the actual delivery of snow plowed cycle lanes there is a gap.

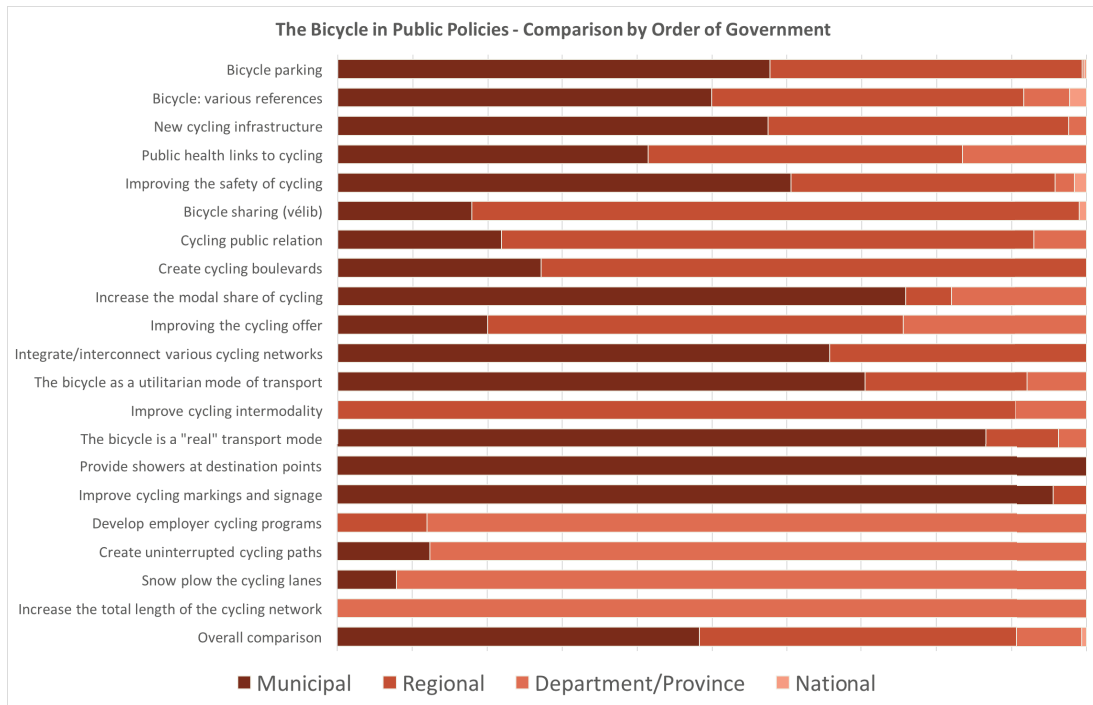


Figure 5:88 Most Frequent Themes About Cycling in Public Policy by Order of Government

5.4.4.8 Walking in Public Policy

The word network around walking (see Figure 5:89) mentions land planning concepts ('neighbourhood', 'territory', 'urban', 'city'). It also has the policy objective to favour 'walking', usually linked to improved walkability of the land planning and the term of [increased] 'usage'.

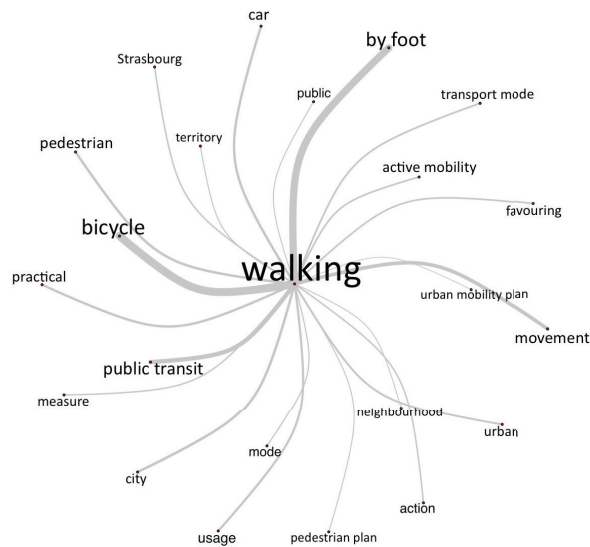


Figure 5:89 Word Network of Walking in Public Policy

The more complete word network¹⁶⁵ (see Figure 5:90) around walking comprises three main constellations. The first one is about the 'pedestrian'. This includes other transport terms ('parking', 'sidewalk', 'bus', 'street', 'pavement', etc.). Some policy objectives also appear in this cluster ('allowing', 'cohabitation', [improved] 'security', 'improving') as well as some land planning terms ('space', 'urban territory', 'land planning', etc.). The second cluster is about the act of 'walking'. It contains policy objectives ([increase the] 'modal share', [contribute to better] 'health', etc.) and land planning terms ('proximity' and 'development').

¹⁶⁵ Including the terms walk, walking, walker, pedestrian, sidewalk and by foot.

As shown in Figure 5:91, walking was an important focus of the discussion in the Strasbourg policy document, showing a significant unique focus on improving the safety of pedestrian facilities, improving the offer for walking, public relations around walking initiatives and dealing with the conflicts between pedestrian and cyclists. For Quebec City, their unique stance was around the issue of the snow plowing of sidewalks, improving pedestrian crossing signals and considering walking as another “real” alternative mode for utilitarian mobility.

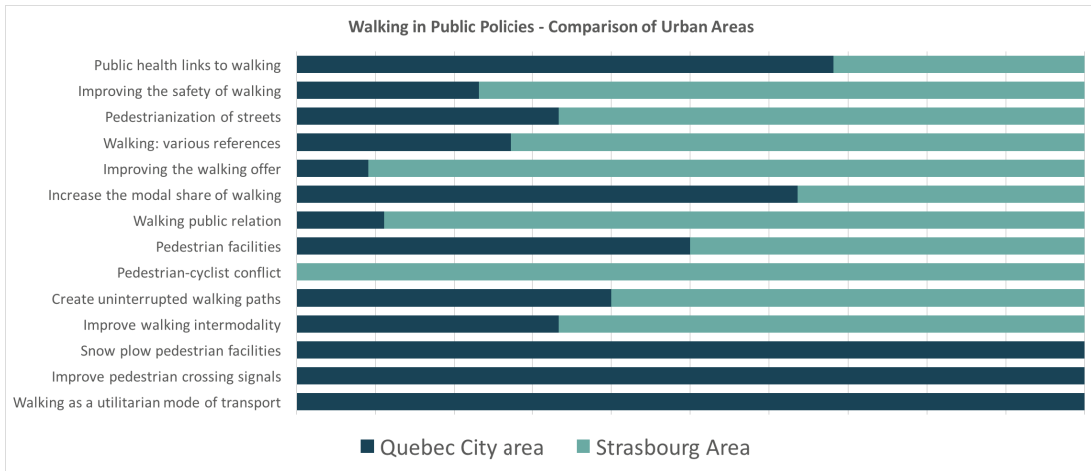


Figure 5:91 Most Frequent Themes About Walking in Public Policy by Urban Area

Among many initiatives to increase the modal share of walking, the Strasbourg area policies included some innovative instruments. For example, the *Urban mobility plan* suggests putting signage in place highlighting the walking time to the next transit stop, right beside the electronic display showing the wait times for the next transit vehicles:

Take advantage of the dynamic display of waiting times at public transport stations to **alert the pedestrians** when they have **enough time to walk** to the next stop before the arrival of the next bus.

Plan de Déplacements Urbains (PDU) de la Communauté Urbaine de Strasbourg
CUS

As was the case with cycling, walking was almost never the purview of the national policies included in the corpus of analysis (see Figure 5:92). In this case, the majority of discussion on the topics came from the municipal policies. Their unique focus was on creating pedestrian areas on streets, mediating pedestrian-cyclist conflict, increasing the mode share of walking, snow removal on pedestrian facilities and improving the experience at pedestrian crossing lights.

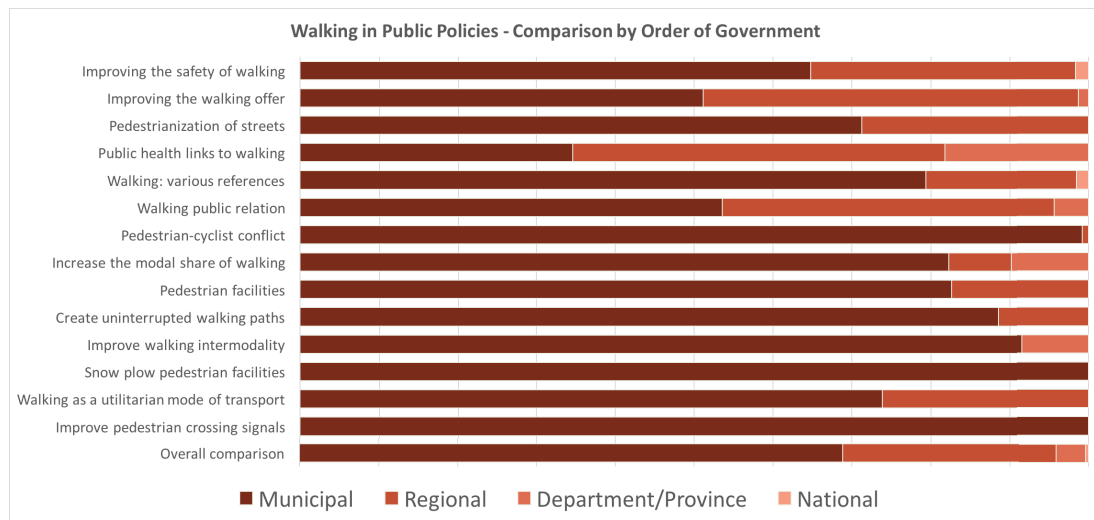


Figure 5:92 Most Frequent Themes About Walking in Public Policy by Order of Government

Other themes are also discussed in the mobility and social exclusion policies that are worth exploring. Those appeared as important themes during the inductive part of the analysis. In the following section I briefly discuss these other themes: environmental, economic and political aspects.

5.4.4.9 Environmental Issues Related in Public Policy

With its important environmental repercussions, car mobility figures as a top ecological concern for policy makers (see Figure 5:93 and Figure 5:94). In the Quebec City area, a unique concern is about SMOG which appears in the policy documents. They also focus particularly on greenhouse gas emissions, respect for the environment and reducing the urban footprint. For the Strasbourg area, the top specific concerns were centred on

protecting the watershed and drinking water supply, the life basin around the area, reducing pollution and environmental public relations efforts.

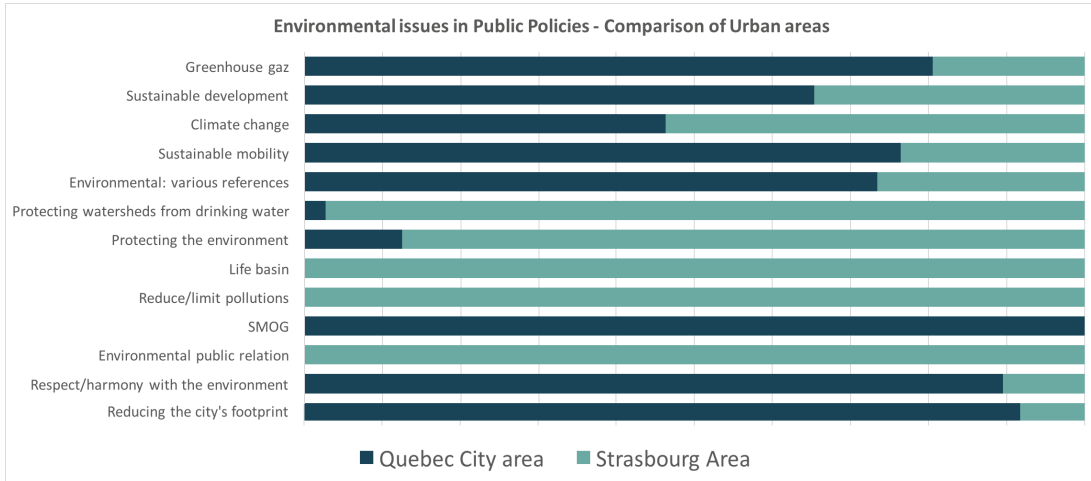


Figure 5:93 Most Frequent Themes About the Environment in Public Policy by Urban Area

Even though the regional level is the one most often addressing the environmental issues, all four levels of government are discussing the topic, this is the topic for which the national government level has the most discussions. Some topics are mostly discussed by the regional policies for example, the discussion around the prevention of environmental risks and protecting the life basin.

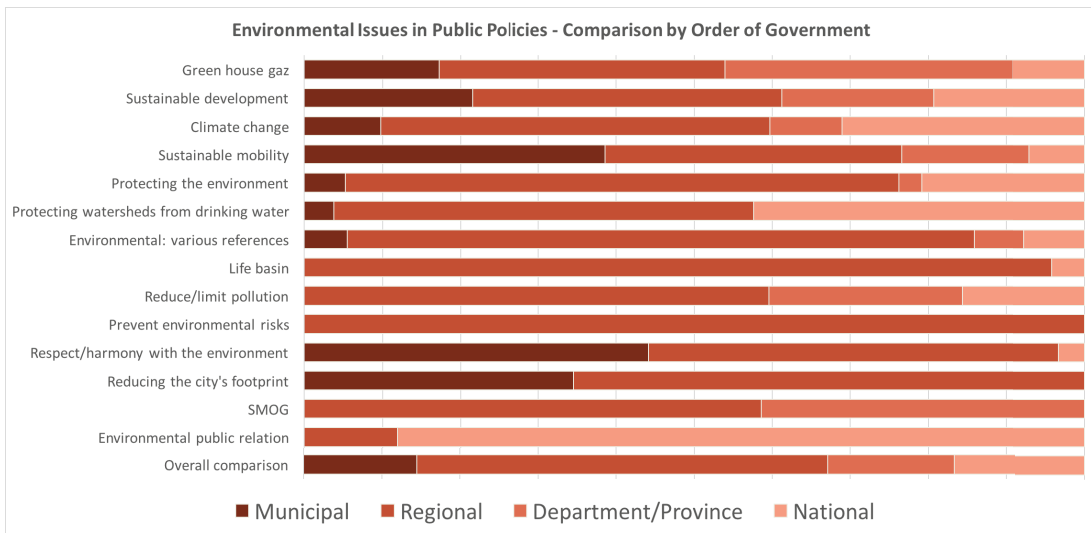


Figure 5:94 Most Frequent Themes About the Environment in Public Policy by Order of Government

5.4.4.10 Economic Issues Related in Public Policy

The various policies analysed also encompassed many economic issues (see Figure 5:95). For the Quebec City area, they included discussion about the housing market and the cost to the local economy induced by congestion, as well as some dependence on foreign oil and a focus on reducing productivity loss due to congestion. The Strasbourg area corpus was the only one to discuss social and solidarity economy¹⁶⁶ and finding mechanism to control the land value.

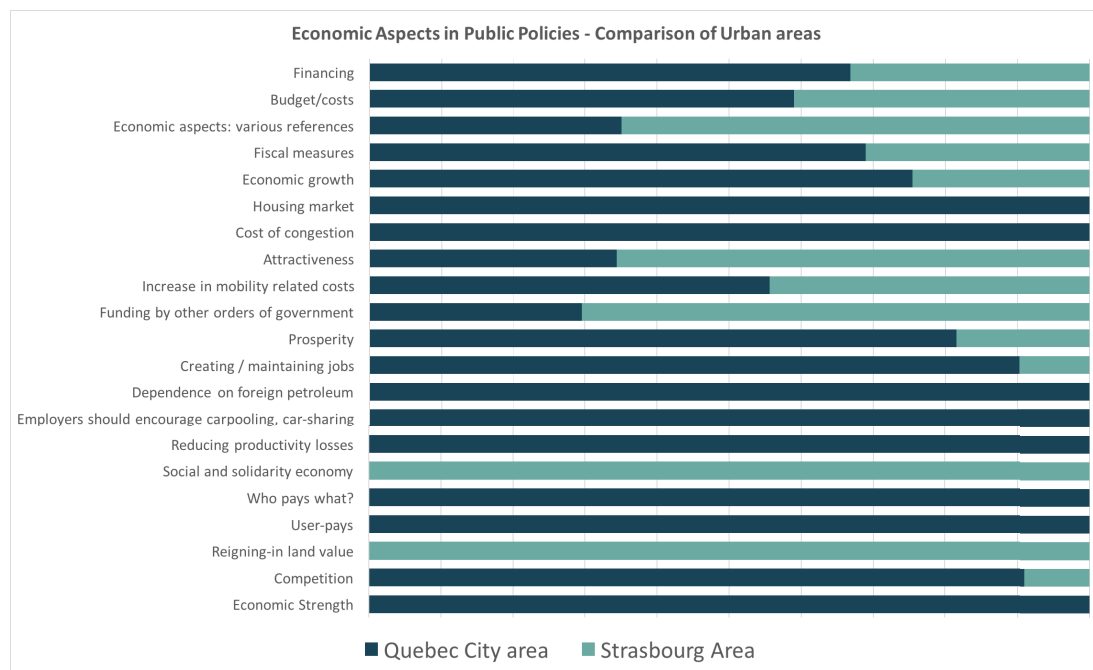


Figure 5:95 Most Frequent Themes About Economic Aspects in Public Policy by Urban Area

Considering the economic side of the policies raises the question of financing. In the Quebec City area, financing policies from the provincial government seems to be favouring the Montreal area over the Quebec City area and the rest of the province for that matter. For example, the subsidy provided between 2006 and 2010 by the provincial agency *Local infrastructure financing corporation (SOFIL)* was totalling CAD 433 million for the Montreal transit authority compared to CAD 45 million for the Quebec City transit authority (Québec, 2006a, p. 36). Which represents CAD 108 per citizen of the Greater Montreal area compared to CAD 60 per citizen of the CMQ.

¹⁶⁶ In the context of social exclusion, not mobility.

The four orders of government included economic issues in their respective policy documents with the discussion of employer-sponsored programs to encourage carpooling and car-sharing as well as the reduction of productivity loss (see Figure 5:96). The regional bodies were the only ones to include discussion of the housing market and its mechanics as well as ways to control the price of land in the area in their policies. The Quebec provincial government was alone to discuss the dependence on foreign oil as an economic issue. The national government also has its unique focus, the social and solidarity economy.

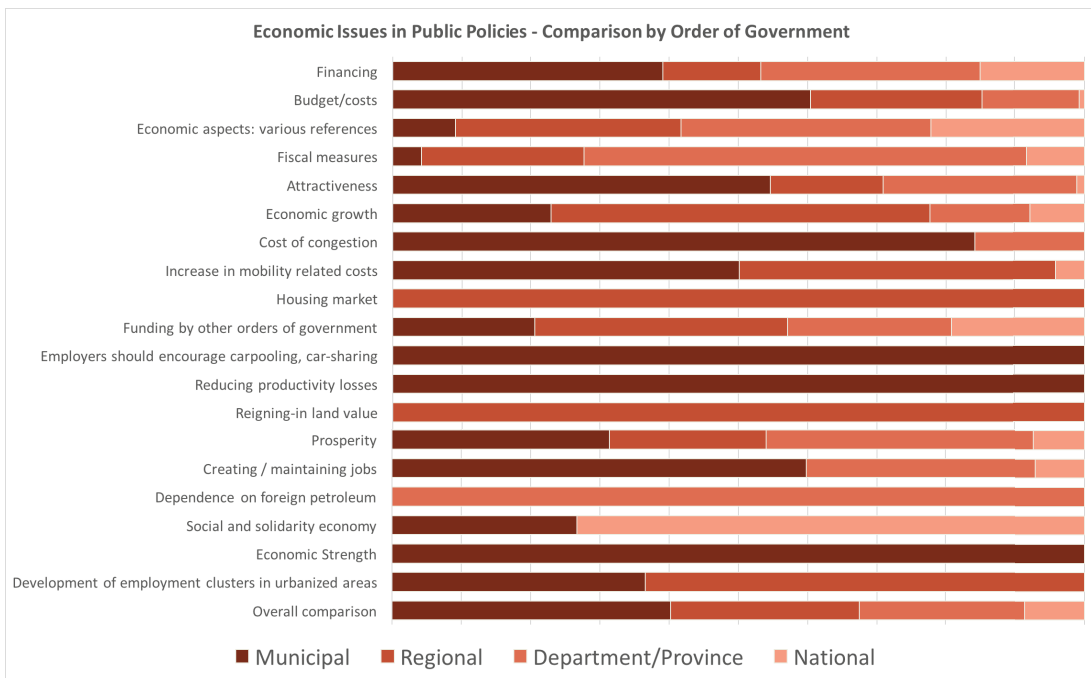


Figure 5:96 Most Frequent Themes About Economic Aspects in Public Policy by Order of Government

5.4.4.11 Political Aspects Related in Public Policy

Finally, the policy documents also mentioned political aspects, or what I considered to be political considerations. For example, the Quebec City policies (see Figure 5:97) often felt toned down, when, on the one hand, they describe an issue related to car dependence or urban sprawl but, on the other hand, they reaffirm that they don't want to constrain the car usage in any way, and to provide ways for many exceptions to the urbanization restrictions in place to limit urban sprawl. I did not observe this in any policies from the Strasbourg area.

For example, in this segment from the metropolitan development plan for the Quebec City urban area, the CMQ lists mandatory rules for developing within already built area, but then also take into account the scenario of non-compliance:

[...] the consolidation criteria outlined in Table 4 for new residential projects. **Failing to meet these criteria**, the component **must justify** its incapacity by considering the constraints and the particularities of its territory.

Le Plan métropolitain d'aménagement et de développement du territoire de la
Communauté métropolitaine de Québec, CMQ, 2013

There are also segments in policy document where the authorities affirm not imposing modal choice as is the case in this segment of the sustainable mobility plan:

The City **does not** have to **make the choice of the best mode of travel** instead of the citizens. But it has the responsibility to develop, with the help of governments, the infrastructures and services that allow citizens to exercise a real mobility choice.

Plan de mobilité durable, 2011
Quebec City's municipal government

Other political topics specific to the Quebec City area include public consultations, mentions of citizens support or citizen disagreement with certain aspects of policies. There are also many more intergovernmental discussions in the Canadian city’s policies which might reflect the federal system in place in the country. For Strasbourg, the most important topics were citizen participation and concertation.

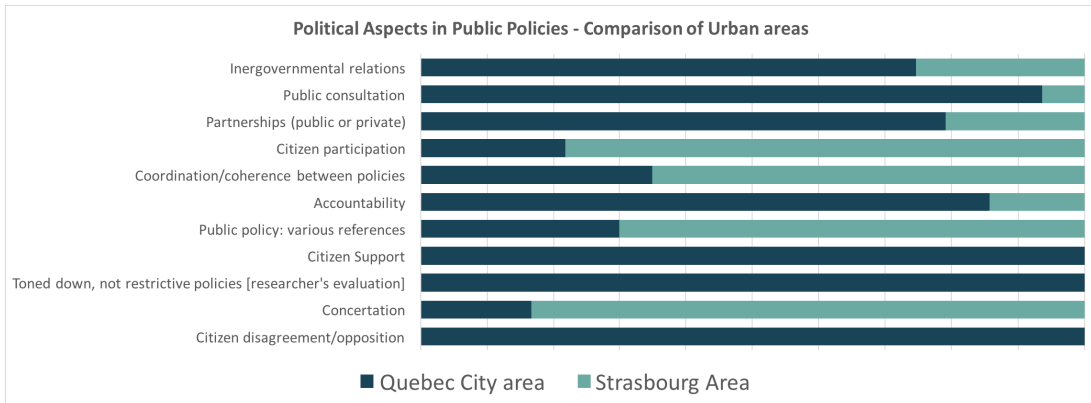


Figure 5:97 Most Frequent Themes About Political Aspects in Public Policy by Urban Area

All four orders of government included some political topics in their policies but it was more a concern for the municipal governments (see Figure 5:98) which had a stronger focus on public consultation and citizen support or disagreement. Regional bodies took the lion’s share of the discussion surrounding the topic of accountability.

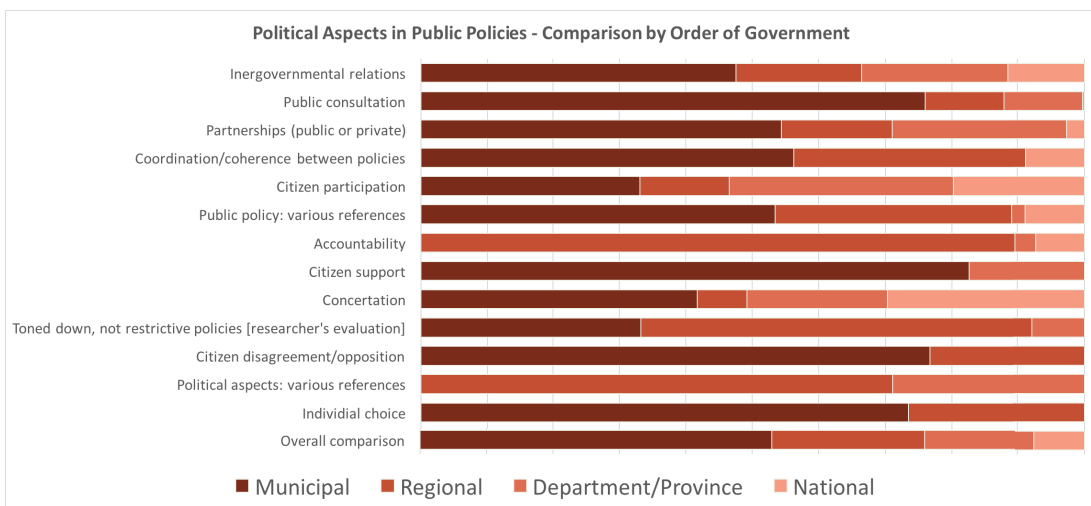


Figure 5:98 Most Frequent Themes About Political Aspects in Public Policy by Order of Government

5.4.5 Bottom-Up vs Top-Down: Similarities & Differences

When comparing the similarities analysis of the discussions with NMH and civil servants regarding policies that deal with car dependence (see Figure 5:30 on p. 251 and Figure 5:39 on p. 268), roughly one third of the top words included in the word networks of both analysis were the same. Some of the words unique to each group are surprising. For example, ‘car-sharing’ was mentioned by NMH discussing policy, mentioning the parking lot subsidy that car-sharing system receives. They also frequently discussed ‘snow removal’ from the sidewalk as a public policy which was not discussed by the civil servants. NMH alone mentioned highways and cycle lanes as well as motorists while discussing public policy and how to improve them. Civil servants were the only ones to frequently mention suburbs and sprawl when discussing car dependence policy. These differences are coherent with different focus of the two groups. While the NMH focus on the “nitty-gritty” aspects of policies, civil servants show a more systemic approach.

5.5 Chapter Conclusion

In this chapter, the objective was to gather a more thorough understanding of car dependence from an empirical point of view and seek differences and similarities by comparing the two different contexts of the study. I looked at the phenomena of car dependence from four different angles, starting from the holistic view of the regional transportation perspective from the origin-destination survey data, I then presented the view from the field with members of carless households, the view from city hall with civil servants working on policies that are connected with mobility and finally, the view from policy makers with the analysis of policy documents. This chapter about car dependence was answering the sub research question (see section 3.3 on p. 107) asking if car dependence is a public policy problem.

The combination of the discussion with participants from NMH about their daily mobility and access to the data from **origin-destination surveys** enabled triangulation of the daily mobility of these kinds of households and allowed for a more complete perspective on the data. The two sets of analyses confirmed each other as was the case for example with men relying more on the bicycle and women relying more on public transit. But in addition to this quantitative understanding of the situation, insight from the qualitative data allowed to find an explanation for these differences, showing that women are more dissatisfied with cycling infrastructure and are demanding many more improvements, testifying to an unsuspected latent demand from women from NMH for better cycling facilities. The OD data highlighted an important major difference between the two urban areas in the share of active mobility which was much higher overall in the Strasbourg urban area. This

important difference in mode share of active mobility can be explained by multiple factors. The climate and the topography of Strasbourg lending themselves more easily to those modes must have an effect, as well as the general positive attitude towards cycling in the area. But the clear active mobility policy and urban planning focus identified during the policy analysis seem to be having positive effects in terms of cycling and walking mode shares in the Strasbourg area.

The second series of analyses presented the perspective of the **non-motorized households** (NMH) looking at how they perceive car dependence and how it affects them in particular ways since they do not own a car and live in regions that are more or less car dependent. The research revealed differences in discourse between NMH women and men in how to cope with car dependence unveiling a particular importance for women in the fact of being able to rely on the potential availability of cars thanks to the car-sharing schemes in place in both urban areas while active mobility modes of cycling and walking were found to be more important for men in curbing and coping with their area's car dependence.

Interesting differences also appeared when comparing respondent's answers based on their revenue level with the active modes of transport appealing more to the lower income group as a solution to their daily mobility needs while the highest revenue group showed a stronger reliance on residential location choice (in proximity to important destination) while relying more on car-sharing as a fall-back solution. The combination of lexicometric analysis of words avoided by each revenue level group and the qualitative analysis allowed to positively link the revenue level with mobility related difficulties. For example, I found that the group with modest revenue was considerably less likely to mention the car, car-sharing, the train and the tram while respondents from most affluent group avoided the words 'waiting' and 'difficult' demonstrating a very different experience in their pursuit of daily mobility.

At the beginning of the doctoral research project, car-sharing was not a focus of the research. I did not consider this "motorized crutch" as a valid work around the gaps in alternative. Through the research, I have found that, while it does not address the causes of car dependence, it is an important component in allowing non-motorized households with members who have a driver's licence to navigate these gaps and as such, it plays a part in preventing the feeling of being socially excluded, by the fact that it enables sporadic access to otherwise inaccessible places or activities. Enabling for example visits to specific shops or weekend getaways in hard to reach, but not so distant areas. For those fortunate enough to have a driver's licence it also enabled an extra level of autonomy that participants felt was missing when they had to rely on car rides from other people to reach these destinations.

Not only did the car-sharing service enable driver licence holders from NMH to go where they otherwise could not, the 24-hour availability of shared vehicles and easy reservation system also enabled them to go when they otherwise could not, an element that mobility policy seldom addresses.

The interview material also demonstrated that “lay people’s” knowledge on policy problems holds interest for scientific enquiry as the respondents demonstrated a deep understanding of the phenomena being discussed, some of them referring to theoretical conceptions of car dependence close to the material presented in the literature review chapter. Securing my initial assertion that as Horkheimer’s (1968/1982) vision of social sciences, through its enquiry might partake in the construction of a better more inclusive society respectful and appreciative of multiple perspectives.

The analyses of the **civil servant’s** interview material revealed that there is an understanding of car dependence and its complexity within the public administration and it creates a frustrating situation for public servants who consider the vicious circle of car dependence to be a very hard challenge to solve. The officials demonstrated an understanding of the time constraints facing NMH, even though they admitted to being unable to formulate a proper solution to those issues. Nonetheless, they seemed to have an understanding of the importance of these limitations and are clearly aware of the additional difficulty of enabling alternative mobility in low-density areas.

The discussion with civil servants in both areas indicated that solving car dependence was a very contested issue. It was particularly evident in the Quebec City urban area where important political ramifications were hindering the strengths of measures that could counter car dependence, in order to keep them socially acceptable and palatable to the local voters. The strength of the “pro-car” or anti alternative mobility public opinion in the Quebec City area as portrayed by the issue of trash radios pitting motorists as the kings of the road with the “*god given right*” to the whole “*paid with my taxes*” street against puny “*out of money*” cyclists and pedestrians, already mentioned by NMH participants, clearly had a limiting factor even at city hall. Deeply rooted, cultural connections with automobility, a typically North-American phenomenon in their opinion was relayed by the Quebec City area civil servants as well as the issue of a large influx of new inhabitants moving-in from rural areas of the province who bring their ingrained car addicted automobility habits, only to further solidify the area’s car dependence.

The complicated aspects of reining-in car dependence while having little control over the housing market and aspects of land values was an integral part of the problem for Strasbourg

area public servants. They also felt limited by the complexity and uncertainty they faced in deciphering what was the best way to deal with car dependence associated with a lack of clear objectives from the elected officials.

The analysis of over three thousand pages of **policy documents** including four different orders of governments, peering from both the quantitative point of view of lexicometric analysis and the qualitative point of view of traditional discourse analysis methods pointed out that, as expected, the Strasbourg area policies have a clear focus on active mobility. However it also depicted in that urban area a more cohesive and integrated approach to social housing and its connectivity to alternative mobility infrastructure, by coordinating across various administrative departments (transport, planning, social services) and the different orders of government. Car dependence was seldom addressed directly in policy and the analysis confirmed the hypothesis that it is not considered an important issue by public policy. When including indirect references, through the qualitative analysis, the regional order of government appears more focused on the issue than any other order of government. For policy, the main issues related to car dependence are attendant to urban sprawl and the challenge of providing good alternative mobility supply in low density territories. To this point, the Quebec City urban area focuses its efforts on limiting the growth and new urbanization within the built urban area while in the Strasbourg area the policy focus was on limiting the peri-urbanization phenomena.

The policy discourse analysis also reveals that in both urban areas car dependence is still operating via a cycle of necessary improvement to the car system as expected by Dupuy's concept of a vicious cycle of car dependence. In the Quebec City area, this took the form of new highway expansions adding new traffic lanes and lately, the appraisal into the creation of a new road connection, either a bridge or a tunnel, across the Saint-Lawrence river, thereby connecting Lévis and Quebec City with a third link. In the Strasbourg area, this took the form of building a new highway bypass and making improvements to increase car safety on existing road infrastructure. But an important difference remains between the two areas, where Strasbourg clearly intends to limit the intrusion of the car inside the city, by reducing speed limits, limiting parking spaces and ensuring that new projects do not improve the efficiency of the car over alternative modes. Thereby clearly indicating two distinct trajectories for car dependence in the two areas. Whereby in the Strasbourg area policies the different orders of government work in concert to consolidate the message that restriction need to be imposed on motorists in order to limit or reduce car dependence for the greater good, Quebec City, policies state forthrightly their intent not to restrict car usage in any way thereby reassuring motorists that they will go unimpeded while other alternatives are added to the mix, the so-called "mobility cocktail".

In both urban areas in order to reduce congestion and environmental side effects of car dependence policy called for a modal shift away from the car, or at least solo driver car mobility by offering “real” alternatives. In the Quebec City area and in the Strasbourg area, modal shift policy discourse mainly targeted commuters and the main alternative was public transit based and modal shift strategies were mostly the purview of municipal bodies. However, a decisive difference exists between the two areas in the targets for the shift towards alternative modes. Even though it already exhibits a very high share of active mobility (as demonstrated in the OD data analysis) the Strasbourg area policies also included strategies for a renewed modal shift towards walking and cycling.

The secondary objective of this chapter was to find out why the social dimension of mobility is often neglected in policy. Unfortunately, the methodology put in place and the data gathered did not enable me to formulate a complete answer to this question. Further enquiry involving more civil servants from a broader range of departments and a historical analysis of the policy formulation phase, including debates around policy adoption, which was not part of my research, appears required to provide a definitive answer.

The social dimension of mobility issues requires a different set of skills than the transportation dimension of those policies. The civil servants in place in the transportation and public transit authorities might lack the capacity to effectively address the social issues surrounding mobility policies. Further research would be required to look into this question but this could be a “policy capacity” issue as presented by Perl & Newman (2012, p. 88). Coordinating with other departments with the proper skillset might offer a solution but coordination between the different policy domains remains an issue. Although the Strasbourg area policies and civil servants interviewed exhibited better coordination between transport, social and urban planning, as exemplified by the priority neighbourhood initiative which provides policy responses adapted to specific neighbourhoods demonstrating a deep knowledge of the spectrum from transport, to social, to land use aspects on a level not seen in the Quebec City area policy documents. The stronger involvement of the national level, with its ample resources also differentiates the two areas. Whereas the Canadian federal government does not seem involved in policies addressing car dependence and social exclusion, the French national government is very active on urban policies, at least from a redistributive point of view. The focus of the French government confirms the findings of Atkinson (2000, p. 1043).

The issue of car dependence and its social implications also demands complex policy answers and might be akin to a “wicked problem”¹⁶⁷. Civil servants often admittedly addressed only the symptoms of car dependence, without attacking the root cause since the kinds of solutions addressing the short-term symptoms are easier to implement, carry less negative political weight and are more socially acceptable. Finally, the apparent lack of political will, broadly across the Quebec City area and centred in the second and first crown of the Strasbourg area makes it difficult for the public administration to prioritize the issue.

Public servants in both areas agree that policies tend to work on addressing the symptoms of car dependence instead of addressing the root cause, some respondents clearly appeared frustrated by this situation and the complexity of dealing with a generalized addiction to the car with limited means and multiple priorities, sometimes political imperatives (like re-election of the team in place) also seemed to force their hand and circumscribed their ambitions.

When comparing the two urban areas using the car dependence analysis criteria set by Litman (1999, p. 1) and presented in Table 2:3 on p. 52, The Quebec City area, shows many of the characteristics of “automobile dependency” (idem) while the Strasbourg urban area shows more characteristics of the “balanced transportation” (idem).

¹⁶⁷ See (Head, 2008a).

6

Empirical Results and Discussion

Objective 2: Increasing our Knowledge on Non-Motorized Households

“The idea of space as derivative from motion parallels exactly the relations of space to motion produced by the private automobile. One does not use one's car to see the city; the automobile is not a vehicle for touring—or, rather, it is not used as such, except by joyriding adolescent drivers. The car instead gives freedom of movement; one can travel, uninhibited by formal stops, as in the subway, without changing one's mode of motion, from bus, subway, or elevated to pedestrian movement, in making a journey from place A to place B.”

Richard Sennett (1977/2002, p. 14)

In this chapter I present the empirical results related to my second objective which is to increase knowledge on the situation of non-motorized households to better understand their perceptions vis-à-vis car dependence and the potential social exclusion related to it, while getting an understanding of their daily mobility practises and expectations of public authorities as well as investigating gender-based differences. Throughout the chapter I make reference to various sub-questions specific to the NMH presented in chapter 3.

I begin the chapter by presenting my analysis of the non-motorized households in the OD survey data from both urban areas. Subsequently I outline discussions with NMH regarding why they do not have a car. Finding out whether it is by choice or by constraint. Then I expose the results of my discourse analysis regarding their daily mobility. Through this analysis, I address their opinion, inconvenience and problems related to the various transport modes. I also present the results according to the different trip purposes. This is followed by a discussion on NMH's perception of mobility-related social exclusion. I follow with an analysis of their expectations from the state and describe their views about what a "perfect world for NMH" would be.

Following these results from the NMH interview material, I present the views of the civil servants and how the policy documents portray the situation of mobility-related social exclusion and NMH. In the last section of the chapter, I provide a comparison on the administrative aspects within the policy documents from each area and compare between the different orders of government. I also review the policy evidence presented in the policy documents and analyze the discussion on that topic with the civil servants.

6.1 Top-Down: The 10'000 Foot View on the Sociodemographics of NMH Versus MH

In this section, I use the various socio-demographic data associated with households or individuals in the raw origin-destination survey of the two urban areas to data between compound motorized and non-motorized households. Since the data sources are different, the comparison between the two urban areas are not always equivalent, however, I made the best effort to use comparable data when possible and the comparison between NMH and MH remains entirely valid as they are sourced from the same database. The data from OD survey comparing the households based on their motorization status helps to establish a more complete answer to my research question - why NMH are without a car¹⁶⁸.

6.1.1 Comparison of Households Statistics NMH vs MH

Some of the statistics provided in the OD survey data for both urban areas are associated with the household. I start by comparing the variables between the two urban areas as well as the non-motorized and motorized households. The data includes household size, revenue levels, residence ownership status, type of residential habitat, opinion on the public transit supply at the place of residence and the role that transit supply play in residence location selection.

¹⁶⁸ See section 3.1 Why is a Household Motorless? on p. 105.

6.1.1.1 Comparison of the Household Size NMH vs MH

Comparing the household size shows that both areas have a very similar distribution for the size of households for both NMH and MH (see Figure 6:1). However, the data also demonstrates that in the Quebec City and the Strasbourg area, NMH are smaller than their MH counterparts with 76% of all NMH made up of single-person households in the Quebec City area and 70% for the Strasbourg area while only have 21% of the MH of the Quebec City area and 24% of the MH of the Strasbourg area contain only one individual¹⁶⁹. As I will show further below, this is related to the individuals who compose the NMH population. The data regarding the age and gender composition of the group can be related to this important household size difference.

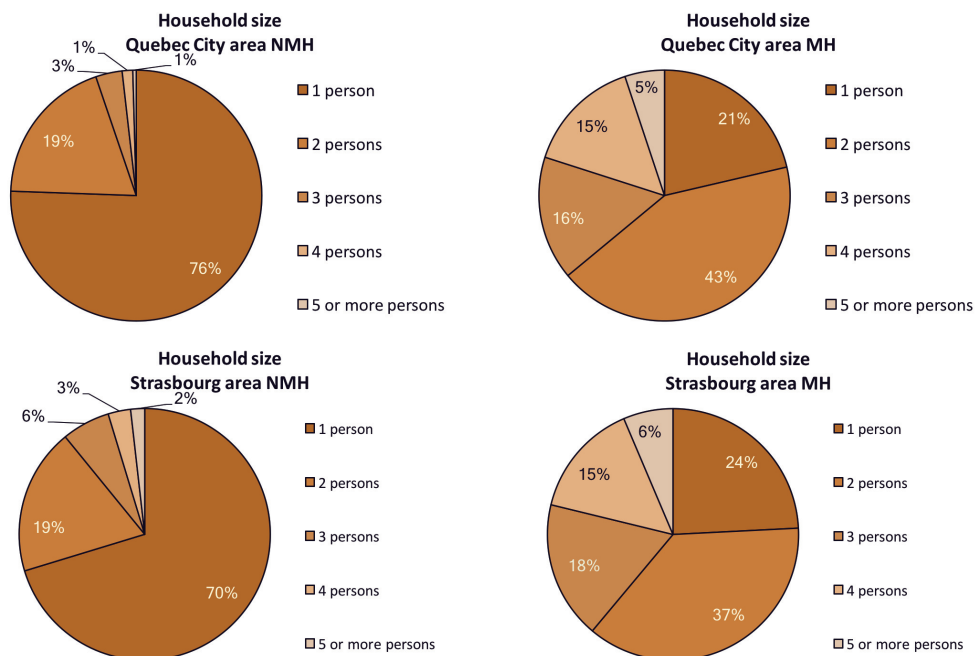


Figure 6:1 Household Size Comparison - Quebec City Area OD NMH vs MH

¹⁶⁹ Since this analysis is based on large samples in both urban areas, for the charts in this section, I have included the detailed percentage information inside the charts as opposed to the charts based on the very small qualitative sample.

6.1.1.2 Comparison of Revenue Levels NMH vs MH

The juxtaposition of the distribution of households into the three different revenue groups (see Figure 6:2) show that in both urban areas, the NMH group has a greater share of modest revenue households and a smaller share of affluent households. This clearly indicates that cost of automobility is a key factor in remaining motorless. In terms of revenue distribution both urban areas appear similar.

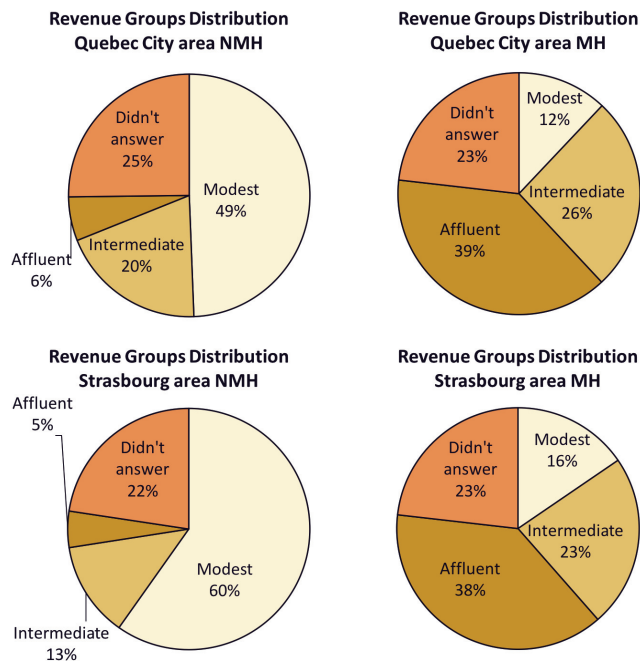


Figure 6:2 Revenue Groups Comparison OD Data NMH vs MH

6.1.1.3 Comparison of the Status of the Residence NMH vs MH

Directly related to the important revenue level differences between non-motorized and motorized households in both areas, I also observe an important difference in home ownership status between the two groups in both urban areas (see Figure 6:3). In both cases the situations are opposed, between owning and renting their residence. For example, in the Quebec City area while only 18% of NMH own their residence, compared to 75% of MH. Moreover, 81% of NMH rent their home while only 24% of MH rent it. Comparing across the two urban areas, a relatively more important rate of home ownership amongst the Quebec City area MH than their Strasbourg area counterpart is apparent. An interesting difference in the data is that the Quebec City survey lacks a category specifically for social housing. All tenants are in the same category when renting an apartment whether subsidized or not.

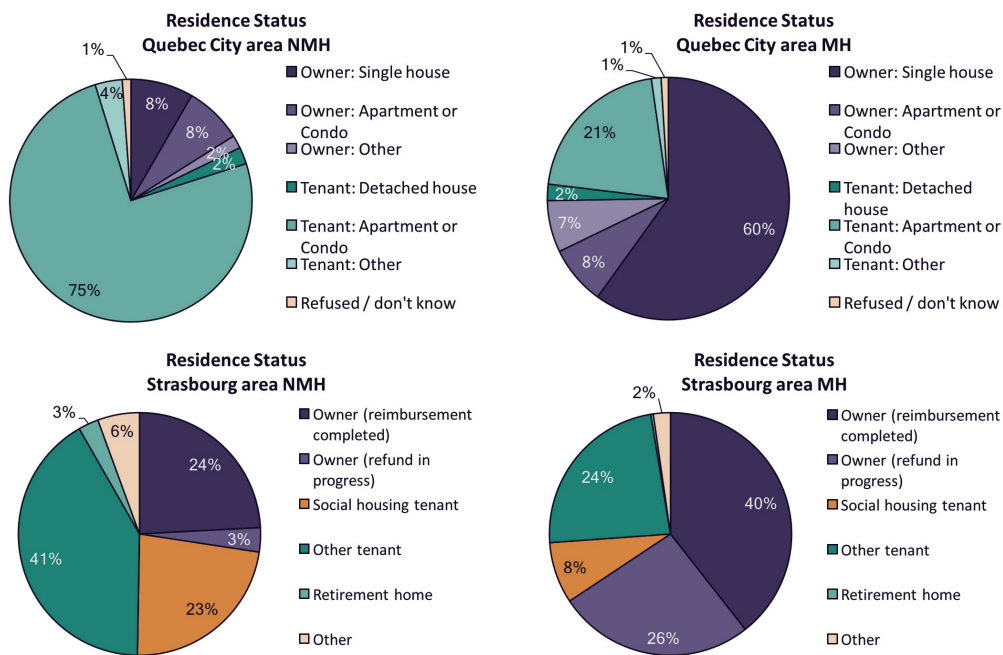


Figure 6:3 Residence Ownership Status Comparison - OD Data NMH vs MH

6.1.1.4 Other Household Statistics Available Only for the Strasbourg Area

The Strasbourg area OD survey data also contained some opinion questions for each household representatives while the Quebec City OD data did not contain any such questions. I present three interesting data points from the survey on respondents' perception of their residential habitat, the transit supply at their residential location and the role of that transit supply in their decision to reside there.

6.1.1.4.1 Type of Residential Habitat

The two types of households show a few differences in their typical habitat (see Figure 6:4). For example, households that own a car, are more numerous to live in single-home developments which are often less accessible by alternative transport modes. Furthermore, probably due lower revenue and smaller household size, a greater share of the NMH live in large residential complex.

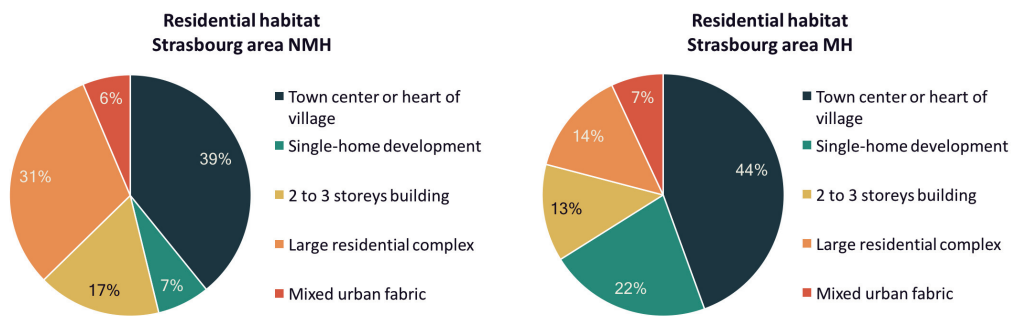


Figure 6:4 Residential Habitat Comparison - Strasbourg Area OD NMH vs MH

6.1.1.4.2 Opinion on the Public Transit Supply at the Place of Residence

The comparison between household representative’s opinion of the transit supply near their home (see Figure 6:5) shows that a greater proportion of the NMH believe there is a good transit supply near their residence with 76% of NMH finding an attractive or very attractive transit supply nearby while only 56% of MH share that opinion.

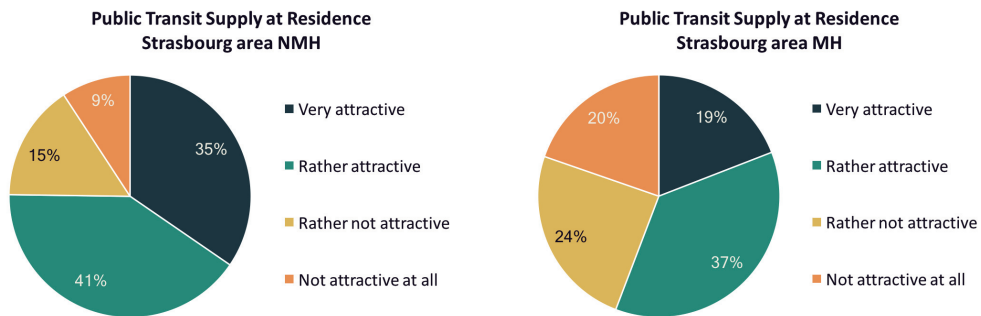


Figure 6:5 Public Transit Supply at Residence Comparison - Strasbourg Area OD NMH vs MH

6.1.1.4.3 Role of Transit Supply in Residential Location Choice

Directly following the last question, OD survey respondents were asked if the transit supply near their home played a role in their residential location choice (see Figure 6:6). Almost twice as many respondents from NMH expressed that the transit supply had a determining role in their residential location choice. Respondents from MH were 18 percentage point more to express that the transit supply played no role at all in their residential location choice compared to respondents from NMH.

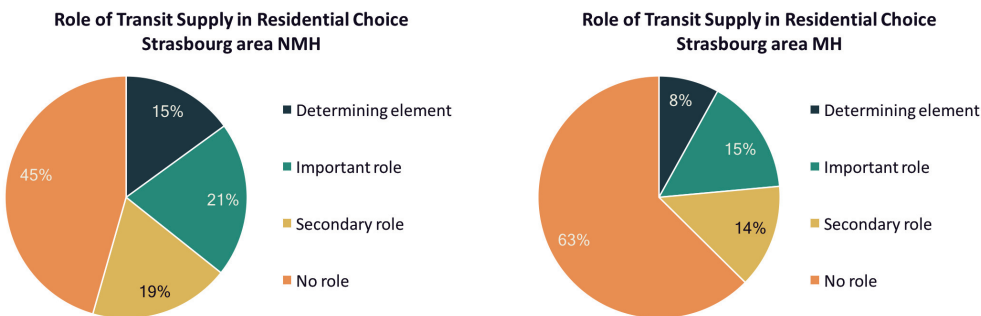


Figure 6:6 Role of Transit Supply at Residence Comparison - Strasbourg Area OD NMH vs MH

6.1.2 Comparison of Individuals Statistics NMH vs MH

Both sets of OD data also contained individual demographic information. In this section I compare this information between NMH and MH across the two urban areas. I present data on the gender of individuals, their age, their work status, their driver licence status, whether or not they had a transit pass and if they telecommuted.

6.1.2.1 Gender of Individuals NMH vs MH

The comparison of the gender of members of NMH and MH (see Figure 6:7) shows that while MH gender distribution follows the general population gender distribution of close to half to each gender, the situation is quite different from parity for NMH. In both urban areas, women are over represented amongst the motorless. This is slightly more so in the Quebec City urban area.

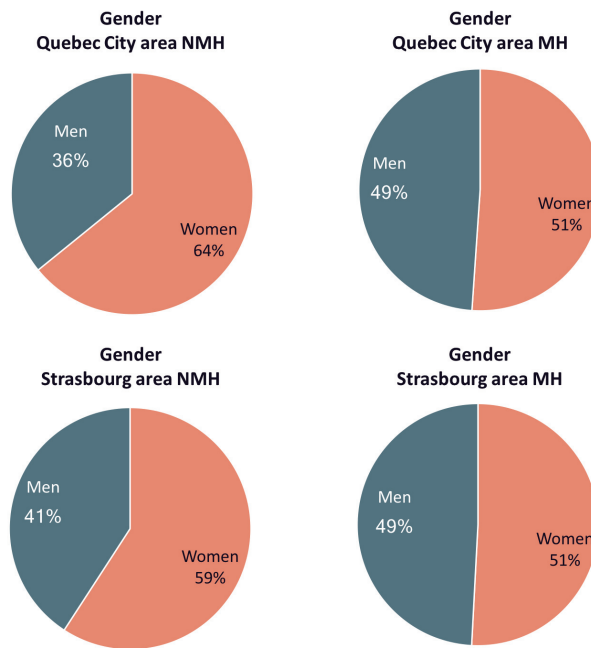


Figure 6:7 Gender of Individuals - OD Data NMH vs MH

6.1.2.2 Age of the Population NMH vs MH

The Strasbourg area OD data not contain age or birthdate data and therefore could not be included in this comparison. However, comparing the age distribution between NMH and MH in the Quebec City area (see Figure 6:8) reveals interesting differences that combined with the gender data can explain the household size difference disclosed in section 6.1.1.1 on p. 346. It is observed that the NMH population is quite older than the MH population. For example, 38% of the NMH population were seniors while only 15% of MH population were 65 or older. This age factor and the fact that the NMH population contains more women (who have a longer lifespan than men in both countries) can help explain the observed smaller household size.

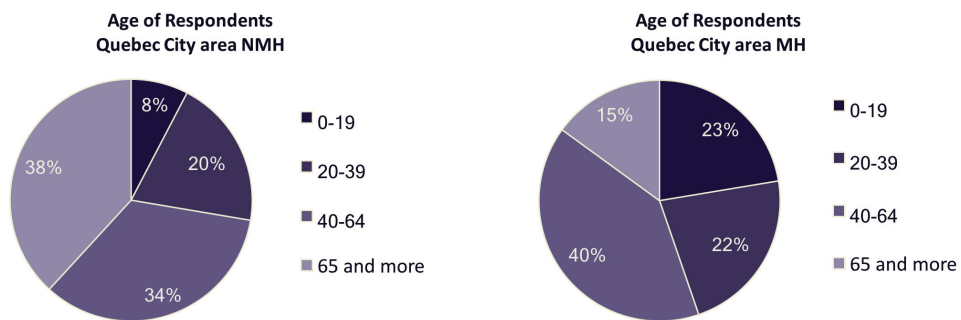


Figure 6:8 Age of the Population - Quebec City Area OD NMH vs MH

6.1.2.3 Work Status Comparison of Individuals NMH vs MH

When comparing the work status of the OD survey population (see Figure 6:9), it appears that the employment status of MH is very similar across the two urban areas. However, many differences appear when comparing between NMH and MH in each urban area. For instance, the share of the NMH population actively employed is much less than the share for the MH population, in both urban areas. While in the Quebec City area 48% and in the Strasbourg area 47% of the MH population is employed, the numbers are noticeably lower for NMH: 30% for the Quebec City area and 23% for the Strasbourg area. In both cases the NMH population contains a lot more retirees: 45% of the NMH population in the Quebec City area and 32% of the NMH population in the Strasbourg area. Finally, the Quebec City area NMH population contains fewer students (11%) than the MH population (20%) while in the Strasbourg area the situation is reversed.

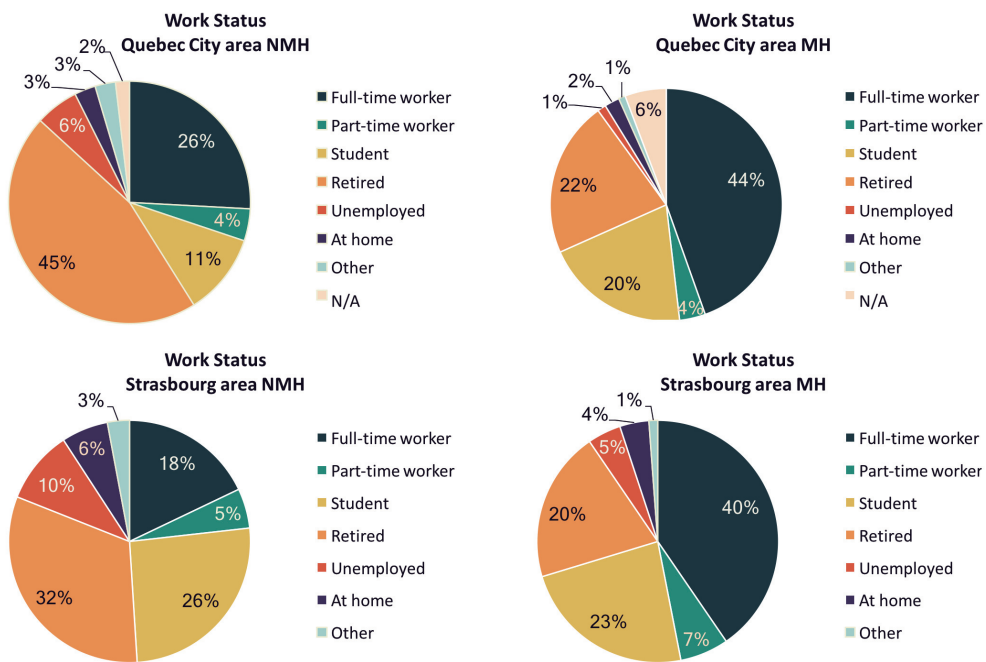


Figure 6:9 Work Status of the Population - OD Data NMH vs MH

6.1.2.4 Driver Licence Status Comparison of Individuals NMH vs MH

As expected the comparison of the possession of a driver licence between the population from NMH and the population (see Figure 6:10) illustrates the fact that a majority of the NMH population in both urban area do not have a driver licence as opposed to a large majority of the MH population having one. In both cases, the data only takes into account the population over the age required to have the right to drive. In relation to all the other findings pointing to a greater car dependence in the Quebec City area than the Strasbourg area discussed in the previous chapter, the fact that 93% of the MH population has a driver licence in the Quebec City area compared to 72% for the Strasbourg area is revealing of a potentially greater need for the licence in that area. Although I must note that acquiring a driver licence is less expensive in Canada than it is in France.

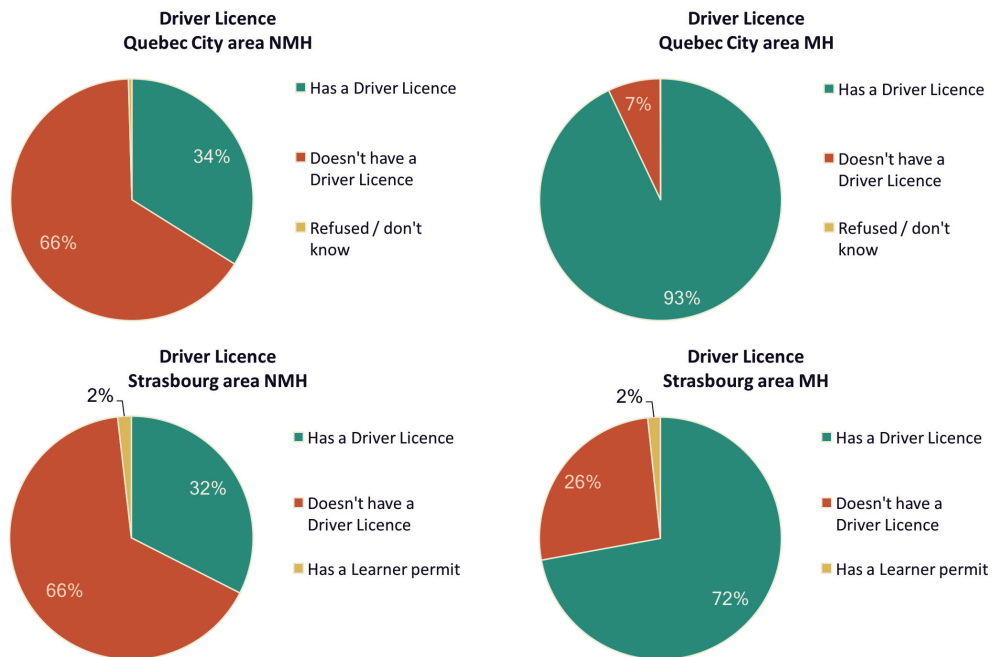


Figure 6:10 Driver Licence Status of the Population - OD Data NMH vs MH

6.1.2.5 Public Transit Pass Status Comparison of Individuals NMH vs MH

Similar to the mode share findings which showed bus use was much higher for the Quebec City area NMH, the comparison of public transit pass ownership (see Figure 6:11) was more significant for that group (51%) than any other. The more limited recourse to active mobility by the Quebec City NMH population can also be accredited to this finding. Nevertheless, in both urban areas, the share of public transit pass ownership was significantly higher in the NMH population than in the MH population.

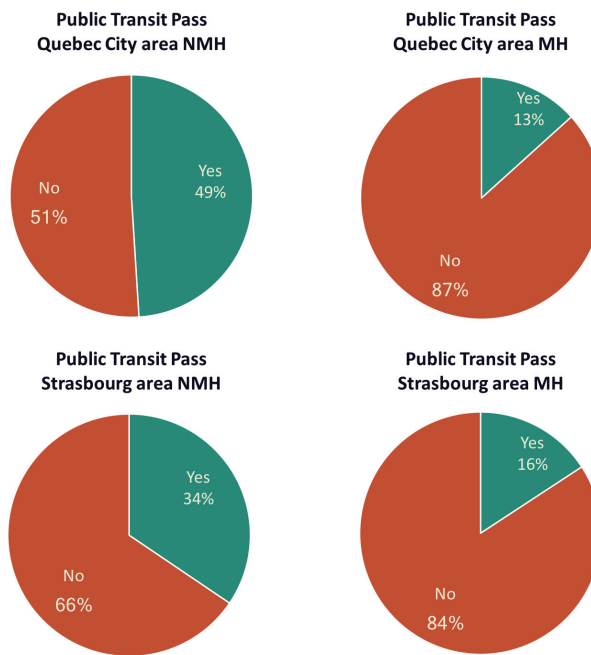


Figure 6:11 Public Transit Pass Status of the Population - OD Data NMH vs MH

6.1.2.6 Telecommuting Status Comparison of Individuals NMH vs MH

The comparison of telecommuting between the two household motorization status (see Figure 6:12) and the two urban areas does not reveal any significant differences.

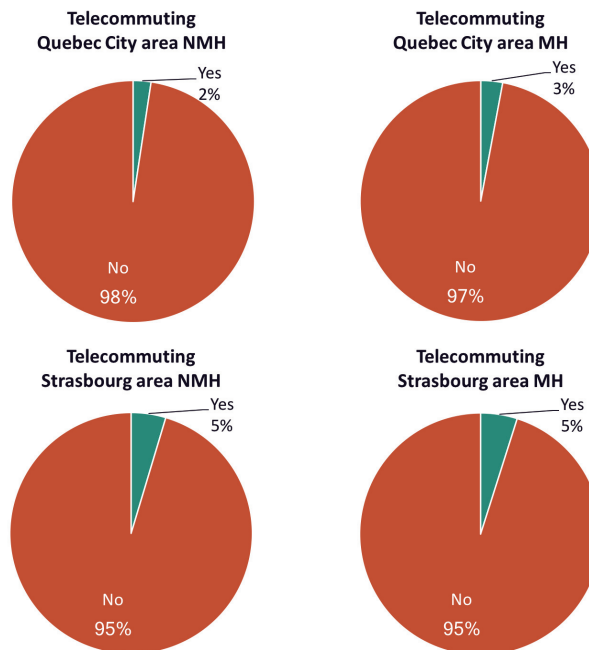


Figure 6:12 Telecommuting Status of the Population - OD Data NMH vs MH

6.2 Bottom-Up: Reasons for Not Having a Car

At the beginning of the discussion with the non-motorized household (NMH) participants, I explored the reasons why they did not have a car. This part of the interview was related to answering my sub-question about the reasons for not having a car¹⁷⁰. For most respondents, there were multiple reasons that could be categorized as either: economical, logistical, or ideological. For some it was not practical to own a car, and for others it was because they simply wanted to get rid of the burden of having a car, such as parking and maintenance issues. The word network in Figure 6:13 shows the results of the IRaMuTeQ similarities analysis. I notice three main clusters, the 'car' being at the centre of the network, the verb 'going' having its own cluster with alternative modes and the last blob being around the word 'city'.

The descending hierarchical analysis generated the dendrogram in Figure 6:14, which is divided into four classes. Class 1 relates the fact that some households became non-

¹⁷⁰ See section 3.1 Why is a Household Motorless? on p. 105.

motorized because of the possibility of getting to where they needed with active mobility. This was strongly correlated with being from the middle revenue group. Class 3 relates to multiple economic reasons for choosing not to own a car. Interestingly, this was correlated with being from the modest revenue group. Class 4 contains diverse reasons related to the residential location which enabled getting rid of the car without great worry about transport issues. This class of discourse was associated with men. Finally, class 2 relates the possibility of relying on the car-sharing system, granting NMH the possibility to still access a car in order to drive to otherwise inaccessible destinations while foregoing owning a car. This was associated with respondents from the Strasbourg urban area; respondents from single-parent households; and women.

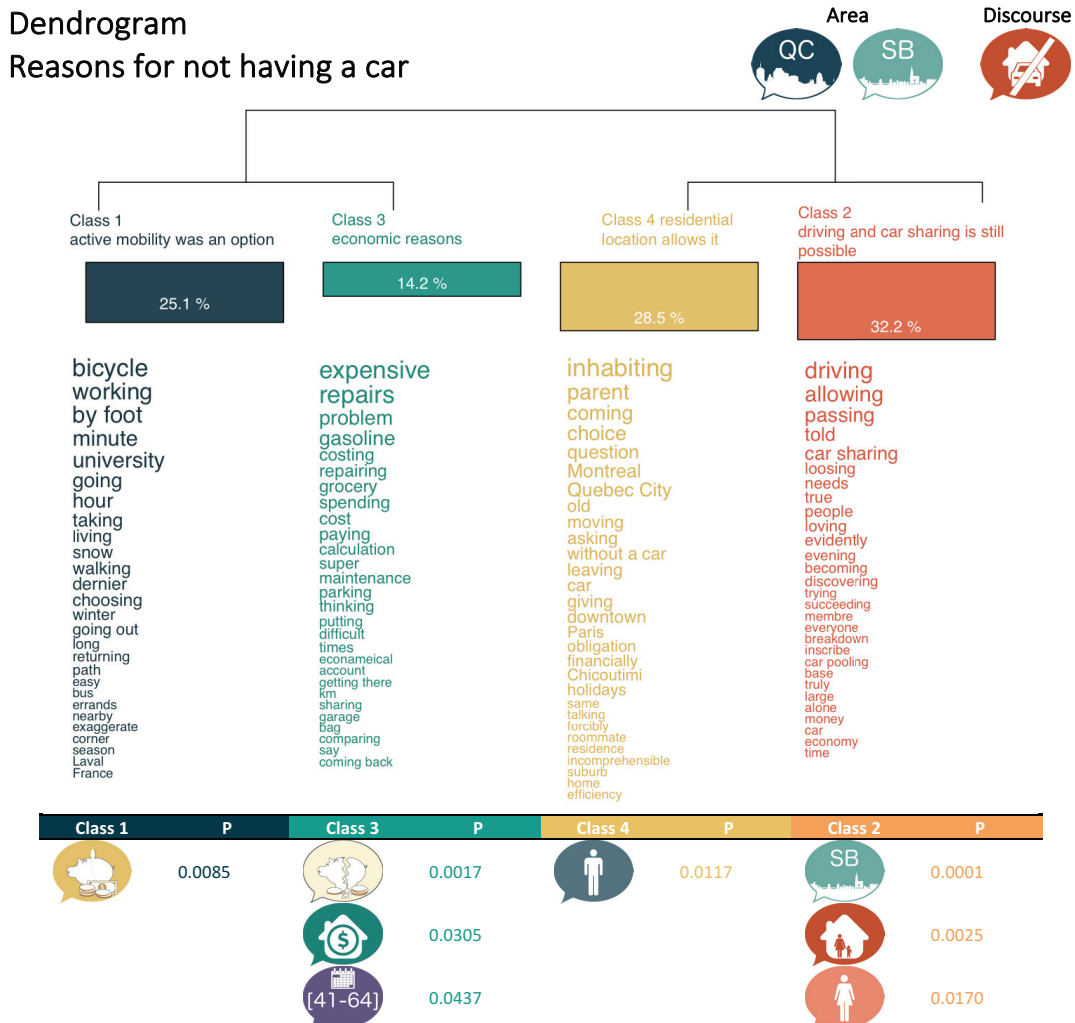


Figure 6:14 Dendrogram - Reasons Why NMH Don't Own a Car

Based on the words identified for each class, IRaMuTeQ provides a functionality to extract a representative segment for each class being typical of the segments forming the class. In the following paragraphs, I provide a characteristic segment for each class of the dendrogram.

As shown in the section discussing their modal share in comparison to motorized households¹⁷¹, active mobility is an important mode of transport for NMH, and therefore is an important part of the reasons NMH give for not having a car. Furthermore, the comparison of driver license ownership between NMH and MH shows that a much larger

¹⁷¹ See section o on p. 182.

proportion of NMH individuals do not have a driver licence, raising the importance for them of active modes of transport¹⁷².

Text segment characteristic of class 1:

I used it [my car] on weekends to go out, to go do some errands, but the rest of the time living downtown I used more my bike and public transport than the car actually...

(247-M) Martin, 36 - Strasbourg (Gare) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Even though this class is the smallest, with only 14.2% of the total discourse, economic issues and the financial burden of car ownership also enters the justifications for NMH to forgo car ownership. Considering that the demographics analysis of NMH compared to MH households revealed a group with less important revenue on average, the fact that economic issues represents a separate class of discourse makes sense. Indeed, as demonstrated in section 6.1.1.2 on p. 347 in both urban areas, the modest revenue group represents a much bigger share of NMH than of MH and the reverse is true for the affluent revenue group, connecting economic hardships with some of the reasons for remaining motorless.

Text segment characteristic of class 3:

Also for economic reasons because it is still very expensive a car, paying maintenance, etc. But precisely while people can very well imagine my disadvantages [of not owning a car] but they do not realize that they...

(341-W) Naomi, 38 - Strasbourg (Wihrel) - Revenue level: Intermediate - Household type: Single parent family - Household size: 3 persons - Car-sharing: Yes - Feels socially excluded.

Residential location, although not always a choice, has an important impact on accessibility and mobility as explored in the vast literature on spatial mismatch in North America (Apparicio et al., 2014; Aubin-Beaulieu et al., 2013; Fan, 2012; Gobillon, Selod, & Zenou, 2007; Horner & Mefford, 2007; Ong & Miller, 2005; Taylor & Ong, 1995), and additionally in Europe: (Cavaco & Lesueur, 2004; Fieldhouse, 1999; Gaschet & Gaussier, 2010; Nicolas et al., 2012; Patacchini & Zenou, 2005; Thisse & Zenou, 1995). The NMH respondents make reference to their residential location as either a deterrent or an incentive to remain

¹⁷² See section 6.1.2.4 on p. 354.

motorless. Furthermore, as discussed previously on section 6.1.1.4.3 on p. 350, access to alternative mobility, in the form of public transit supply near the residence plays a more important role on residential choice for NMH than it does for MH.

Text segment characteristic of class 4:

The only real regret I had was that I have friends who live in the countryside and I have family who lives in Montreal and for long-distance trips in the province of Quebec when you don't have a car it is extremely complicated.

(88-M) Philippe, 38 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

Finally, not having a driver licence and either not wanting to get one or nor being able to afford one is also an important factor. This again relates to the much larger share of individuals in NMH who do not have a driver licence when compared to MH as discussed in section 6.1.2.4 on p. 354.

Text segment characteristic of class 2:

So, it happened in March 2012, my son still had the time to pass his driving licence with the car, to train and everything and then it broke down and we did not repair it.

(326-W) France, 51 - Strasbourg (Les Quinzes) - Revenue level: Intermediate - Household type: Single parent family - Household size: 4 persons - Car-sharing: Yes - Doesn't feel socially excluded.

6.2.1 Reasons for Not Owning a Car by Urban Area

When examining the reason for car ownership between the two urban areas (see Figure 6:15), some differences appear. For example, in the Quebec City area, the nearby presence of a ‘grocery’ store (factor: 4.4) is an enabling factor. The harsher winter climate has influenced the relative importance of this necessity facilities being in proximity. The easy accessibility of the ‘university’ (factor: 4.4) campus by public transit and active modes also helped students and assistants working there from feeling that they must have a car. In Strasbourg, the availability of car ‘rental’ (factor: 2.6) and ‘car-sharing’ (factor: 1) played a role in allowing NMH to imagine their future without car ownership. This result is related to the fact that people in the affluent revenue groups, which represent a greater share of respondents in the Strasbourg area rely on these modes as enablers of their motorless “lifestyle”.



Figure 6:15 Specific Discourse About Reasons for not Having a Car by Urban Area

Having a grocery store in proximity to the residence or the work location appears to be an important aspect for NMH in the Quebec City area compared to Strasbourg. Without any actual data on the territorial distribution of groceries and supermarket between the two area, this is challenging to interpret. With such data, I could confirm my apprehension, but from my experience during the field works, living in the area, without a car for a few weeks, I believe that there is a much wider distribution of smaller food stores in the Strasbourg urban area compared to a more dispersed distribution or large supermarkets in the Quebec City area. This could explain the difference and the fact that Yvon in the sample quote below thought important to mention this as part of his reason for not having a car.

Text segment characteristic of Quebec City urban area discussion:

Then finally I saw that there is next door that is to say that we have the **grocery** store, one can make their errands there, finally we are not going to talk about brands, but we can go shopping next door...

(147-M) Yvon, 32 - Quebec City area (St-Jean-Baptiste) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Doesn't feel socially excluded.

The quote from Yvon is representative of the NMH respondents in the Quebec City area that more likely mention car-sharing or renting a car. Two factors can explain this result: 1) as discussed previously, the Quebec City area sample of NMH contains about twice as many transit pass holders than the sample from the Strasbourg area¹⁷³. There was also a larger share of the Quebec City area NMH than the Strasbourg NMH owning a transit pass when comparing the data from the OD survey¹⁷⁴ showing a greater reliance on collective motorized transport in the Quebec City urban area. 2) The Strasbourg area sample contained more affluent respondents and more respondents from the intermediate revenue level than the Quebec City area sample which contained a larger share of modest respondents. Seeing the relatively high price of car rental and car-sharing, this can also be a factor to explain this difference in the importance of those modes between the two urban areas.

Text segment characteristic of Strasbourg area:

On the other hand, we are members of the **Citiz car-sharing** system which is very good and when you have to make longer distance, we **rent cars**

(384-M) Gustave, 36 - Strasbourg area (La Robertsau) - Revenue level: Affluent - Household type: Family - Household size: 3 persons - Car-sharing: Yes - Doesn't feel socially excluded.

¹⁷³ See Figure 4:20 and Figure 4:21 on p. 132.

¹⁷⁴ See section 6.1.2.5 Public Transit Pass Status Comparison of Individuals NMH vs MH on p. 355.

6.2.2 Reasons for Not Owning a Car by Gender

When comparing the answers of women and men (see Figure 6:16), some specific words emerge, but words alone can sometimes hide the meaning in the original context. For example, the word ‘driving’ specific to women (factor: 4.3) does not mean that women miss driving or rely more on driving rental cars or car-sharing vehicles. In actuality, women most often used the word ‘driving’ (factor: 4.3) either to say they disliked driving, because it was too stressful, or they never drove for lack of driving licence. For women residential location, in the form of the French word “habiter” that I translated to ‘inhabit’ (factor: 1.8), maybe improperly. Men discussed the purchase (buying, factor of 4.4) of their previous car more than women which is the main reason this is the most specific word for men. The second most popular word for men was ‘spring’ (factor: 3.6) as it seems that this is the time of the year men finally decide to let go of the car and starting using the bicycle for their daily mobility. Men also appeared to care more about the ‘repair’ (factor: 2.5) costs as a reason to finally forego the car.



Figure 6:16 Specific Discourse About Reasons for not Having a Car by Gender

Text segment characteristic of women:

I would say that when I went to learn to **drive**, because I still tried to do it awhile, that I had, it's a little more personal, but I did not really like **driving** that stressed me a lot.

(111-W) Nadine, 27 - Quebec City area (St-Sauveur) - Revenue level: Modest - Household type: Roommates - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

Text segment characteristic of men:

But we wondered whether we should buy a second-hand [car] because we did not want to spend too much money but who says used cars also says **repairs**. It is a vicious circle another form of a vicious circle.

(289-M) Gervais, 43 - Strasbourg (Schiltigheim) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

6.2.3 Reasons for Not Owning a Car by the Feeling of Being Socially Excluded or Not

I also analyzed the discussion based on the differences in the answers of those who did not feel socially excluded related to their mobility and those who did (see Figure 6:17). Other than the fact that distance travelled and price per kilometre ratio seem to matter a lot to those not feeling socially excluded, as the word 'kilometre' (factor: 4.1) was with the word 'renting' (*ex aequo*) as the most specific word for this group. The habit of 'renting' (factor: 4.1) a car for long trips far from home, even while still owning a car (often times due to the bad state of repair of the car they owned), or the ability to rely on rental after the fact played a part in the decision-making of those not feeling excluded socially. The regional 'trains' (factor: 2.2) in Alsace (Strasbourg urban area) also played a role in enabling NMH not to feel excluded, doing the same kinds of leisure trips than the rest of the population. The issue of finding solutions to the making of 'errands' (factor: 1.9) was also significant for this group.

For people feeling socially excluded, the most frequent specific word was the 'bus' (factor: 3.7). This is in part related to the higher number of participants feeling socially excluded in the Quebec City urban area where the bus is the only transit system available and the policy has a strong focus on this mode of transport for NMH. The sample demonstrates the role that the bus plays. But the second most specific word, 'difficult' (factor: 2.7) is also quite significant. The people feeling socially excluded face some difficulties that probably play a role in the feeling. 'Money' (factor: 1.7) is also often at cause for not being motorized.

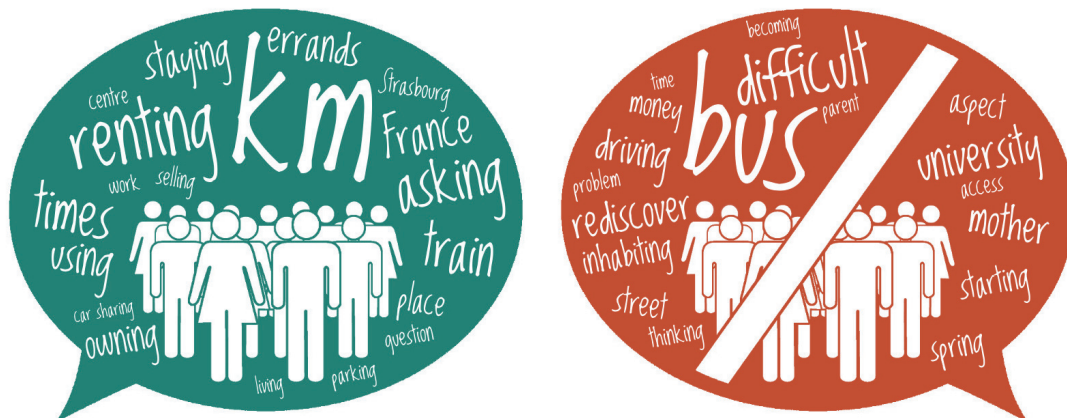


Figure 6:17 Specific Discourse About Reasons for not Having a Car by the Feeling of Social Exclusion

I include many sample quote from NMH not feeling socially excluded because they reveal important aspects that can work to prevent the feeling of social exclusion. I note the importance of regional public transport, the role played by rental cars and car-sharing in enabling demotorization for those not feeling socially excluded, as well as the availability of proximity shopping.

For example, Béatrice reveals the importance of regional public transit that makes the countryside accessible to NMH in Alsace:

In fact, we discovered a lot of things for the people who do not have a car, that is to say public transport that takes us even in the Alsatian countryside, the **trains!**

(226-W) Béatrice, 38 - Strasbourg (Place de Haguenau) - Revenue level: Intermediate - Household type: Family - Household size: 3 persons - Car-sharing: No - Doesn't feel socially excluded.

Car rental, allowing to get the specific vehicle for the specific situation appears important for many NMH who do not feel excluded. Of course, someone in the household must have a driver licence to avail this opportunity but it was a recurring theme:

Yeah, we like to **rent** a nine-place car for precisely just without a back seat for when we go to IKEA and we will buy mattresses, etc. we always **rent** the type of car we need eh!

(359-M) Loïc, 34 - Strasbourg (Hypercentre) - Revenue level: Intermediate - Household type: Family - Household size: 6 persons - Car-sharing: Yes - Doesn't feel socially excluded.

The availability of stores, especially grocery stores, within walking distance of the home was an important enabling factor for many households not feeling mobility-related social exclusion.

I went to do my **errands** on foot, I bought myself a small cart and I realized that it was really doable yeah.

(326-W) France, 51 - Strasbourg (Les Quinzes) - Revenue level: Intermediate - Household type: Single parent family - Household size: 4 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Just like car rental enabled some to feel like they are not completely out of the car system and automobility, thus enabling accessibility to places outside the reach of alternative mobility modes, car-sharing was often mentioned by NMH in their reason for being able to leave their car, especially those not feeling socially excluded like Pauline in this quote:

It is exactly because I lived in the neighbourhood here, then there is car-sharing. If I had not seen the alternative of car-sharing, then I'm not sure I would have gotten rid of it [my car] for example because the car-sharing it very much made me say to myself, "look I'll still be able to go out when I want".

(155-W) Pauline, 65 - Quebec City area (Faubourg St-Jean) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

Conversely, some explanations for not having a car were only related by participants from NMH feeling socially excluded in relation to their mobility. For example, the bus was often mentioned by those as in the example of Stéphanie below. With its limited territorial accessibility, time restrictions and varying frequency, the negatives aspects of relying only on the bus, especially in the Quebec City area was most often mentioned as an enabling alternative to owning a car by those feeling socially excluded. This does not mean that the bus leads to social exclusion, rather it is more the lack of access to other alternatives motorized mobility, rendered necessary for regional accessibility by car dependence and its vicious cycle that results in the feeling of social exclusion.

I don't have the means to have a car, I depend on the others or the bus, I take the bus from time to time. I wait after the bus, often I wait after the others, I wait all the time...

(54-W) Stéphanie, 74 - Quebec City area (Notre-Dame des Laurentides) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

NMH participants, feeling socially excluded mentioned having to deal with difficulties more often than those not feeling socially excluded when explaining the reason why they do not have a car. This can be related to their modest revenue as some of the difficulties mentioned had to do with finding the money to pay for things like car maintenance as in this quote from Tobias:

It was, it was getting **difficult**, there I noticed I've never been, I've never felt as poor as when I bought a car.

(195-M) Tobias, 37 - Quebec City area (Vieux Québec) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

The complexities of accessing some area with public transit also had a tendency to make things difficult for NMH and makes them somewhat nostalgic for less difficult time when they had a car as in this example from Martine:

[...] I found it **difficult** because I told myself my god was that easier when we had the car than when we were in public transit and even today I tell myself how I can find a way to go to...

(176-W) Martine, 55 - Quebec City area (Montcalm) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

For other participants who felt socially excluded because of their mobility, the difficulty is associated with the transition from having a car in the household to not having one anymore. As we can see in the following example from Élise, in a car dependent area where the territory is planned, organized, and designed for car mobility, becoming motorless can be a confusing and difficult time :

It was five years ago. The transition was very **difficult**. I felt alone, I felt lost, I felt in a questioning state, how I will make do? There is nothing familiar anymore, no usual land marks and wayfinding.

(227-W) Élise, 56 - Strasbourg (Port du Rhin) - Revenue level: Modest - Household type: Single parent family - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

The lack of financial means was often identified as an explanation for being without a car. This is not surprising once again considering the surplus of modest revenue household in the non-authorized group according to the OD survey data¹⁷⁵. As with other studies, poverty is also related to social exclusion. Studies in French: (Fréchet & Lanctôt, 2003; Gagnon & Saillant, 2009; Morel, 2003; Outin, 2003) and in English (Barry, 1998; Clifton, 2003; Gordon et al., 2000; Hodgson & Turner, 2003; Jeekel, 2014; Kintrea & Atkinson, 2001; Levitas et al., 2007; Lucas, 2011; Özkazanç & Özdemir Sönmez, 2017; Páez, Mercado, Farber, Morency, &

¹⁷⁵ See section 6.1.1.2 Comparison of Revenue Levels NMH vs MH on p. 347.

Roorda, 2009) have addressed the association between the two. The sample below from Jack who feels socially excluded illustrates the issue:

And then I did not have any **money** to buy a car when I came to Quebec City, so I started a car-free lifestyle by obligation at the start and then finally it stayed like that...

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

For many NMH respondents who felt socially excluded, not having a driver licence and being averse to driving was a common reason for being non-motorized as characterized by the quote from Mélanie below:

I have never had one [a car], I have my **driver's licence** but I hate to **drive**, particularly at rush hour, there you know I did not own one, but with my ex we had a vehicle that I could use myself. I hated using it, there you are.

(194-W) Mélanie, 35 - Quebec City area (La Cité) - Revenue level: Modest - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

6.2.4 Reasons for Not Owning a Car by Membership in the Car-Sharing

Using the specificities analysis of IRaMuTeQ, I analyzed the answers based on membership in the car-sharing system to see if it was part of the motivations. Effectively, ‘car-sharing’ (factor: 6.7) was the number one lemme for members of the system in both urban areas, showing the important role that the potential membership can play in these households’ decision to go motorless. This is also linked with the specific advantage of car-sharing versus car owning, not needing to worry or pay for ‘maintenance’ (factor: 2.1) of the vehicle.

For those who are not members of the system, the most specific word associated with becoming carless is ‘rediscovery’ (factor: 4) of their city, the ‘bicycle’ as a mode of transport, of their surroundings. What was concerning them the most was ‘grocery’ (factor: 3.7) shopping and some of them still experience difficulties with this. The third most specific word is ‘difficult’ (factor: 3.4) attesting that there is an added level of difficulty felt by non-members of the car-sharing system. They also mentioned more often other motorized modes (‘train’, factor of 3.1 and ‘bus’, factor of 2.4).



Figure 6:18 Specific Discourse About Reasons for not Having a Car by Membership in the Car-Sharing System

As Moïse and others mentioned the car-sharing systems played a role in the decision to no longer own a car for the household:

Since 2005 it will be nine years, it was at the end of the lease when we handed the car back to the dealership and then we said we will try to do with car-sharing ... to replace ... a car-sharing service to replace the car.

(66-M) Moise, 40 - Quebec City area (St-Jean-Baptiste) - Revenue level: Intermediate - Household type: Family - Household size: 6 persons - Car-sharing: Yes - Doesn't feel socially excluded.

In particular, members of the car-sharing system from the NMH respondents felt freed from many concerns with car ownership like repairs and maintenance:

I realized that possessing a car was still much more inconvenient than what one believes when one actually possesses it, that is to say, the concerns with its maintenance, and sometimes unforeseen expenses.

(247-M) Martin, 36 - Strasbourg (Gare) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Respondents whose household was not member of the car-sharing were more likely to report having difficulties either as reason for not having a car or as a consequence of getting rid of the one they previously own as the following examples demonstrate.

[...] yes, there are things that I found difficult because regarding the grocery stores, things like that...

(176-W) Martine, 55 - Quebec City area (Montcalm) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Although the transition from car ownership to no car ownership appears more difficult for those not members of the car-sharing system, all is not bleak. The lack of access to individual motorized transport did enable the rediscovery of active mobility, something which is felt positively by the respondents as characterized by the answers of Rose and Maxime:

Yes *difficult, difficult* because, well yes and no I was glad to go to discover to *rediscover* the city on foot, I liked it.

(213-W) Rose, 60 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

I took the bike and then it was spring it was nice out, but I *rediscovered* this mode of transport and I say good maybe ... before also I found that my daily use of the car before was uh, ridiculous.

(243-M) Maxime, 35 - Strasbourg (Contarde) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Another mode was reportedly rediscovered, in particular by NMH respondents not members of the car-sharing system, the train. This somewhat expensive mode of transport appeared more affordable when the cost of car ownership were removed from the household mobility budget as explained by Tobias:

Then I started taking the *train* a lot more and I saw that I have never travelled so much since I was driving, because I had more money to travel.

(195-M) Tobias, 37 - Quebec City area (Vieux Québec) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Later on, in the conversation, Tobias, the same NMH participant in the Quebec City area talks about the train again, but interestingly he points out that when he had a car, the train did not seem to be an option, the car was the only logical choice for him since he was already paying for the upkeep and ownership of the car, relating to the car as a habit¹⁷⁶ or the car as an addiction¹⁷⁷ model of car dependence presented in chapter 2:

¹⁷⁶ See section 2.2.3.4 Habits and Behaviours – A Car Dependent Lifestyle on p. 45.

¹⁷⁷ See section 2.2.3.5 Addiction to the Car on p. 47

Then there is another thing, also when I did not have a car, I often took the train Toronto-Montreal, Toronto-Quebec City then some time, when I had a car, sometimes I was saying ah it's a shame I cannot take the train.

(195-M) Tobias, 37 - Quebec City area (Vieux Québec) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

6.2.5 Reasons for Not Owning a Car by Revenue Levels

When using a specificities analysis based on the three revenue level groups, the answers also show the various motivations unique to each group (see Figure 6:19). For example, the modest revenue group specifically discussed issues with car 'maintenance', 'parking', 'parking lot', 'difficulties' and 'money'. They also referred most often to 'public transit' as a mode enabling them. The middle revenue level was the most often referring to active modes, but also the 'train' and the 'bus'. Finally, the most affluent revenue group specifically referred to 'car-sharing'.



Figure 6:19 Dendrogram - Reasons for Not Having a Car By Revenue Level

Text segment characteristic of the modest revenue group:

There has never been more than one in our household, moreover she was showing of the signs of old age and I had a **maintenance** that cost me quite expensive and I said to myself the next time I won't **repair** it anymore.

(326-W) France, 51 - Strasbourg area (Les Quinzes) - Revenue level: Intermediate - Household type: Single parent family - Household size: 4 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Text segment characteristic of the middle revenue group:

I was already doing it, so that even when I ended up without a car, it did not really bother me even though I have a lot to do at the community centre, very often. When the weather is nice it takes me like twenty minutes, 22 minutes pretty much **by foot**.

(152-W) Thérèse, 64 - Quebec City area (Chaudière Ouest) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Doesn't feel socially excluded.

Text segment characteristic of affluent revenue group:

What replaced this recourse is **car-sharing** because at one point I had an obligation that led me to say that I had to make, that I had a trip let's say two trips per month impossible without a car.

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

The negative specificities analysis (see Figure 6:20) also provided a compelling insight into the difference between the revenue groups as it relates to their reasons for not having a car in the household, adding to the positive specificities analysis. I note for example that respondents from the modest revenue groups avoiding the words 'car-sharing' and 'renting' attesting to these solutions lack of applicability for this group. The affluent group also significantly avoided the words 'bus', 'difficult' and 'repair', attesting that maintenance cost is not a problem for those households.



Figure 6:20 Dendrogram - Reasons for Not Having a Car by Revenue Level - Words Avoided

6.3 Bottom-Up: Living Without a Car - Choice or Constraint?

Delbosc & Currie (2012) studied the importance of choosing or being forced to reduce the number of cars in a household. They did not study NMH but rather MH that reduced their number of owner cars but they found that this question was important to the well-being of the household:

households that have been forced into low-car ownership will face barriers to access which will in turn create negative impacts on their well-being and integration into society. In contrast, households that choose low-car ownership will not face these same barriers and will not face as many negative consequences (ibid., p. 8).

I also wanted to address this question in order to formulate a more complete answer to my sub research question about why NMH are not motorized¹⁷⁸. In order to find out if not having a car was a choice or a constraint for the households, I asked the participants to describe their situation using a scale between 0-10. Figure 6:21 show the overall results¹⁷⁹. Based on the small samples no significant differences exist as shown in Figure 6:22 regrouping the answers by urban area. In both areas, the reasons for not having a car are constrains for close to one quarter of participants¹⁸⁰. These results are not generalizable to the entire urban area and only represents the findings for the sample of NMH respondents I met in each area. Further research using a more representative sample would be necessary in order to confirm these findings.

Not Having a Car, Choice or Constraint?
NMH Respondents

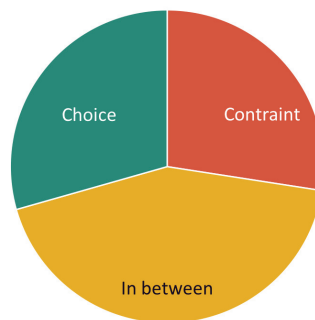
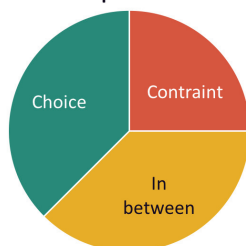


Figure 6:21 Choice or Constraints for Not Having a Car in Overall NMH Sample

Not Having a Car, Choice or
Constraint?
Quebec City area NMH
Respondents



Not Having a Car, Choice or
Constraint?
Strasbourg area NMH
Respdents

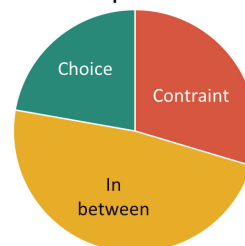


Figure 6:22 Choice or Constraints for Not Having a Car per Urban Area

¹⁷⁸ See section 3.2 How Do Non-Motorized Households Cope With the Absence of a Car for Their Daily Mobility? on p. 106.

¹⁷⁹ As was the case in previous sections showing results from the NMH participants on demographic information alone, I must remind the reader of the small sample size of only 57 individuals as basis for this analysis. Because of this, the graphics do not contain any specific value but are to be taken as a general overview.

¹⁸⁰ Here as well the sample on which the analysis is based is small. 30 individuals for the Quebec City area and 27 individuals for the Strasbourg area.

This discussion was based on a close-ended question, which generated only very short replies and as a result prevented any conclusive IRaMuTeQ analysis because of the small corpus generated by the answers. Nonetheless, the specificities analysis (see Figure 6:23) using the three choices or constraint groups shows interesting results. For example, the constrained group was most likely to discuss renting a 'car' (factor: 1.6) or mentioning specific 'costs' (factor: 1.2). The group of people which were closer to the middle, are the only ones specifically mentioning transport modes other than the car ('bus', factor of 1.3; 'bicycle', factor of 0.6; 'car-sharing', factor of 0.5). The participants for whom it was a choice had the 'choice' (factor: 0.6) of 'going' (factor: 3.1) with a 'car' (factor: 0.6).



Figure 6:23 NMH Participants Discourse on Not Having a Car by Choice or Constraints

6.4 Bottom-Up: Daily Mobility of NMH

I have already looked at the daily mobility in the previous chapter, from the point of view of the OD survey data which provided a quantitative point of view describing the mobility of NMH versus MH. In this section I present what was found using the discourse analysis of

the interview material from NMH regarding their daily mobility. A qualitative understanding of NMH participants' feeling towards their daily mobility assists in establishing a complete response to my sub-question about how NMH cope with their limited accessibility¹⁸¹.

6.4.1 Bottom-Up: Daily Mobility Discourse of NMH

The discourse about daily mobility contains five classes of discourse (see Figure 6:24). The first class relates to making long-distance trips, involving for example the 'train' and the 'airplane' as modes of transport. It is strongly associated with living in the Strasbourg area and not feeling socially excluded. The association of this class with the Strasbourg area can be explained by the lack of "low-cost" airlines in the Quebec City area and the limited train service. Furthermore, for many members of NMH in that area, long-distance trips are taken by regional bus which is featured in a different class. Class 5 is about consuming activities. It is strongly associated with respondents from the Quebec City area as doing errands and grocery shopping trips was a more important topic of the conversation on daily mobility in that area. Class 4 is about the bicycle as a mode of transport and lists some of its advantages like 'pleasant' and 'practical' but also some of its drawbacks like 'rain' and 'snow'. This class is strongly associated with respondents in the Strasbourg area which is logical when taking into account the popularity and large modal share of the bicycle in that area. Class 3 is about destination reached by bus. It is associated with respondents of the Quebec City area and as the bicycle's association with Strasbourg, the larger modal share and importance of the bus as the sole public transit option explains this association with the region. Finally, class 2 features a discussion about activities performed during the week.

¹⁸¹ See section 3.2 How Do Non-Motorized Households Cope With the Absence of a Car for Their Daily Mobility? on p. 106.

Dendrogram Daily mobility of NMH

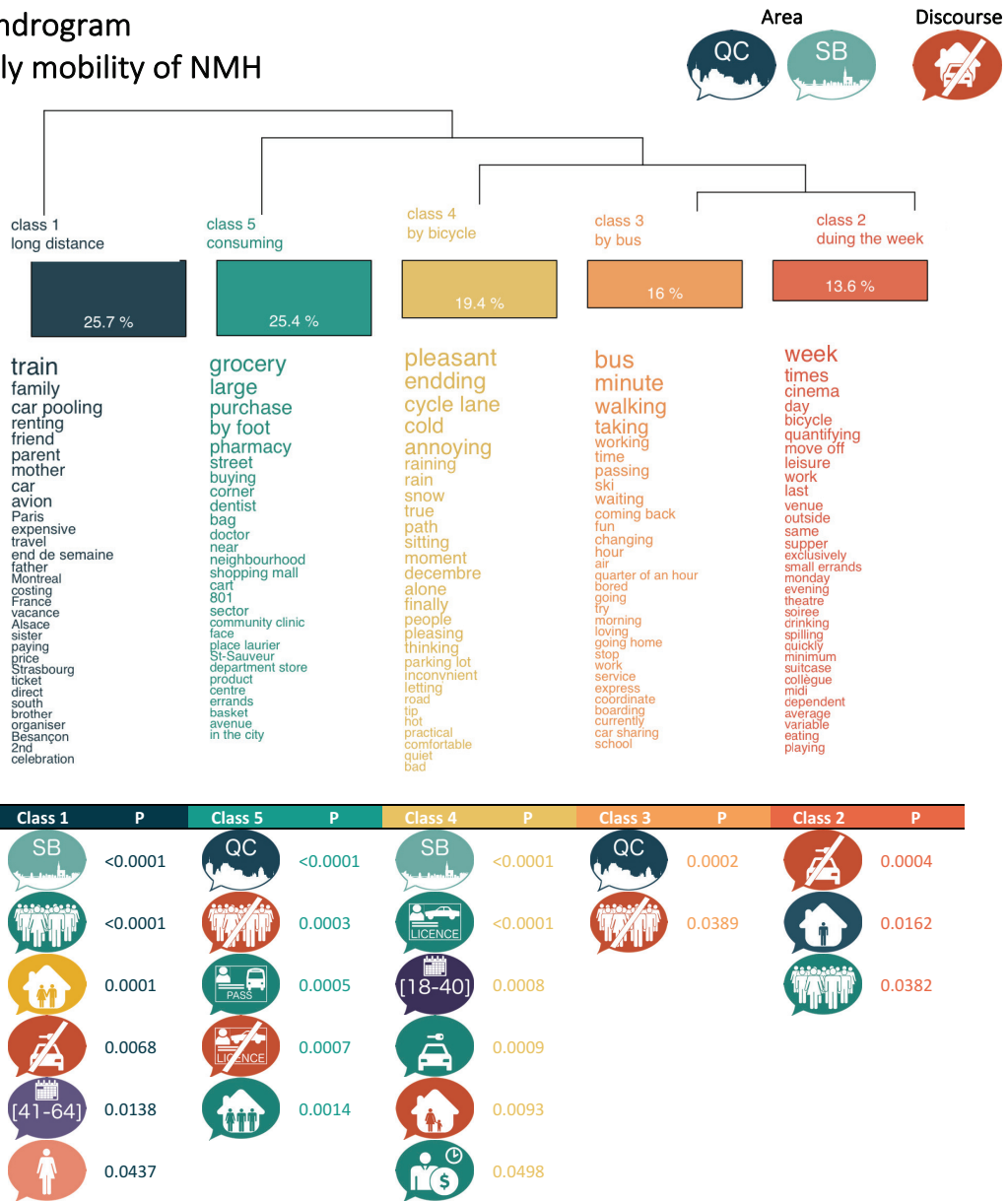


Figure 6:24 Dendrogram - Daily Mobility of NMH

are grouped, here the researcher can decide to make a distinction to the reading of the discourse in order to refine the results.

The next series of results were derived from the block of answers to the questions about the daily mobility¹⁸² with the NMH grouped by region. When qualitatively analyzing the text of the transcript, a series of themes emerged, the first being the modes used for each of the trip purpose (shopping, leisure, shopping, health, families and friends), but there was also a series of themes linked to participants' appreciation of certain modes. They also describe the advantages and disadvantages of the various modes, the problems and difficulties encountered. This analysis reveals, for example, the importance of the bicycle for the Strasbourgeois who mentions this mode 250 times while the Quebecers mention it only 87 times. But beyond the simple counting of mentions (which can be assimilated to lexicometric analysis), this analysis makes it possible to fine-tune the strengths and weaknesses of this mode for non-motorized households. The results are similar to the OD survey data analyzed in the previous chapter, but a more detailed look at the usage of the car is possible as respondent mentioned various access to the car; for example, if it was a borrowed car from their friend or a rented car or a vehicle from the car-sharing network. This level of detail was not captured by the OD surveys used in the study. It represents a relevant weakness of the Quebec City and Strasbourg OD surveys which did not ask any questions about car-sharing nor the relation to the car used. While the qualitative material encompassed the various ways to access the car for NMH¹⁸³, OD data only contains the categories "car as the driver" and "car as a passenger" without specifying if it is car-sharing, ride-sharing or carpooling, for example. The car-sharing and ride-sharing schemes were still nascent when these surveys were performed but I would recommend that the next iteration of these longitudinal research be adapted to better capture this new reality.

The qualitative analysis of mode share based on how often they were mentioned¹⁸⁴ (see Figure 6:26) shows a few differences between the two urban areas. Quebec City area respondents were more likely to mention getting car rides from friends and family. They were also more likely to take the bus, to no surprise and they were a slightly more often mentioning forms of reversed mobility, as for example having relative and friends come over to visit them or having goods delivered to their house rather than going themselves to go get them. Strasbourg area respondents were more likely to use carpooling, borrow a car

¹⁸² Question 7, 8, 9, 10 and 12 from the semi-directed NMH interview protocol.

¹⁸³ See section 3.2 How Do Non-Motorized Households Cope With the Absence of a Car for Their Daily Mobility? on p. 106.

¹⁸⁴ The mode share was computed by using the number of words counted as part of a quote associated with a transport mode. The total number of words is in percentage relative to the total number of words for each corpus devoted to a specific subject. The calculations were performed by the code document table analysis of Atlas.ti.

from a friend or family, take the tram or the train, use their bicycle and fly. The airplane mode of transport difference can be explained by the availability of “low-cost” air carriers in Strasbourg as is common in most major European cities. This is not the case as “low-cost” air carriers are non-existent in the Canadian market or operate on a different (more expensive) price bracket. These results are compatible with the ones from the OD survey data. Ride-sharing and taxis were conspicuously absent from the discussions with the NMH participants even though the taxis and the Uber ride-sharing service were available in both urban areas.

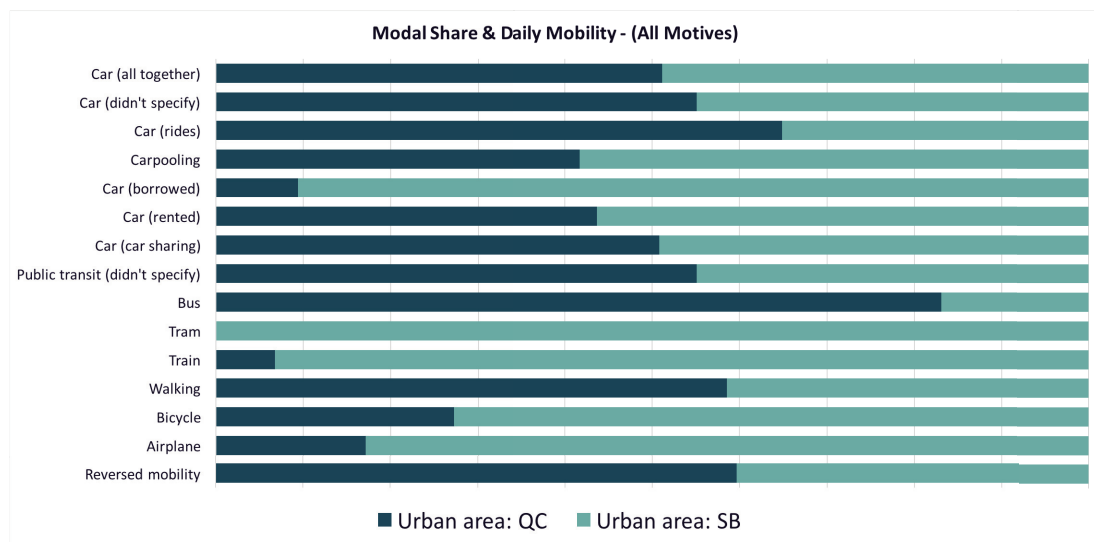


Figure 6:26 Specific Discourse About NMH Daily Mobility by Urban Area (Qualitative Analysis)¹⁸⁵

6.4.2 Bottom-Up: NMH Opinion of the Transport Modes

The qualitative analysis of the discussion with NMH regarding their daily mobility highlighted their opinion, appreciation, inconvenience and difficulties with the various transport modes that they rely on. In this section I share the results of this analysis which reveals the different inductive codes that the Atlas.ti analysis of the discussions surfaced.

¹⁸⁵ This chart and all the similar charts that follow comparing between the two urban areas are based on the discussion with the 57 NMH respondents met for semi-directed interview.

6.4.2.1 The Car for NMH

The qualitative analysis of respondent’s appreciation of the car (see Figure 6:27) reveals that most opinions are not expressed in both cities at the same time, except for finding that the car-sharing vehicles are not too distant which appeared in both urban areas as the number one appreciation of car-based modes and an appreciation for the car-sharing that it’s going well which was also shared. Quebec City area respondent found in particular that car-sharing was less expensive than owning a car and that it freed them of issues associated with snow fall and on the street parking of private vehicles in that area. While Strasbourg area respondents lauded the car-sharing service’s ease of use and practicality and appreciated the lack of maintenance afforded by this car-based option.

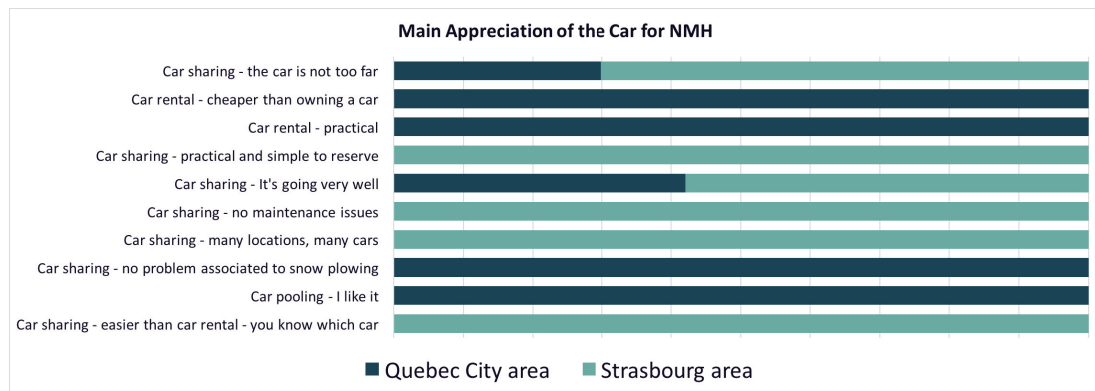


Figure 6:27 Appreciation of the Car for NMH by Urban Area

As shown in Figure 6:28, except for a few responses about the difficulty associated with finding a parking spot, Quebec City area respondents found no inconvenience with the car-based modes while Strasbourg participants noted quite a few, mainly regarding the activity of going by car as painful and a waste of time they could have better spent using another form of transport.

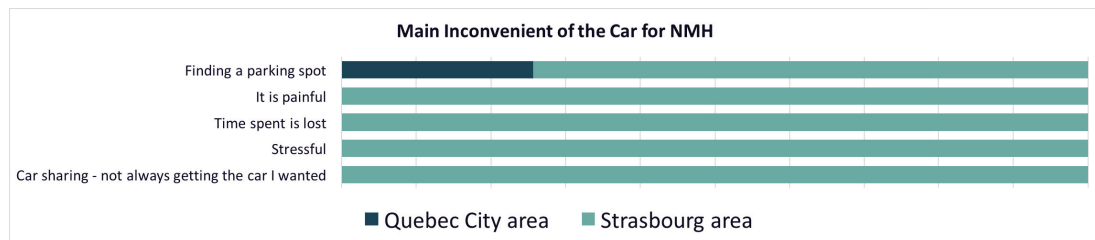


Figure 6:28 Inconvenient of the Car for NMH by Urban Area

Participants found problems with car-based modes in both areas (see Figure 6:29) with the top most issue being more often mentioned in the Quebec City urban area, problem of availability of child car seats with the car-sharing system. Participants expressed difficulties with the mechanism to reserve and get the child car seat in both areas. Quebec City urban area respondents who rely more on car rides than their French counterparts were also more concerned with sometimes feeling uncomfortable asking for a ride. Strasbourg area participants expressed not always being able to get the specific car they had in mind (number of seats, storage space, etc.).

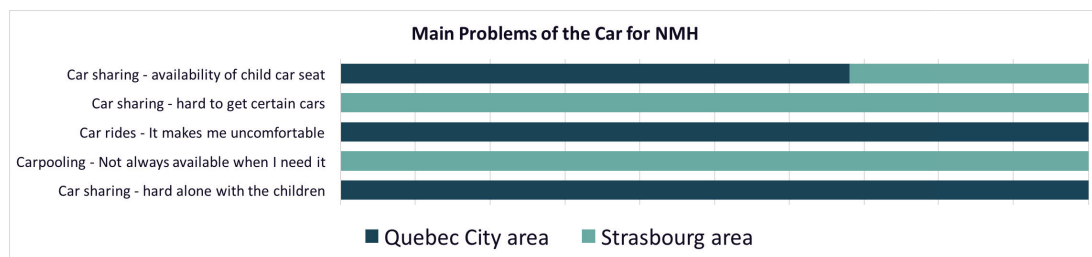


Figure 6:29 Problems Encountered with the Car for NMH by Urban Area

As these tables show, this analysis has the advantage of being fairly fine in terms of understanding the content and what is conveyed by the discourse. On the other hand, it makes it difficult to link the discourse to several variables as easily as with the lexicometric analysis or to determine the different discourses woven in the integral frame of the answers.

6.4.2.2 The Bus for NMH

Without surprise, as I have discussed before, the participants of the Quebec City area rely much more on the bus than the participants from the Strasbourg area. They also discussed the mode more than their counterparts, appreciating (see Figure 6:30) the attitude of bus drivers and the usual possibility of getting a seat and the fact that time on the bus can be dedicated to their children, not having to focus their attention towards driving...

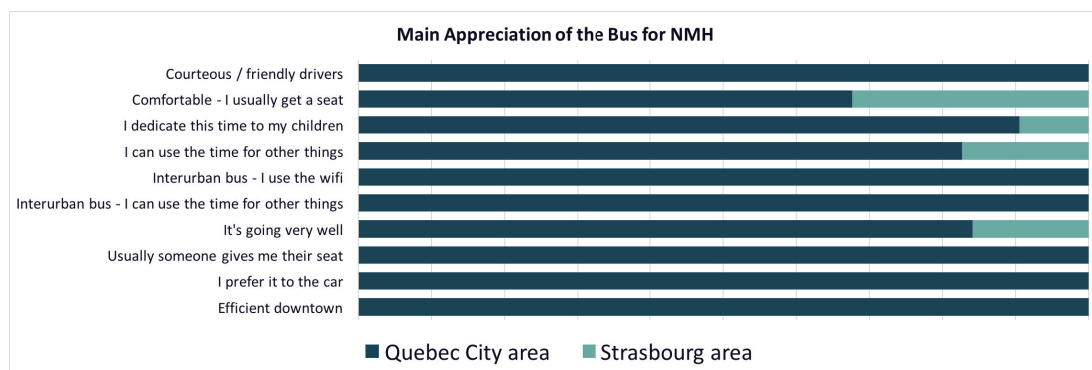


Figure 6:30 Appreciation of the Bus for NMH by Urban Area

For participants in both areas the main inconvenience of the bus was crowded buses (see Figure 6:31). Quebec City area respondents also faced conflicts with other bus riders and found the ride to take unpleasantly long time. Some Strasbourg area participants were bothered by taking the bus.

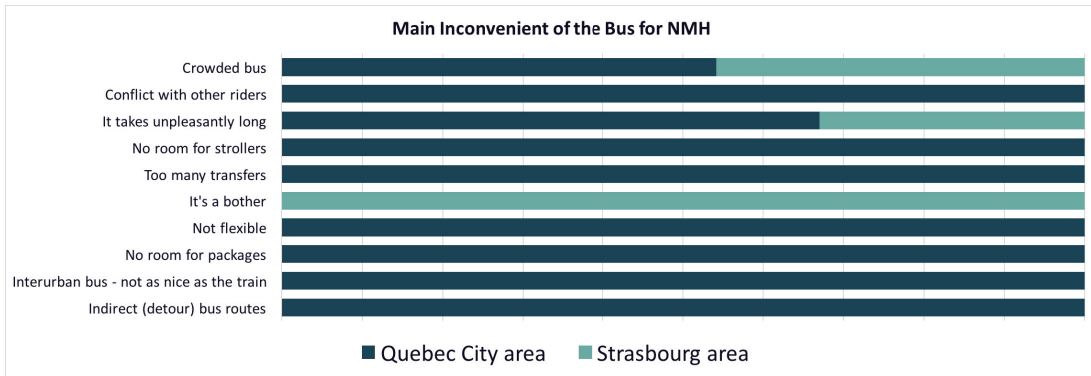


Figure 6:31 Inconvenient of the Bus for NMH by Urban Area

Multiple bus-related problems were discussed (see Figure 6:32) three of them related to the bus schedule: the frequency of the bus is too low, it's hard to fit my schedule to the bus schedule and the bus not adhering to its advertised schedule (late or early bus was an issue). Participants from both areas had problems finding the bus too complicated to use.

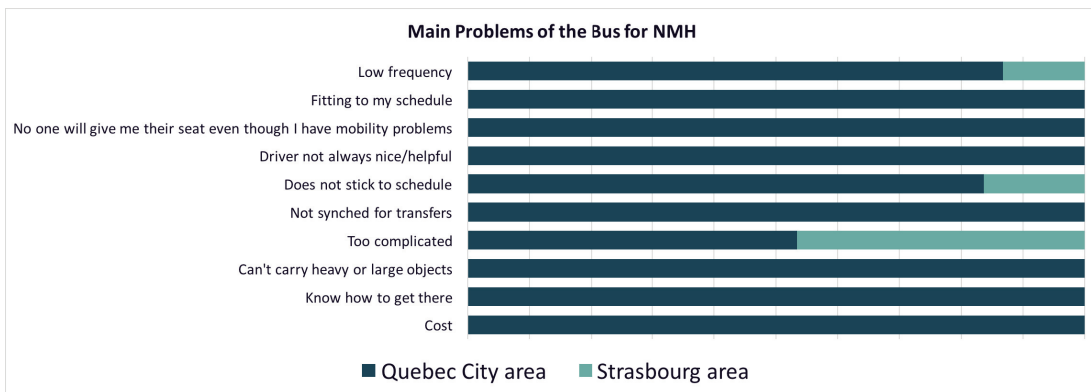


Figure 6:32 Problems Encountered with the Bus for NMH by Urban Area

6.4.2.3 *The Tram for NMH*

Opposite to the bus, the comments about the tram are all from the Strasbourg area, and there was only praise for the mode (see Figure 6:33).

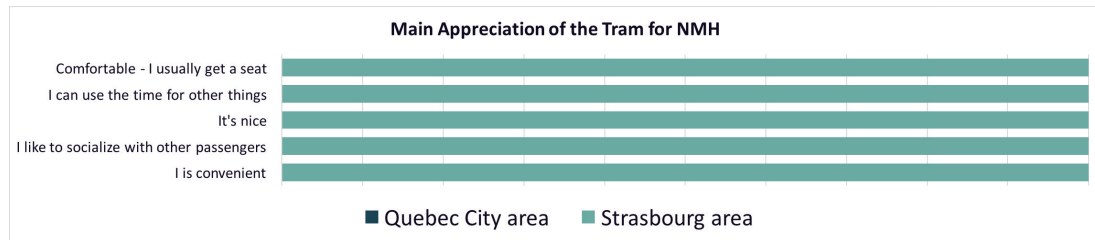


Figure 6:33 Appreciation of the Tram for NMH by Urban Area

6.4.2.4 *Walking for NMH*

NMH participants in both areas gave appreciations to walking (see Figure 6:34) with people in the Quebec City area finding it particularly nice while, surprisingly, participants in the Strasbourg area were found it was fast. This is in relation to the pedestrianization of the “magistrale” a walkway that crosses the entire downtown and the speed limitations for cars and the long-time lost in looking for a parking spot when driving. In both areas, the number one appreciation for walking was that it forces people to spend time outdoors.

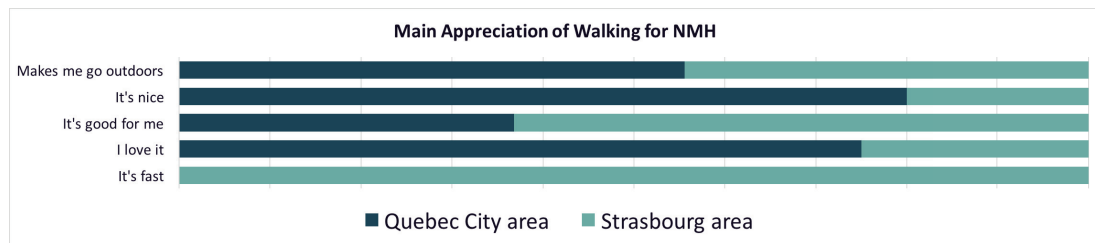


Figure 6:34 Appreciation of Walking for NMH by Urban Area

The main inconveniences (see Figure 6:35) mentioned during the daily mobility discussion was about walking in the rain which was an issue only in the Quebec City area. For the Strasbourg area, while some thought walking was fast, some also found it too slow or counterproductive (when compared with the bicycle which was thought to be faster than the car in the downtown area).

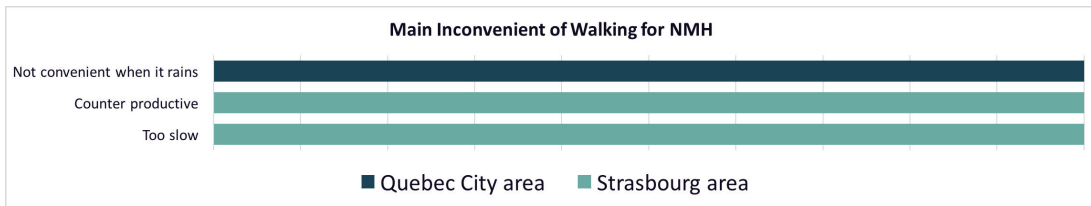


Figure 6:35 Inconvenient of Walking for NMH by Urban Area

NMH respondents in Quebec City urban area mentioned a lot more problems experienced during walking that their Strasbourg urban area counterpart. The pedestrian architectures in Strasbourg being particularly developed, this is not a surprise. As shown in Figure 6:36, the main issue for Quebec City area NMH was the problem of carrying large or heavy objects and they complained about snow removal on sidewalk and other issues with Winter. This can be attributed to a very snowy winter when the interviews were done (December 2014 and January 2015) while in the Strasbourg interviews were realized in the spring of 2015 after the snow had completely melted away. The topography of the Quebec City downtown area can also render walking problematic as the downtown is divided into the upper and lower town with steep hills separating the two, almost like San Francisco. When the sidewalks get iced up, it is especially difficult to keep balance and not fall while walking. The only problem that came up with Strasbourg area respondent were issues of safety at night which was not mentioned by any Quebec City area participants.

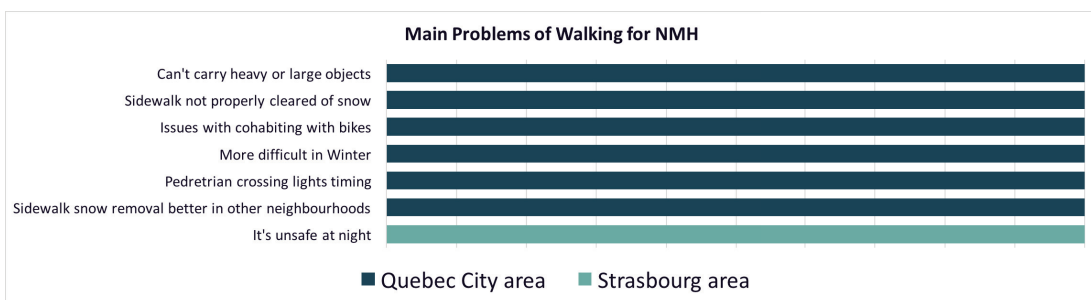


Figure 6:36 Problems encountered with Walking for NMH by Urban Area

6.4.2.5 The Bicycle for NMH

The high popularity of cycling in the Strasbourg area appears in this list of appreciations (see Figure 6:37) which is more numerous for respondents in that area. Generally across both areas respondents liked cycling and were grateful for the existing cycling infrastructure. Both areas, while a more apparent in Strasbourg area, felt that the bicycle gave them freedom. I also note that Strasbourg area respondent felt pleasure using their bicycle and have become dependent upon it.

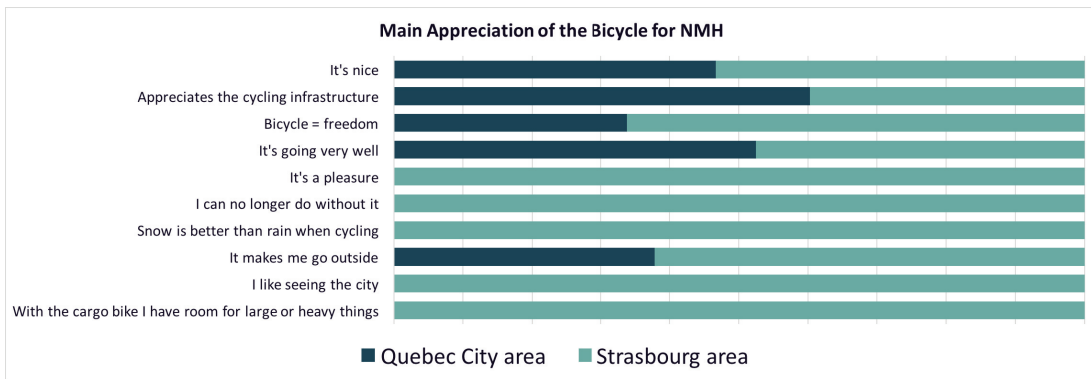


Figure 6:37 Appreciation of the Bicycle for NMH by Urban Area

While cycling was much appreciated, participants also noted inconvenience (see Figure 6:38). For both areas equally, the stress related to cycling, especially when sharing the infrastructure with cars or pedestrian was the main inconvenience. The problem of respecting the work environment dress code while commuting by bicycle was an issue, more often the case in Quebec City, while carrying large or heavy objects and finding a place to safely park the bicycle was an issue only in the Strasbourg area.

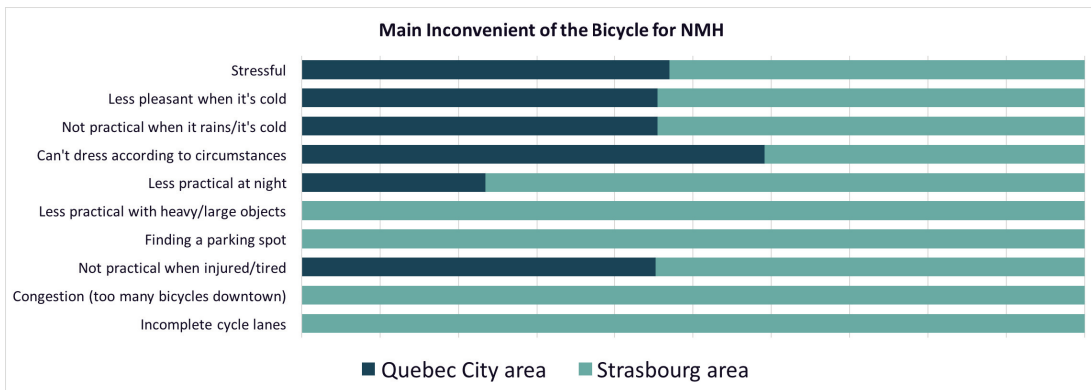


Figure 6:38 Inconvenient of the Bicycle for NMH by Urban Area

Participants in the Quebec City area experienced more problems (see Figure 6:39) than their Strasbourg counterparts. The main complaint especially for Strasbourg area NMH was that some zones were thought to be dangerous, this is coupled with the fact that using the sidewalk to go around these dangerous zones was forbidden. For Quebec City area NMH the issues centred around safety with other road users and a lack of infrastructure dedicated to cycling.

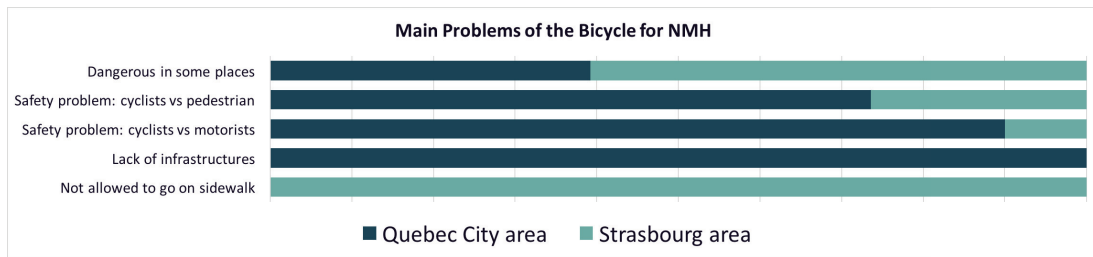


Figure 6:39 Problems Encountered with the Bicycle for NMH by Urban Area

6.4.3 Bottom-Up: Daily Mobility for Various Trip Purposes for NMH

In a similar fashion, in this section I summarize the discussion about the modes and issues associated with being from a non-motorized household related to the various motives for mobility.

6.4.3.1 Leisure Trips of Daily Mobility for NMH

For leisure purposes (see Figure 6:40), the train was the main mode of transport for both urban areas. For Quebec City urban area respondents, walking was also an important mode for reaching leisure activities. For Strasbourg, the second most popular answer was the bicycle for leisure modes. Car-sharing was also more popular for this purpose in the French area than in the Canadian one. While Quebec City NMH relied more on getting car rides for leisure activities than did the Strasbourg area NMH.

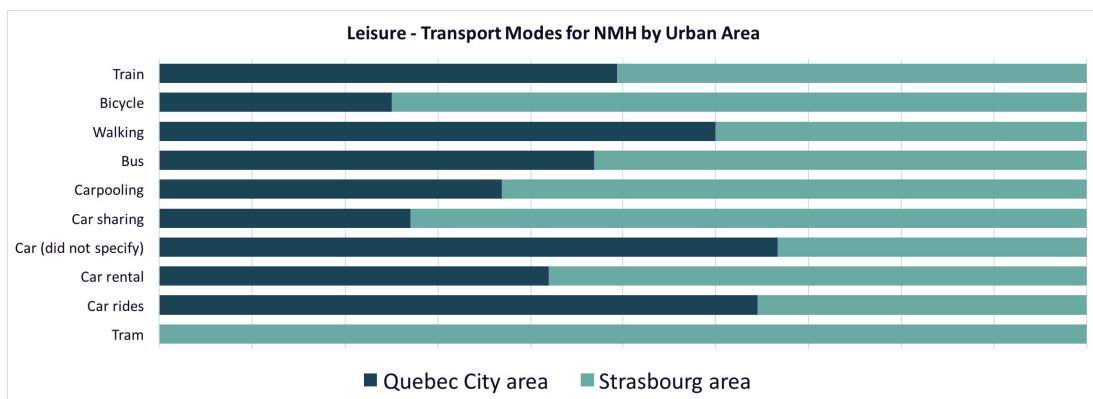


Figure 6:40 Modes of Transport Used for Leisure by NMH by Urban Area

As depicted in Figure 6:41 Quebec City area respondents were more likely to mention they would stay downtown, stay close to home, and they have fewer outdoors activities compared to when/if they owned a car. For Strasbourg area respondents, the main limitation was in reducing their number of leisure trips.

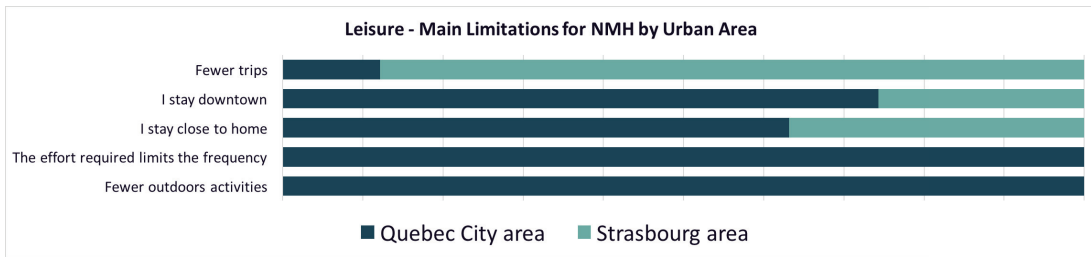


Figure 6:41 Limitations to Leisure Trips by NMH by Urban Area

6.4.3.2 Shopping Trips of Daily Mobility for NMH

For shopping trips (see Figure 6:42), Quebec City area participants were more likely to either walk or make use of reversed mobility the form of deliveries for their shipping activities while Strasbourg area respondents were more likely to use car-sharing or the bicycle. The bus was also popular for shopping as well as car rides from friends and relatives in the Quebec City area.

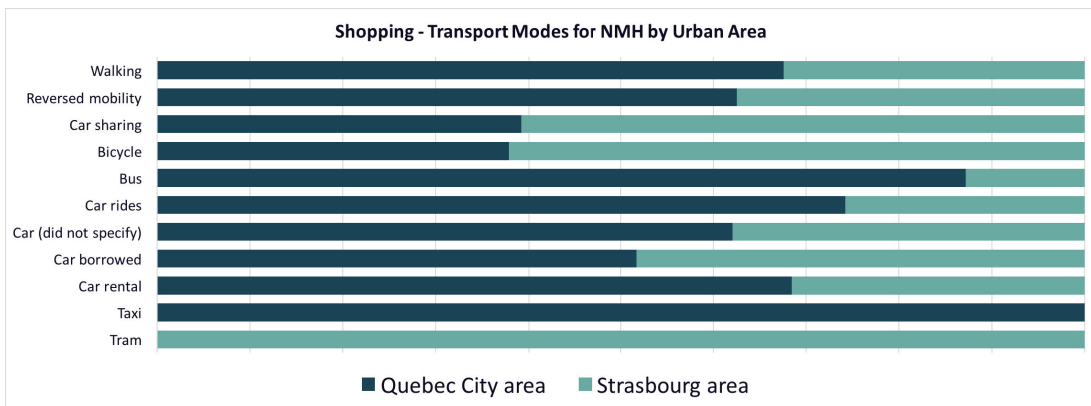


Figure 6:42 Modes of Transport Used for Shopping by NMH by Urban Area

The main inconvenience related to not having a car for shopping purposes (see Figure 6:43) was the impossibility to go to the cheapest stores, which was more an issue in the Strasbourg area. For Quebec City area, the main issue for NMH was limiting their purchases.

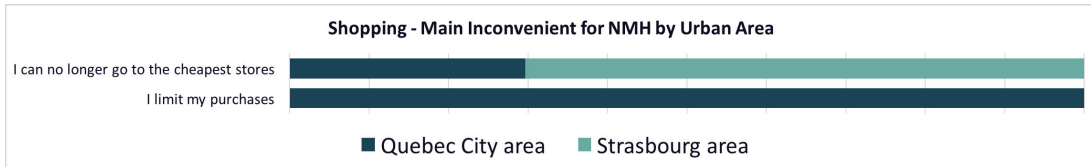


Figure 6:43 Inconveniences to Shopping Trips by NMH by Urban Area

Two shopping destinations (see Figure 6:44) were only discussed by Strasbourg area participants, prepared order pick-up services offered by some stores, which to my knowledge is not existent in the Quebec City area was an important source of shopping trips as well as Germany for the availability of better prices. Supermarkets were an important shopping destination only for Quebec City area respondents.

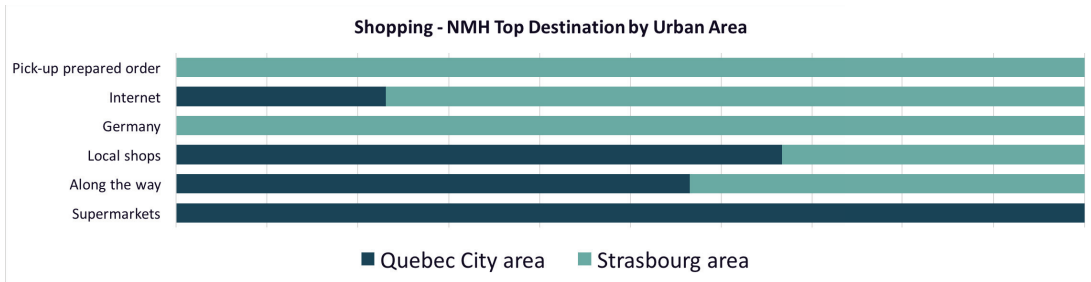


Figure 6:44 Shopping Destination of NMH by Urban Area

6.4.3.3 Visiting Remote Family Trips of Daily Mobility for NMH

I enquired about visiting family and visiting friends in the research in part because, as presented by Stanley et al. (2011, p. 219) the lack of contact with friends and family is an important aspect of mobility-related social exclusion. Visiting family that lives in a remote area is an important motive for trips (see Figure 6:45). Carpooling was the number one mode mentioned in both areas. With car rental being a bit more popular in the Quebec City area and car rides for this purpose being more popular in the Strasbourg area as well as the train and borrowed cars. Reversed mobility in the form of remote family coming to the Strasbourg area to visit instead of having the NMH make the trip was something specific to the Strasbourg area.

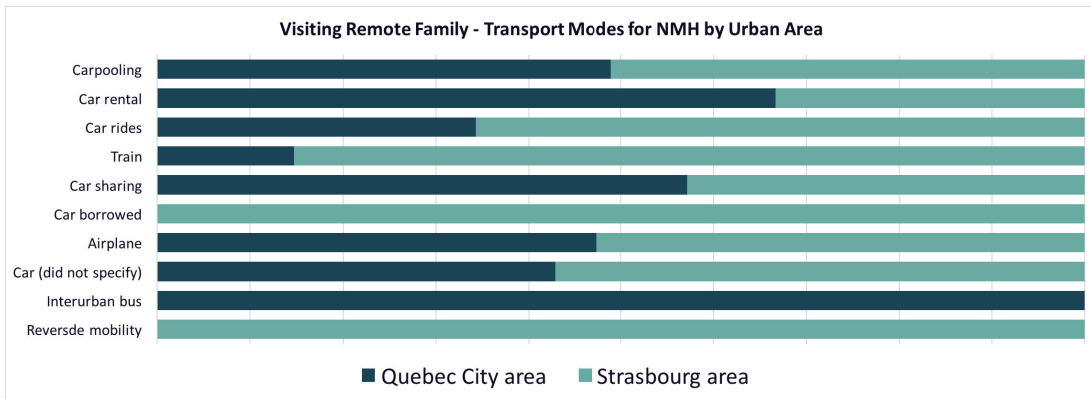


Figure 6:45 Modes of Transport Used for Visiting Remote Family by NMH by Urban Area

Strasbourg area respondents found more inconvenient with visiting remote family (see Figure 6:46) than their Canadian counterparts. Both area respondents found it complicated and expensive to visit remote family.

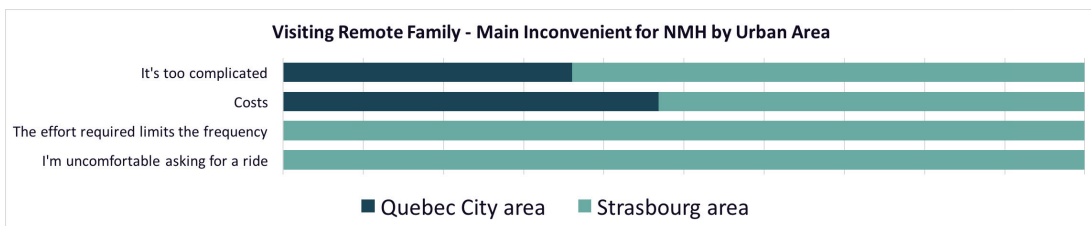


Figure 6:46 Inconvenience to Visiting Remote Family Trips by NMH by Urban Area

6.4.3.4 Visiting Friends Trips of Daily Mobility for NMH

The results of the analysis of trips made for visiting friends (see Figure 6:47) show that the train is the most popular mode for this purpose, and more so in Quebec City area, the only purpose for which the train was more popular in Canada than in France. Quebec City area respondents were the only ones relying on the taxi for visiting friends, while Strasbourg area participants were alone in using carpooling, car-sharing and airplanes, etc. for visiting friends.

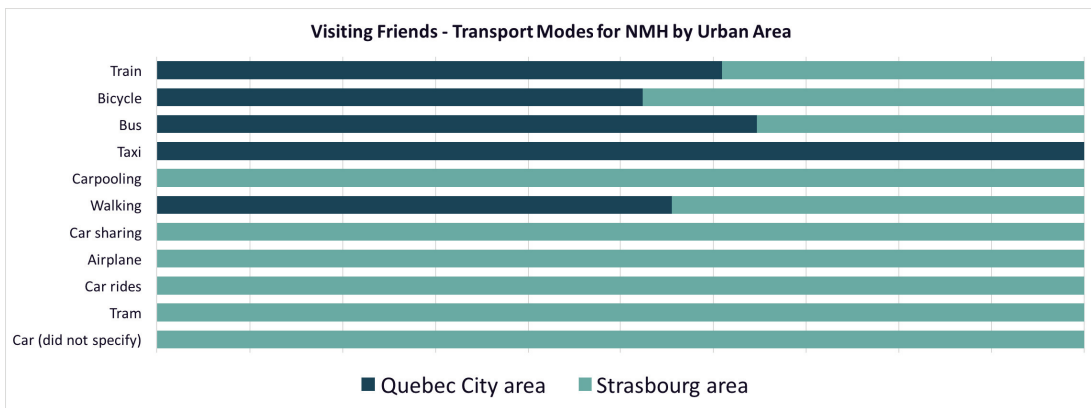


Figure 6:47 Modes of Transport Used for Visiting Friends Trips by NMH by Urban Area

As with visiting remote family, the main inconvenience to visiting friends for NMH (see Figure 6:48) was that it seems too complicated. This was the case only in the Strasbourg area. NMH participants in the Quebec City area were alone in having to see their friends less often because they didn't own a car.

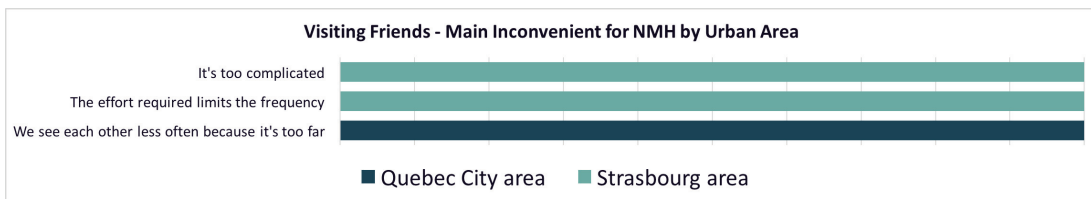


Figure 6:48 Inconvenience to Visiting Friends Trips by NMH by Urban Area

6.4.3.5 Work Trips of Daily Mobility for NMH

For the Strasbourg area participants, active modes were the most important for travelling to work (see Figure 6:49). A lot more participants in the Strasbourg area also took the train to reach work destinations. This is explained by the regional ‘TER’ train service operated in the area while there is no such regional train service in the Quebec City area. On the other hand, Quebec City area respondents were more likely to use the bus, a scooter or simply work from home. The discussion around trips for work purpose did not elicit any relevant mentions of inconveniences.

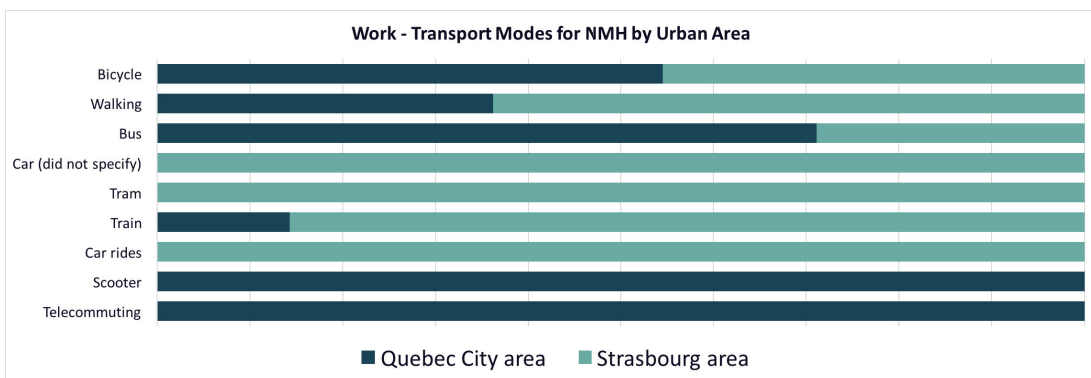


Figure 6:49 Modes of Transport Used for Work by NMH by Urban Area

6.4.3.6 Health Related Trips of Daily Mobility for NMH

For health-related trips (see Figure 6:50), the car was the most used transport mode. Quebec City area respondents were more likely to walk, and Strasbourg area respondents were more likely to cycle.

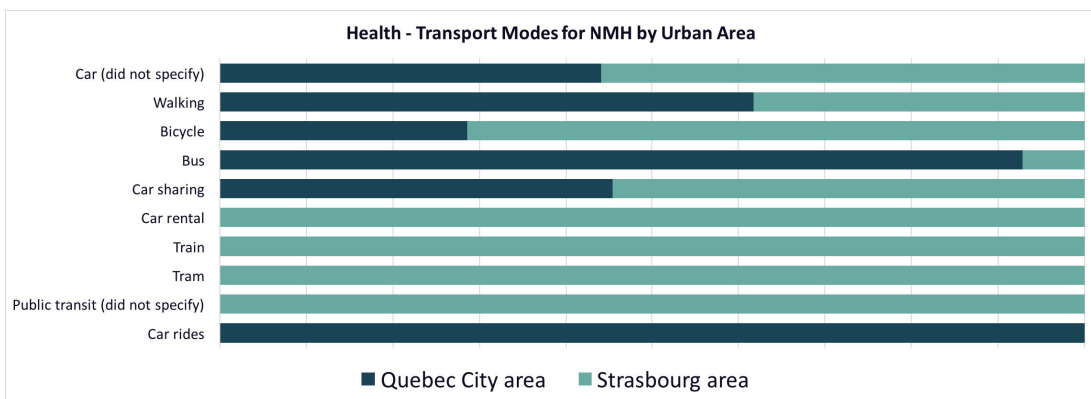


Figure 6:50 Modes of Transport Used for Health Trips by NMH by Urban Area

The discussions about health-related trips elicited many more inconvenient in the Quebec City urban area than in Strasbourg (see Figure 6:51). There are apparent issues of accessibility with medical clinics impossible to reach by public transit or existing accessible clinics relocating to suburban, and thus less accessible areas. Managing the schedule or making appointments were also harder for Quebec City respondents.

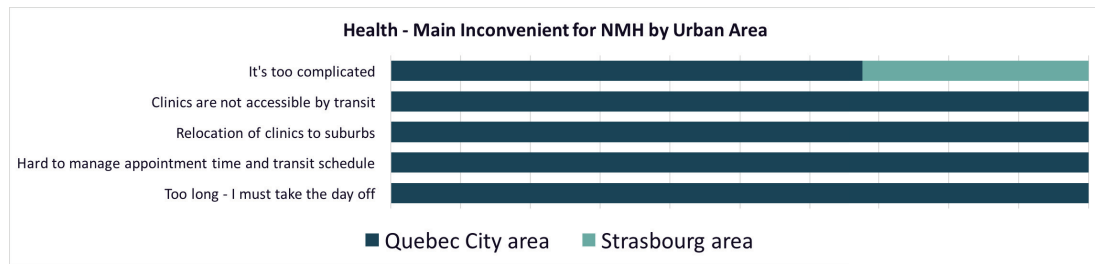


Figure 6:51 Inconvenience to Health Trips by NMH by Urban Area

6.4.4 Differences in the Daily Mobility of NMH by Gender

For both genders the specificities analysis (see Figure 6:52) shows that the most specific word is a motorized mode of transport, namely ‘carpooling’ for women (factor: 4.2) and ‘car-sharing’ for men (factor: 3.75). This is a relevant and unique finding that I hadn’t forecasted nor seen in literature on gendered based mobility differences. But it can be explained by the cost factor, as carpooling is a much cheaper option than car-sharing. The high price certainly seems a more important issue for women as ‘expensive’ was a specific word for them (factor: 1.9). Both these results can be linked to the fact that 33% of women respondents fell into the modest revenue group compared to only 24% of the men falling into that revenue group. Women were also more likely to mention the ‘train’ (factor: 2.1). Men were more likely to mention ‘renting’ (factor: 2.9) and ‘rental’ (factor: 2.3), ‘car’ (factor: 2.8) and ‘bicycle’ (factor: 1.9).



Figure 6:52 Specific Discourse About NMH Daily Mobility by Gender (Lexicometric Analysis)

Text segment characteristic of answers from women:

I've been twice to visit my family this summer, but I'm riding in a carpool, and then my sister comes to pick-me up and it saves me a little money.

(176-W) Martine, 55 - Quebec City area (Montcalm) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Text segment characteristic of answers from men:

Yes, either a rental car or car-sharing, we happened to take a car-sharing also there is a small [price] difference between the rental car and the car-sharing where sometimes it depends...

(247-M) Martin, 36 - Strasbourg area (Gare) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Doesn't feel socially excluded.

6.4.4.1 The 10'000-Foot View: Gendered Based Mobility Differences in OD Survey Data

While looking at the daily mobility of the overall population of both urban areas from the OD survey data sets (see Figure 6:53), gender differences do appear. The overall analysis confirms previous findings of multiple studies¹⁸⁶. In both urban area overall, men use the car as drivers 8 to 9 percentage points more than women. Women, on the other hand, use the car as passengers 6 to 8 percentage points more than men. Women had an overall greater share of walking (6 percentage points more in the Strasbourg area and 2 percentage points more in the Quebec City area). However, when looking at the data based on the typology of territories some of the expected findings from the overall comparison are reversed in parts of the territory. For example, while women had a greater share use of the bus in the old Quebec City, leading men by 4 percentage points, that lead falls down to only 1 percentage point in the old suburban areas which are now part of the Quebec City. However for Levis, the Northern Crown and the southern crown men have a larger share of usage of the bus then women reversing the usual trend. In the Strasbourg area, the share of bicycle usage was the same for men and women in the city of Strasbourg but men have doubled the share of women in the rest of the Eurometropole and kept a lead over women in all other parts of the territory as well as in overall comparison.

¹⁸⁶ For example: (Bowling, Göllner, & O'Dwyer, 1999; Greed, 2008; Hjorthol, 2008).

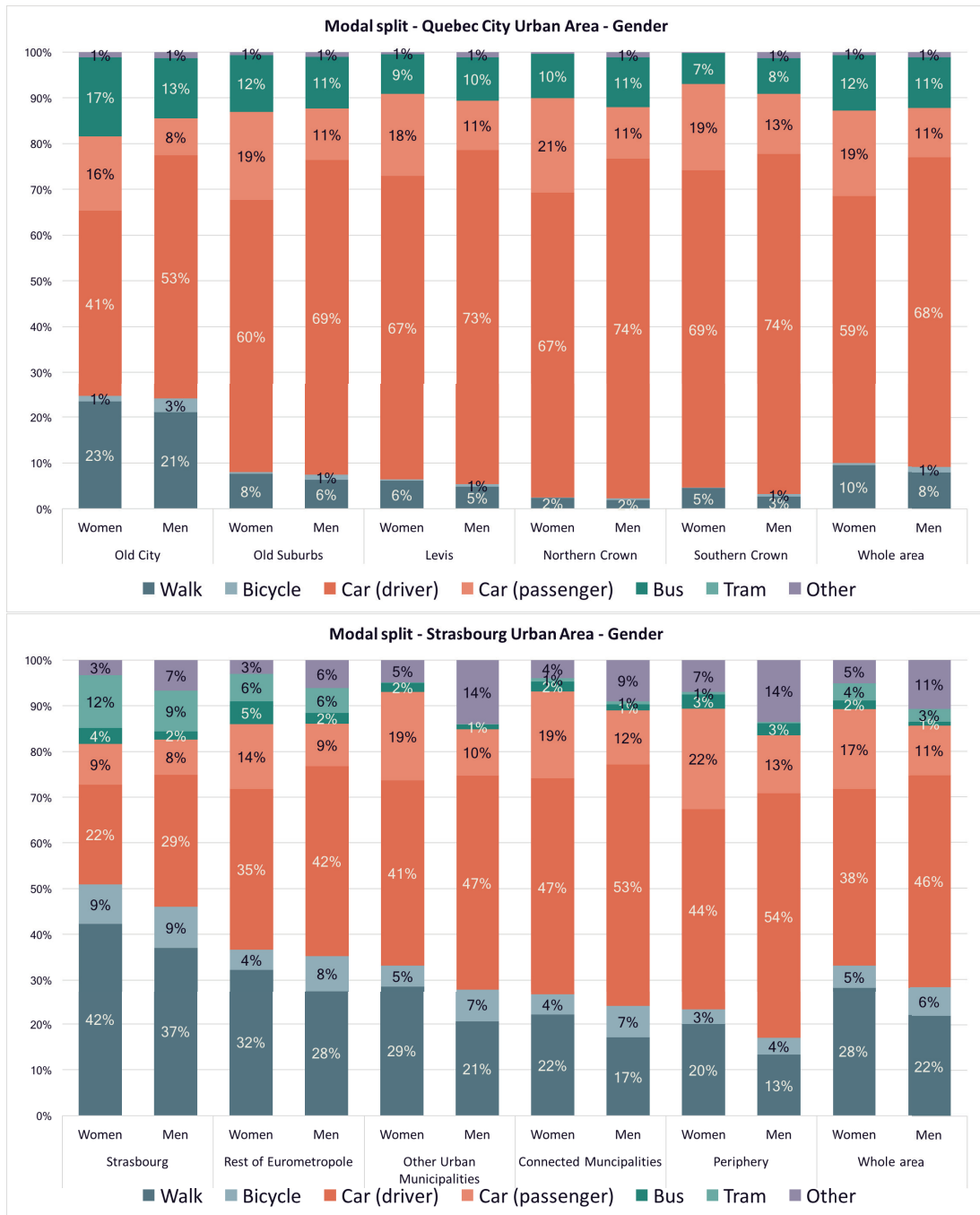


Figure 6:53 Modal Split for Overall Population by Urban Area by Gender

When looking at the gender difference from the perspective of household motorization status overall for both urban areas (see Figure 6:54), some of the general trends are reproduced by NMH and MH. For example, women had a greater share of transit usage in all cases. For both areas for both types of household, women had a greater share of car as passenger, as was the case for the overall population. Moreover, in both areas for both types of household men had greater share of car as the driver but the differences were infinitesimal in the case of Strasbourg NMH. One difference appears between the overall gender comparison and the NMH comparison. In the Quebec City area, men from NMH had a greater share of the walking mode while in every other case, women had the greater usage of that mode.

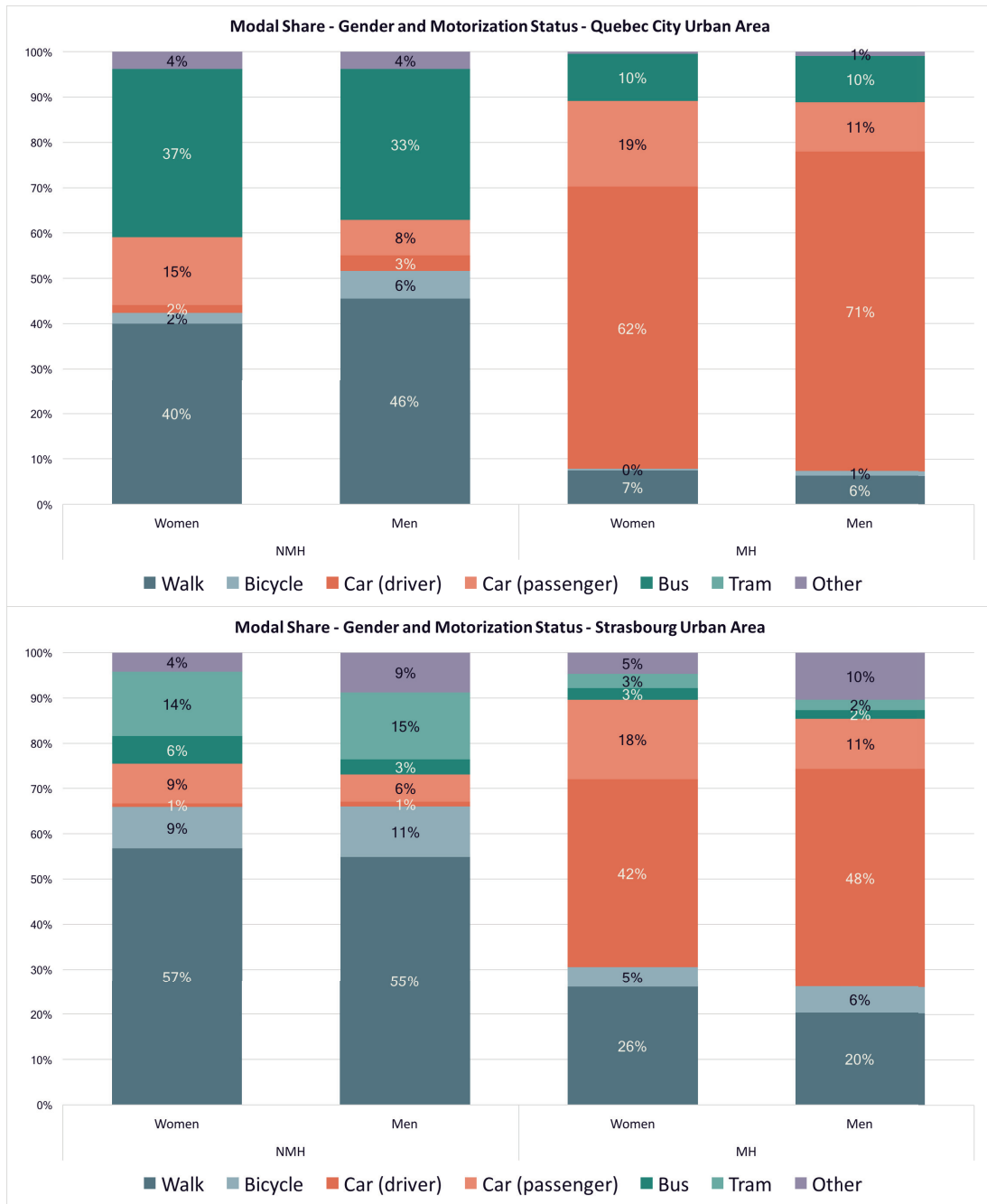


Figure 6:54 Modal Split by Motorization Status and by Gender

6.4.5 Differences in the Daily Mobility of NMH by Revenue

When analyzing the answers to questions about their daily mobility by a specificities analysis on revenue levels (see Figure 6:55), it appears that members of the modest revenue group mention two modes of transport more than any other, ‘carpooling’ (factor: 3.4) and the ‘bus’ (factor: 2.2); ‘800¹⁸⁷’ (factor: 2.3) and they feel like they ‘stay’ (factor: 3.9) ‘nearby’ (factor: 2.8). People from the middle revenue group were more likely to mention ‘children’ (factor: 7.3), ‘child car seat’ (factor: 3.5), ‘errands’ (factor: 3), ‘walking’ and ‘tram’ (factor: 3). Respondents from the affluent revenue group were most likely to mention the transport modes of the ‘train’ (factor: 6.4) and ‘car-sharing’ (factor: 2) demonstrating once again that these transport modes are not necessarily affordable by all NMH and are solutions that appeal to more well-off NMH only.



Figure 6:55 Specific Discourse of NMH Daily Mobility by Revenue Level

¹⁸⁷ 800 is the bus route number of the Metrobus main route in the Quebec City urban area.

Text segment characteristic of answers about daily mobility by a member of the modest revenue group:

When you are in the *Saint-Sauveur* neighbourhood you are not too far on foot, about 15 minutes on foot, but you have no *buses*, you are not next to a *bus* which passes very often.

(111-W) Nadine, 27 - Quebec City area (St-Sauveur) - Revenue level: Modest - Household type: Roommates - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

Text segment characteristic of answers about daily mobility by a member of the middle revenue group:

Then get the car to *put* the *[children]* *car seats* and leave, and for that it is difficult when you are alone *[as an adult]*, because you have to bring the children with you, after that you cannot bring them back because you do not have the *[children]* *car seats*.

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Text segment characteristic of answers about daily mobility by a member of the affluent revenue group:

For my sister, also my friends normally it's always the *train*, sometimes I rent a car but when it's really when I go visit friends who do not *live* in *big cities*.

(320-W) Émeline, 31 - Strasbourg area (Centre-ville) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

The analysis of negative specificities for the three revenue groups (see Figure 6:56) shows that the modest revenue group avoided the words 'tram' (factor or -5.9). This is related to the fact that more individuals from the Quebec City area (2/3) are included in this revenue group than individuals from the Strasbourg area. Two other transport modes are avoided by this group, the 'train' (factor: -3.7) and 'airplane' (factor: -3.4). The middle revenue group avoided talking about 'transit routes' (factor: -4.4), '800' (factor: -4.4), 'public transit' (factor: -2.9), the 'bus' (factor: -2.1) and 'flights' (factor: -1.9). The affluent revenue group evaded the words 'children' (factor: -4.8) and 'carpooling' (factor: -3.6).



Figure 6:56 Specific Discourse of NMH Daily Mobility by Revenue Level - Words Avoided

6.4.6 Differences in the Daily Mobility of NMH by Household Type

The discourse analysis by household types reveals different issues which can probably be associated with the different life stages related with each type of household. I have included this household type analysis about daily mobility here as an example because I performed it for every question. However, in general it hasn't provided much sensible result. As such, I have refrained from including this kind of analysis in the rest of the chapter. The most interesting learning from this analysis is to see which transport mode is specifically associated with the discourse from each type of household (see Table 6:1). The transport modes are listed in alphabetical order and the icon for each household type are ordered from left to right by order of the strength of the association. For example, in the table I notice that families are the household type most strongly associated with the bicycle, the car, car renting and car-sharing.

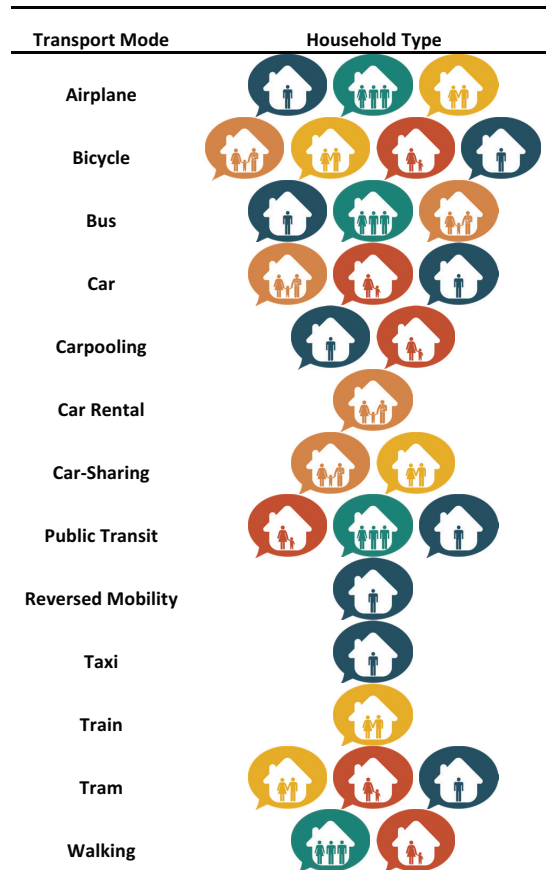


Table 6:1 Transport Mode Specifically Associated with the Daily Mobility of Different Household Types by Order of Specificity

Figure 6:57 shows the results of the specificities analysis by type of household. Respondents living in single-person households were most likely to discuss the 'carpooling' (factor: 3.1), '800' (factor: 2.2), 'airplane' (factor: 2.2) and 'public transit' (factor: 1.9). Respondents living in households formed of roommates specifically mentioned the 'sidewalk' (factor: 4.8) and 'pedestrians' (factor: 2.2). They also mentioned many residential neighbourhoods of Quebec City. People living in couples were most likely to mention the 'train' (factor: 10) and 'flights' (factor: 2) and the 'tram' (factor: 1.9). Respondents from families with children most often talked about 'children' (factor: 15), 'renting' (factor: 10), 'car' (factor: 6.4), car-sharing (factor: 4.8), 'stroller' (factor: 4.8), 'internet' (factor: 1.8), the 'bus' (factor: 1.2) and 'bicycles' (factor: 1.1). Finally, participants from single-parent households specifically mentioned the word 'annoying' (factor: 4), 'downtown' (factor: 3.8), 'children' (factor: 3.8) and 'transit route' (factor: 3.2).



Figure 6:57 Specific Discourse of NMH Daily Mobility by Type of Household

6.4.7 Differences in the Daily Mobility of NMH by Membership in the Car-Sharing System

Analyzing the daily mobility discourse looking at the specificities of members and non-members of the car-sharing system (see Figure 6:58) shows that members of the car-sharing system are more likely to mention the 'bicycle' (factor: 5,1) and they seem to find their mobility more 'enjoyable' (factor: 3,2), although they also are more likely to find things 'annoying' (factor: 2.8). Non-members of the car-sharing system find things more 'difficult' (factor: 2.9) and are most likely to mention 'carpooling' (factor: 2.5). They also mention more 'constraint' (factor: 2.3).



Figure 6:58 Specific Discourse of NMH on Daily Mobility by Membership in Car-Sharing System

As with the analysis comparing car-sharing membership for the reasons leading NMH to become motorless, in this analysis, the results unsurprisingly show that the car in general and car-sharing in particular is more present in the discourse of car-sharing members.

Text segment characteristic of daily mobility discourse from a member of the car-sharing system:

If we go with the family we will take a car, it is cheaper, we take my mother's car or I rent a car from the car-sharing for the weekend. It's true that sometimes it is pretty interesting.

(326-W) France, 51 - Strasbourg area (Les Quinzes) - Revenue level: Intermediate - Household type: Single parent family - Household size: 4 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Text segment characteristic of daily mobility discourse from a non-member of the car-sharing system:

There I have [medical] exams at the [clinic] de la capitale to go *pass* that I think if my woman friend is not able to *come* I go by bus otherwise I *asked* [name removed] for a *lift*, she always told me if you need [a ride] just ask.

(59-W) Dominique, 62 - Quebec City area (Notre-Dame des Laurentides) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Doesn't feel socially excluded.

6.4.8 Differences in the Daily Mobility of NMH by the Feeling of Being Socially Excluded or Not

The specificities analysis of the daily mobility discourse between those feeling socially excluded and those who aren't (see Figure 6:59) shows that those who don't feel socially excluded in relation to their mobility are far more likely to mention the 'train' (factor: 20). They are also more likely to mention 'renting' (factor: 3.9), the 'tram' (factor: 3.5), 'car' (factor: 2.8), having 'fun' (factor: 2.8), 'rental' (factor: 2.8) and 'travel' (factor: 2.6). They are also more likely to mention many words that are specific to the Strasbourg area like the tram, already mentioned but also 'Paris' (factor: 9.6), 'Strasbourg' (factor: 2.2), 'Vosges' (factor: 1.3), 'Kehl' (factor: 1.2), 'Germany' (factor: 1.1). This indicates that there are significantly more people not feeling socially excluded in the Strasbourg area sample of NMH. The respondents who felt socially excluded in relation with their mobility were more likely to mention 'transit route' (factor: 4.5), 'difficult' (factor: 4.1), 'carpooling' (factor: 3.9), 'constraint' (factor: 3.7), the 'bus' (factor: 2.4).

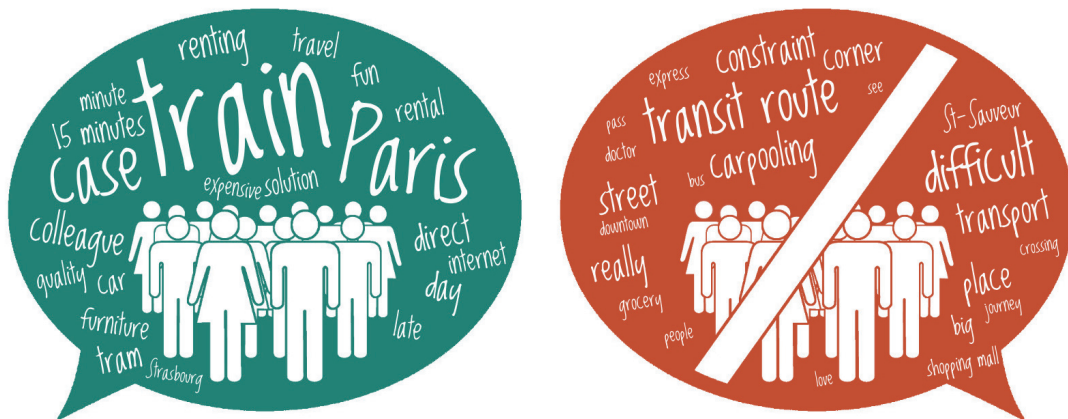


Figure 6:59 Specific Discourse of NMH on Daily Mobility by Feeling Socially Excluded or Not

As shown in the figure above, the train was specifically associated with the mobility discourse of participants not feeling socially excluded.

Text segment characteristic of NMH members not feeling socially excluded:

Well, it depends, well I go on foot to the station for the TGV Paris, well it's a direct [train]. For Berlin, I take a little train that goes between Kehl, that goes between Kehl and Offenburg.

(253-W) Édith, 54 - Strasbourg area (Hypercentre) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

Once again, the issue of shopping for essentials, represented by the word grocery store was specifically associated with a group in this analysis. While access to nearby grocery stores was presented as a reason for getting rid of their car by NMH not feeling socially excluded¹⁸⁸. In this analysis, I notice the opposite situation, a lack of accessibility to grocery stores which is specifically associated with the feeling of mobility-related social exclusion.

Text segment characteristic of NMH members feeling socially excluded:

When you do not have a car, you cannot do your grocery [in one run] anyway that's for sure. You have to do it in several times, when you are also looking for to see the specials it forces you to go to several places.

(213-W) Rose, 60 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Carpooling is also specifically associated with respondents feeling social exclusion. Most of the time participants described using carpooling for reaching far-away destinations as in this example from Célestine. Since carpooling is an inexpensive way to travel long distance, and that more people from the modest revenue group feel socially excluded. I conclude that this explains the specific association with this mode since some participants reported having issues with carpooling.

¹⁸⁸ See section 6.2.3 Reasons for Not Owning a Car by the Feeling of Being Socially Excluded or Not on p. 366.

And beyond the region ergo it's *carpooling*, that's what I use the most for holidays, it's through a system I do this since I lived in Brussels, that is to say for seven years That I use the instituted *carpooling* that is to say through a [web] site.

(336-W) Célestine, 42 - Strasbourg area (St-Étienne) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded

6.5 NMH & Mobility-Related Social Exclusion¹⁸⁹

After briefly describing social exclusion related to mobility, I asked each respondent if they perceived this form of exclusion. This was included in the NMH interview in order to answer my sub research question regarding the social exclusion of NMH¹⁹⁰. Getting this deeper understanding of the issues causing mobility-related social exclusion will also enable me to build an appropriate answer to the sub-question regarding what needs to be done to improve the situation¹⁹¹.

¹⁸⁹ Parts of this section of the chapter has been included in a preliminary report provided to associations in both urban areas that helped in finding and recruiting NMH participants.

¹⁹⁰ See section 3.4 Are Members of Non-Motorized Households Feeling Socially Excluded Related to Their Mobility? on p. 108.

¹⁹¹ See section 3.7 What Is Needed to Improve the Mobility Situation and Reduce Social Exclusion of Non-Motorized Household? On p. 111

Unfortunately, overall a majority of respondents say they are experiencing this form of exclusion (see Figure 6:60¹⁹²). On the other hand, I perceive a difference between the two urban areas as to whether respondents felt mobility-related social exclusion. The results from the two cities are opposite, and this difference is significant¹⁹³. But I must remind the reader that the samples were small (30 participants in the Quebec City area and 27 participants in the Strasbourg area). As Figure 6:61 shows, a majority of participants in Quebec City found that various forms of social exclusion related to the mobility of non-motorized households existed in their region, while in Strasbourg (see Figure 6:62), less than half of the participants felt social exclusion related to mobility. This may be related to certain demographic differences between the two samples and does not mean that mobility-related social exclusion is necessarily more prevalent in the Quebec City area than in the Strasbourg area in general. However, since as I discussed in the previous chapter, car dependence also appears stronger in the Canadian city than in the French one, the higher level of car dependence might play a role in explaining the reasons for this difference.

Mobility Related Social Exclusion - Whole Sample

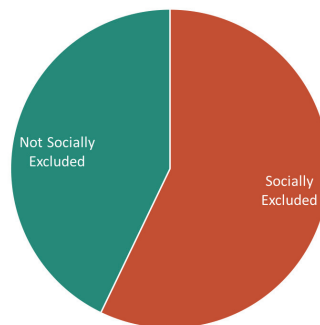


Figure 6:60 Social Exclusion Among Overall Sample of NMH Respondents

Mobility Related Social Exclusion
Quebec City area

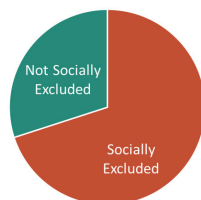


Figure 6:61 Social Exclusion related to Mobility in the Quebec City Area Sample

Mobility Related Social Exclusion
Strasbourg area

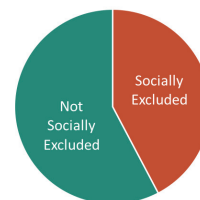


Figure 6:62 Social Exclusion related to Mobility in the Strasbourg Area Sample

When analyzing the answer to this question by combining it with socio-demographic variables, I also find that social exclusion tends to decrease significantly¹⁹⁴ as the revenue level of the household rises as shown in Figure 6:63. A large majority of households with a modest standard of living perceived social exclusion, while a majority of households with an affluent standard of living did not. In fact, more than three out of four respondents in the modest revenue group felt mobility-related social exclusion, whereas more than three out of five respondents from the affluent revenue group did not feel socially excluded related to their mobility.



Figure 6:63 Social Exclusion Related to Mobility and Revenue Level - Overall Sample

¹⁹² The charts included to illustrate this section of the chapter intentionally do not include a scale, in order to not induce a feeling of exactitude since the data is extrapolated from a small sample of 57 NMH participants. I believe the reality is somewhat similar to these depictions since they have been shown as significantly relevant by the Pearson chi-square analysis which is valid for samples of this size (Frankfort-Nachmias & Leon-Guerrero, 2011, p. 350), but further inquiry with a much larger sample would be required to make exact conclusions.

¹⁹³ The Pearson chi-square test indicates an approximate significance of 0.037. A value of less than 0.05 is considered a significant correlation (Cramer & Howitt, 2004, p. 24).

¹⁹⁴ The Pearson chi-square test indicates an approximate significance of 0.032 for the set and even more for the Quebec City area with approximate significance of 0.018. The smaller the value, the more significant the correlation.

However, as Figure 6:64 and Figure 6:65 show, this difference is more pronounced for households residing in the Quebec City area than those living in the Strasbourg area.

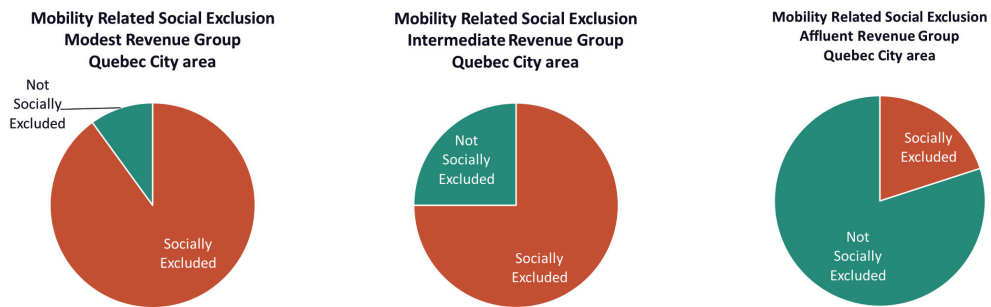


Figure 6:64 Social Exclusion Related to Mobility and Revenue Level - Quebec City Area

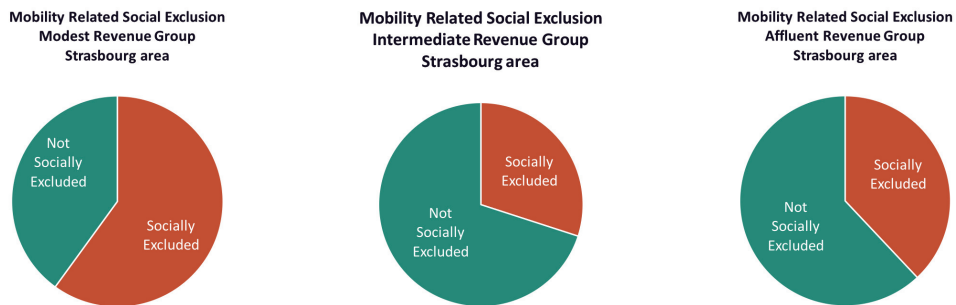


Figure 6:65 Social Exclusion Related to Mobility and Revenue Level - Strasbourg Area

6.5.1 Bottom-Up: What NMH Say About Social Exclusion

Using the similarities analysis in IRaMuTeQ, the discussion with NMH participants on whether or not they felt socially excluded in relation with their mobility produced the word network in Figure 6:66. I notice two main clusters, one about the ‘car’ and one with the verb ‘going’ at its centre. The ‘car’ being at the centre of the network. The ‘going’ (pink) cluster spawns a small ‘exclusion’ (purple) cluster linked to the verb ‘feeling’. This cluster also contains the word politics, showing that NMH at this point in the discussion were making connection between social exclusion and some political questions, even if I didn’t prompt them. The word ‘exclusion’ is connected to the car, representing a proximity between these two words in multiple segments of the social exclusion discussion. There is also a “money” (blue) cluster with the words ‘expensive’, ‘paying’ and ‘costing’.

When proceeding to the descending hierarchical analysis, the dendrogram in Figure 6:67 is generated. It groups the discourses into four distinct classes. Class 2 described multiple hardships on the bus. It is associated with a series of variables (having a driver’s licence,

being in the middle revenue group, not being a member of the car-sharing system, being a woman, etc.). Class 1 is about finding a way of getting by, making do with the situation of exclusion. It is correlated with answers from people of 65 years or more; from the modest revenue group; as well as respondent owning their home. Class 4 is about exerting a form of control over the car. It is associated with living in the Strasbourg urban area; having a driver's licence and living in a single parent family household. Class 3 is about not feeling excluded. It is correlated with not being socially excluded; owing their home; and being in a couple households.

Word Network
Mobility-Related Social Exclusion for NMH

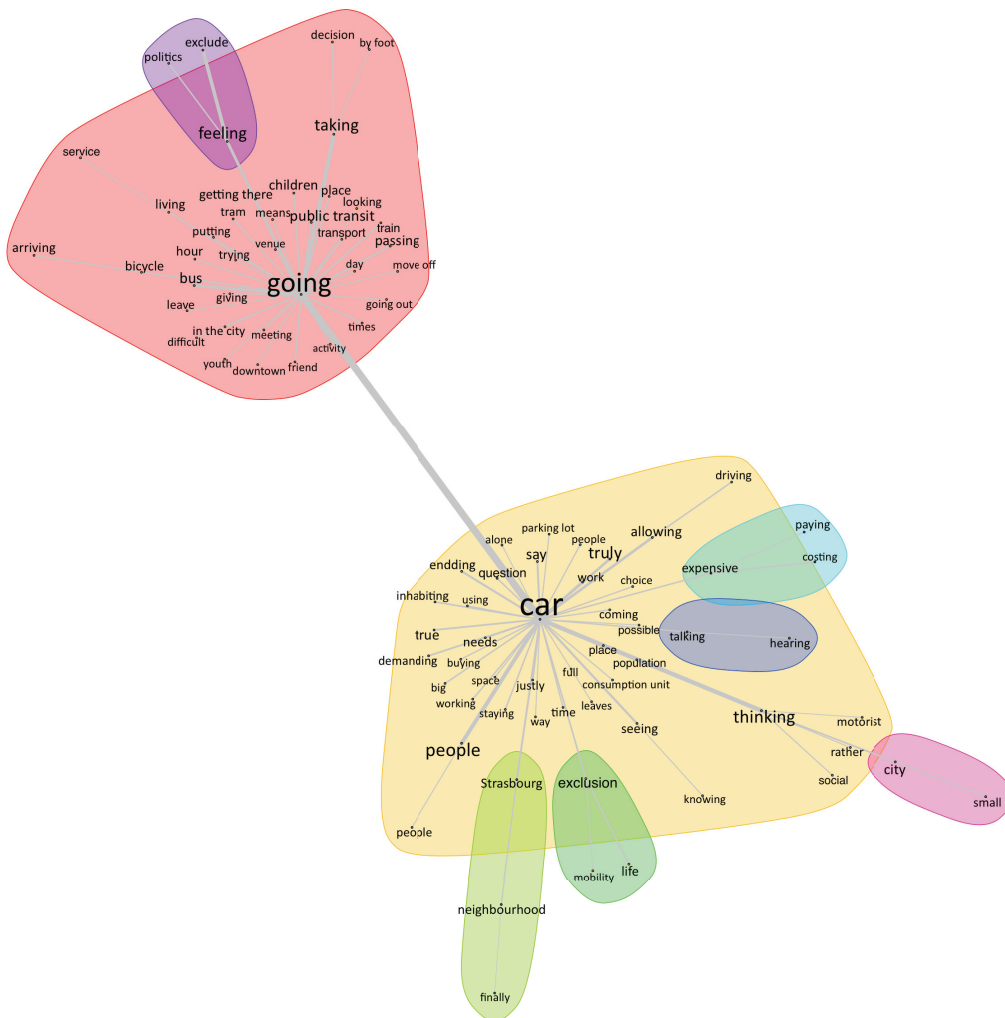


Figure 6:66 Word Network - Mobility-Related Social Exclusion for NMH

Dendrogram

Mobility-Related Social Exclusion for NMH

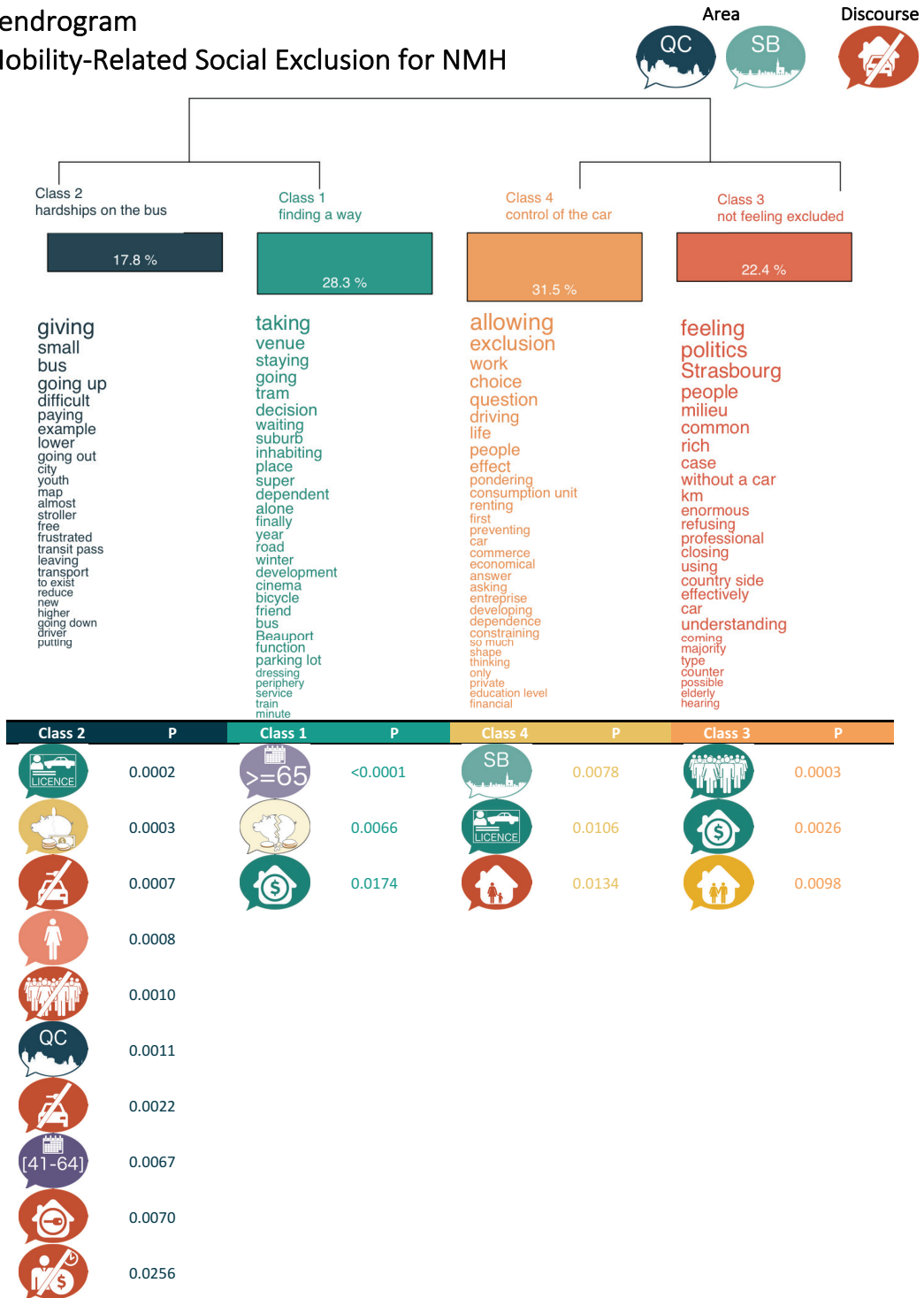


Figure 6:67 Dendrogram - Mobility-Related Social Exclusion for NMH

6.5.2 Bottom-Up: What Socially Excluded NMH Had to Say About Social Exclusion

The previous section represented an interesting view of mobility-related social exclusion by NMH, including all the participants in the study. But what if I only take the discourse from respondents who actually feel socially excluded? Being interested in the authentic perception and description of social exclusion related to mobility of people actually reporting feeling it, I created a sub-corpus of the social exclusion discussion containing only the answers of those respondents who reported feeling socially excluded.

The word network in Figure 6:68 shows the results of the similarities analysis. The word network contains three main clusters around the word 'car' in the centre of the network (in orange), the verb 'going' as the largest cluster (in red) directly connected to 'car' and the word 'thinking', also directly connected to 'car' forming the last and smallest main cluster. The appearance of this 'thinking' cluster in this word network, while not in the previous one is significant. It shows that participants feeling socially excluded were more likely to express their opinion, which in French is often delineated with the preface "I think".

Monetary aspects have their own sub cluster (in blue), directly connected to 'going'. However this time it contains one more word than in the previous exercise including all participants, the transit 'pass'. This indicates that the high cost of the transit pass for some participants with low revenue who in the Quebec City area do not benefit from the Strasbourg revenue based pricing, is associated with social exclusion. The word network also includes a small 'feeling' and 'excluded' cluster (green) which includes the word 'pedestrian' inside the 'going' red cluster, demonstrating that for the NMH the experience as a pedestrian can lead to the feeling of social exclusion. This is probably the case more for the Quebec City area than the Strasbourg area, as for example, motorists do not usually pay any respect to pedestrian crossings in that area¹⁹⁵ when they are not part of an intersection with traffic lights. Unless there is a red traffic light, the experience of pedestrians there is that cars don't stop for people crossing the street, one has to wait for the absence of cars to safely cross the streets. Living in the 'suburb' also form a single (green) cluster connected to the 'car' cluster, connecting this environment with social exclusion as well for NMH.

The Alceste analysis generated a dendrogram (see Figure 6:69) containing four distinct classes of discourse on social exclusion by NMH feeling socially excluded. Class 3 describes

¹⁹⁵ Often not even slowing down but rather speeding to "scare off" the pedestrian who is crossing at the designated crossing area as I experienced first-hand many times during my field work in Quebec City. More than one angry motorists even stopped afterward opened their window and screamed profanities at me in the -20 degrees Celsius weather for crossing, even though the law ascertains that pedestrians have the priority at pedestrian crossings and signs clearly and on the pavement markings clearly indicate the crossing.

respondents' thoughts and feelings about the car. It is correlated with having a transit pass; and having a driver's licence. Class 2 relates to the feelings of being isolated and excluded linked to the primacy of the driver licence. It is associated with living in the Strasbourg area; being in the affluent revenue group; not owning a transit pass; and being a member of the car-sharing system. Class 4 provides a discourse on political reflections. This is correlated with having a transit pass; living in a roommate household; being in the younger age group of 18 to 41 years old, as well as living in the Quebec City area. Class 1 contains a discourse related to the experience of taking the bus. While it is focused on a public transit mode of transport, it is correlated to answers from respondents who do not possess a public transit pass. Once again bringing up the issue of the cost of transit pass as a cause of exclusion. It is also associated with respondents 41 years or older, it is correlated with not being a member of the car-sharing system; as well as not having a job. Women are also more represented in this category of discourse.

Dendrogram Mobility-Related Social Exclusion for NMH

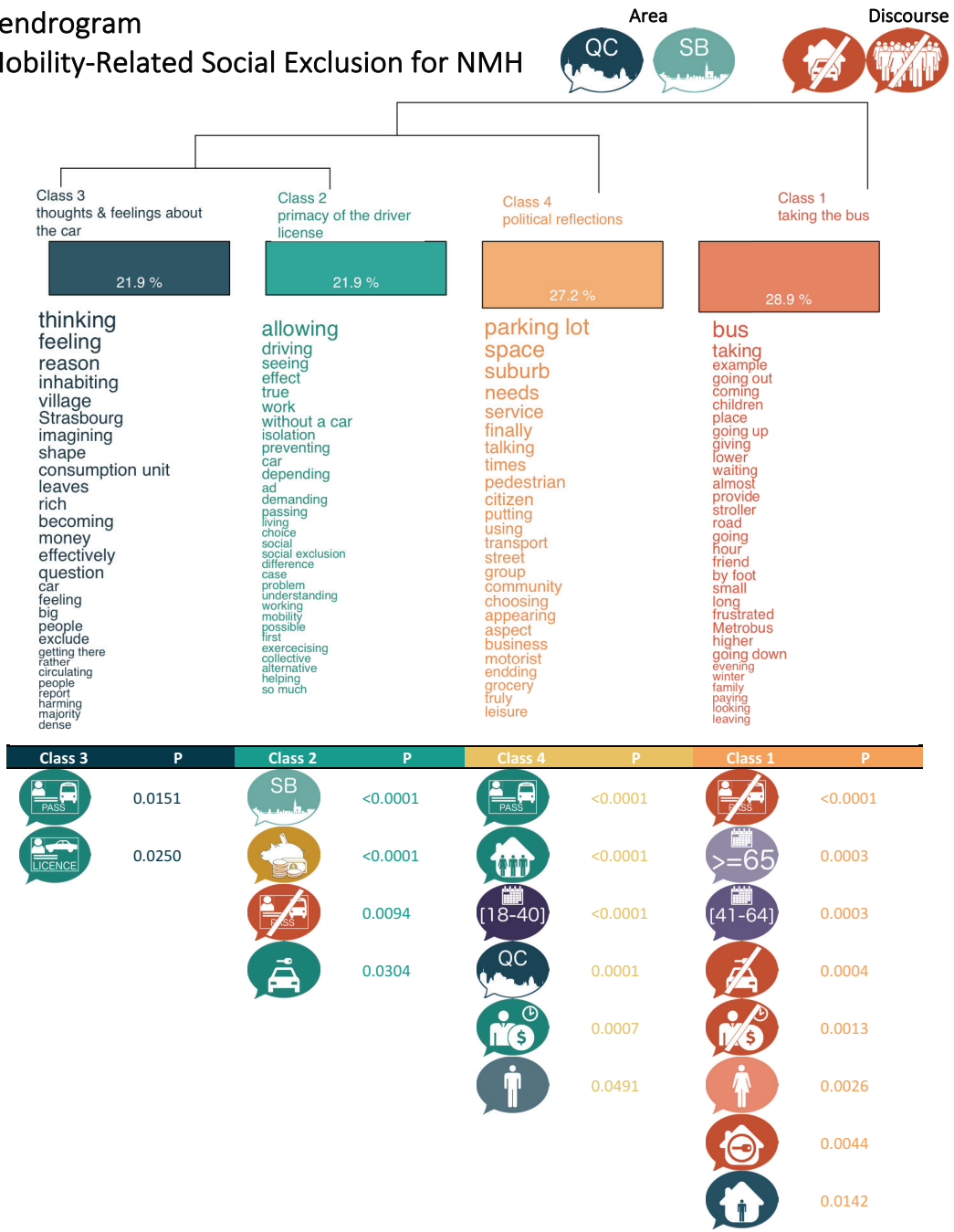


Figure 6:69 Dendrogram - Mobility-Related Social Exclusion for Socially Excluded NMH

6.5.2.1 Mobility-Related Social Exclusion for Socially Excluded NMH by Urban Area

Looking at the specifics between the two urban areas (see Figure 6:70), fewer words appear than in other such an analysis, indicating that fewer differences existed based on the urban area. Typical area differences on transport mode are apparent as in the reliance on the ‘bus’ (factor: 3.3) in the Quebec City area and the ‘train’ (factor: 3.3) in the Strasbourg area. The socially excluded NMH in the Quebec City area were more likely to mention going on ‘by foot’ (factor: 1.2) and discussed spatial aspect (factor: 2.1). The car was more present in the discourse of the respondents from the Strasbourg area as demonstrated by the word ‘driving’ (factor: 3.3) and ‘car’ (factor: 1.1). The Quebec city area participants were also more likely to talk about their ‘feelings’ (factor: 2.9). But the most important difference for the Strasbourg area was the ill feelings towards the high importance given to the possession of a driver’s ‘licence’ (factor: 13.5) for ‘work’ (factor: 3.2) or ‘working’ (factor: 2.3).



Figure 6:70 Specific Discourse on Social Exclusion by Socially Excluded NMH by Urban Area

The first two segments below present statements showing for example people from the Quebec City urban area discussing their ‘feelings’. The first segment also presents an example of mentioning the bus, the second most used transport mode for NMH in that area (after walking) according to the OD survey data¹⁹⁶. The third segment shows an example of spatial discussion from a NMH representative in that area.

¹⁹⁶ See Figure 5:5 on p. 183.

Text segments characteristic of the answers specific to the Quebec City area:

Sometimes yes we **feel** excluded because we cannot go sometimes to places we would like to go, like Wendake¹⁹⁷, for example. Or the cinema, sometimes it's doctor's appointments, that the doctor [office] is far away and the **buses** are not going there.

(176-W) Martine, 55 - Quebec City area (Montcalm) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Yes, I happen to **feel** that it is really not of me that they think when they develop certain policies, I **feel** that I am part of a minority.

(166-W) Johanna, 64 - Quebec City area (Ste-Foy) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

It is when we open the door, we are in the common space there and so when we see that the common space is planned according to those who own cars or who use them... In addition, I find that there is a blatant injustice that is visible.

(88-M) Philippe, 38 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

The Strasbourg area respondents face an issue that was not discussed by the Quebec City area respondents, the exclusion from the job market directly linked to not having a driver licence. Although both areas have very similar share of non-licence holder amongst NMH¹⁹⁸, this problem is specific to the Strasbourg area. A possible explanation for this difference lies in the fact that the vast majority of individuals in MH in the Quebec City do have a driver licence and since NMH are much less numerous in that area, employers might assume that applicants all have a driver licence. The three segments that follow show various aspects of this issue.

¹⁹⁷ Indian reservation in the Quebec City area.

¹⁹⁸ See section 6.1.2.4 Driver Licence Status Comparison of Individuals NMH vs MH on p. 354.

Text segments characteristic of the answers specific to the Strasbourg area:

Me for having done a lot of interim [temporary work], I was systematically asked for the [driver's] licence even if I did not go to work by car.

(289-M) Gervais, 43 - Strasbourg area (Schiltigheim) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

[...I being allowed to require a driver licence for a job, then they should facilitate my access to the licence. Especially since passing the license does not mean that I take a car, it's just that it does not prevent me from taking a job.

(336-W) Célestine, 42 - Strasbourg area (St-Étienne) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded

Just as people do not have the alternative well the fact of not having a car can be a big problem to go to work because precisely there we have no choice and it may be a social isolation indeed.

(289-M) Gervais, 43 - Strasbourg area (Schiltigheim) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

6.5.2.2 Mobility-Related Social Exclusion for Socially Excluded NMH by Gender

When analyzing the social exclusion discussion by the specificities of the answers by gender (see Figure 6:71), monetary issues appear specifically for women: 'paying' (factor: 2.4), 'expensive' (factor: 1.3), 'means' (factor: 1.2). The main transport mode specifically associated with the answers of women feeling socially excluded is the 'bus' (factor: 1.9). The number one specific word for men feeling socially excluded is 'bicycle' (factor: 2.4). They are also more likely to talk about 'space' (factor: 1.8), 'parking' (factor: 1.8), 'exclusion' (factor: 1.8) and the 'train' (factor: 1.5).

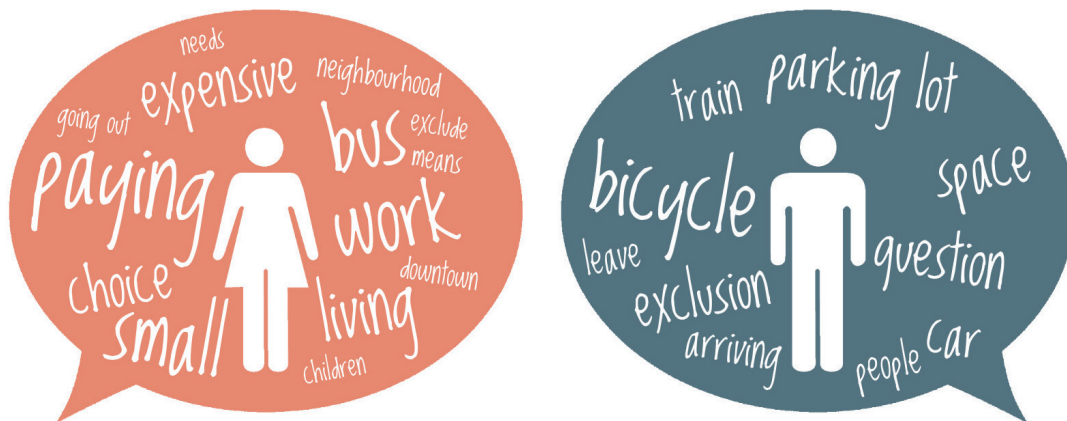


Figure 6:71 Specific Discourse on Social Exclusion by Socially Excluded NMH by Gender

In the analysis of the discussion with women respondents from NMH feeling social exclusion, financial matters were a specific topic of discussion that didn't surface when discussing with men in a similar situation. Once again, based on the small sample size (only 28 respondents felt socially excluded) it's hard to take this difference as evidence as it could be an artefact of the small sample, but considering that in both urban areas a greater proportion of women than men lived under the poverty line (Québec, 2006b; Strasbourg, 2011), it could also reflect the reality.

Text segments characteristic of the answers specific to women:

I think that **paying** taxes, I think you have to have services. Sure, if you are in the suburbs right now you **pay** for the public transport yet you do not really get the service.

(155-W) Pauline, 65 - Quebec City area (Faubourg St-Jean) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

I know someone who often does this, he often goes from Charlesbourg on foot because he cannot afford to **pay** for transit to go and eat at the soup kitchen here in Saint-Roch it gives you an idea.

(111-W) Nadine, 27 - Quebec City area (St-Sauveur) - Revenue level: Modest - Household type: Roommates - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

When comparing the mobility practices of men and women I found that in all the types of territories analysed, with the exception of within the city limits of Strasbourg, men used the bicycle more than women¹⁹⁹. This could be indicative that it's even more important for men that feel socially excluded.

Text segments characteristic of the answers specific to men:

Then they fired me two days later. When I came to the agency by **bike**, they told me you went to work by **bike**? I said yes why? But on principle it did not please them.

(289-M) Gervais, 43 - Strasbourg area (Schiltigheim) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

At some point, I say either you do it or you don't do it! But go if you really want to do something for the **bicycles** well maybe it will actually impair the cars but we think more of ways to annoy the bikes than annoying the cars.

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

6.5.2.3 Mobility-Related Social Exclusion for Socially Excluded NMH by Revenue

Looking at the distribution of the participants feeling socially excluded across the revenue group, it appears that my sample differs from what Perrons & Skyers (2003, p. 271) found: “[t]he well paid and securely employed are rarely found among the socially excluded”. Of course, this could just be related to the small sample size²⁰⁰, but at the very least, I point out

¹⁹⁹ See the comparison in Figure 6:53 on p. 399.

²⁰⁰ In total only 28 participants felt socially excluded.

that is my sample, some affluent and employed NMH respondents still felt socially excluded in regards to their mobility which might be indicative of a difference with other causes of social exclusion.

Before discussing the analysis of those who were feeling socially excluded in regard to the three different revenue groups, some differences regarding the distribution of respondents in the three revenue groups per urban area is important and needs to be discussed. As shown in Figure 6:72, the modest and middle revenue group represent the vast majority of participants who reported feeling socially excluded in the Quebec City area whereas they only represent half of the population feeling socially excluded in the Strasbourg area. In light of these differences the modest revenue group answers are more representative of the Quebec City area and the affluent revenue group answers are more representative of the Strasbourg area.

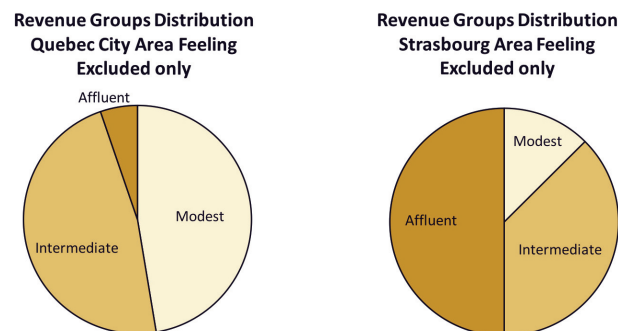


Figure 6:72 Revenue Group Distribution of Socially Excluded Respondents per Urban Area

Overall few differences appear. The analysis of the discourse of revenue groups (see Figure 6:73) shows the modest groups more likely to discuss ‘demanding’ (factor: 2.2), ‘neighbourhood’ (factor: 1.7) and ‘needs’ (factor: 1.6). The middle revenue group were more likely to bring up the ‘bus’ (factor: 1.6), ‘space’ (factor: 1.1) and the ‘bicycle’ (factor: 1). The affluent revenue group feeling socially excluded were more likely to mention ‘driving’ (factor: 5.7), ‘licence’ (factor: 2.3), ‘public transit’ (factor: 1.6), ‘costing’ (factor: 1.2), ‘paying’ (factor: 1) and ‘car’ (factor: 0.9).



Figure 6:73 Specific Discourse of NMH Daily Mobility by Revenue Level for Those Feeling Excluded

It's hard from the single words in the figure above to really understand what the respondent meant. IRaMuTeQ can help, by identifying text segments that are characteristic of each group and this helps understand the meaning of the words by providing the context.

Text segments characteristic of participants from the modest revenue group that feel excluded:

They do not necessarily say the car but the licence, yes in France they **demand** the licence for everything, even when we do not need it. It has always been **demande**d, I do not always understand why.

(289-M) Gervais, 43 - Strasbourg area (Schiltigheim) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Of course, there may be a definite exclusion. In the sense that decisions are **taken** not according to your needs but to the needs of motorists.

(111-W) Nadine, 27 - Quebec City area (St-Sauveur) - Revenue level: Modest - Household type: Roommates - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

Text segments characteristic of participants from the intermediate revenue group that feel excluded:

But after I also think that the people who are in these **small** villages are obliged to have a car just for work. Finally, there is very few that work [where they live]... In the end, there is no business, there are very few businesses...

(319-W) Rachel, 39 - Strasbourg area (Neudorf) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Some participants expressed the idea that the bus was not accommodating to everyone, you had to fit certain criteria to be able to fully take advantage of the bus system. This was not always the case, especially with elderly participants:

I find to be well served by the bus system but [I find that] you have to be autonomous, that you can walk, that you are of an average build [not obese].

(213-W) Rose, 60 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

The other issue that was often mentioned is the relative inefficiency of the bus system compared to the car, a defining feature of car dependence according to Dupuy (1999a).

Yes, I think it [the bus] goes by. But after that you have to walk for 20 minutes, in short, I looked to go there once by bus then it was an outing of maybe four hours for a meeting of one hour, at not so far away, 10 minutes by car.

(109-M) Denis, 41 - Quebec City area (Villeneuve) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: No - Feels socially excluded.

Even for participants from the affluent revenue group the issue of driver licensing requirements for access to jobs was mentioned.

Text segments characteristic of participants from the affluent revenue group that feel excluded:

No, I think for work here in Strasbourg I think it was necessary to have a licence. It was not necessary to have your own car, but when travelling I had to drive and quite a lot, so yes...

(320-W) Émilie, 31 - Strasbourg area (Centre-ville) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

6.5.2.4 Mobility-Related Social Exclusion for Socially Excluded NMH by Membership in the Car-Sharing System

As shown in Figure 6:74, a small majority of the respondents feeling socially excluded were not members of the car-sharing system in their area. The opposite is true for those not feeling socially excluded. This is not a statistically significant difference when tested with the Chi-square test. However, I thought it was important to note that the answers of the members of the car-sharing system represent a smaller number of participants. For IRaMuTeQ, the small number of participants was not a statistical problem since the analysis is still based on the entire sample of 35 answers²⁰¹ which contains 13'486 words, including 1'557 different forms. The members of the car-sharing system that felt socially excluded (14 individuals) provided 16 answers, representing 5'030 words and 852 forms.

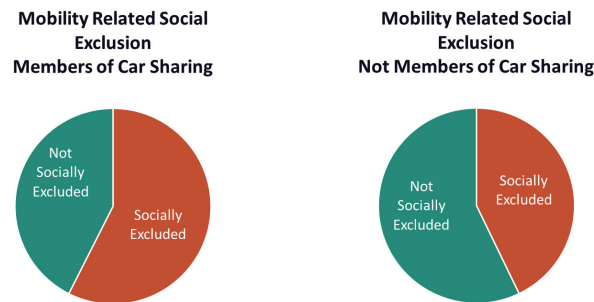


Figure 6:74 Car-Sharing Membership Distribution of Socially Excluded Respondents

As shown in Figure 6:75, the members of the car-sharing system feeling socially excluded were significantly more likely to talk about the 'car' (factor: 2.6), 'the bicycle' (factor: 2.5), driving (factor: 2.3) and 'parking lots' (factor: 0.8), which is logical as they are often more likely to drive a car than the non-members. For the non-members of the car-sharing system that reported feeling socially excluded, the specificities analysis shows that they more likely talked about the 'bus' (factor: 4.1), 'taking' [decisions, a transport mode] (factor: 2.1), 'space' (factor: 2.1) and 'expensive' (factor: 0.8). The inclusion of the word 'expensive' in the non-member specificities results indicates that their non-membership in the car-sharing system might be related to the costs involved.

²⁰¹ Even though only 32 participants felt socially excluded some provided more than one answer, as they requested to comment back on this later on in the discussion and I coded those as different answers, in that case multiple answers are assigned to the same participant.



Figure 6:75 Specific Discourse of NMH on Accessibility by Membership in Car-Sharing System

Text segments characteristic of a participant from the members of the car-sharing system:

They thought I would arrive late or things like that because they think people will arrive late if they do not have a car in fact.

(289-M) Gervais, 43 - Strasbourg area (Schiltigheim) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Text segments characteristic of participants from the non-members of the car-sharing system:

If there were no buses I would be pretty isolated, I would not get out very much even if I would be in an area where the bus passes on the hour, or on the half hour or hour and a half I would find it hard.

(94-M) Benoit, 44 - Quebec City area (Charlesbourg) - Revenue level: Modest - Household type: Roommates - Household size: 5 persons - Car-sharing: No - Feels socially excluded.

There are buses, but there are things like that where you tell yourself that they are frankly not thinking about it [...] like the cinema, that's for sure that's the kind of thing you wonder to yourself why is there so little bus access for these places?

(150-W) Caroline, 46 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

Some of the words included in the chart for the non-members of the car-sharing system might seem puzzling. For example, the word *passing*. The word 'passing by' (*passer* in French) has multiple meanings, in French and in English. This is a weakness of the lexicometric analysis, in that the word is analysed, with its context (the words surrounding it) but the meaning does not enter the equation. In the interview material, it is either missing the bus and seeing it passing by, or it meant going through or not being able to go through a specific path or area. It can mean passing time somewhere, succeeding in getting the driver licence, and so forth. While this word was often used by NMH participants feeling socially excluded that are also not members of the car-sharing system, it took on so many meanings that it should be ignored from the analysis.

6.5.3 Bottom-Up: Discourse on Reasons for Feeling Socially Excluded

With their first-hand experience with mobility-related social exclusion in two different continents, the respondents of my samples provide various insight into the cause of this social problem. In this section I present verbatim quotes²⁰² from the respondents in the discussion about social exclusion from not having a car, grouped by frequent topics. Following the analysis and re-reading of these exchanges, transcribed for research with traditional qualitative discourse analysis, several themes appeared that could explain this feeling of social exclusion. The lack of inclusion of non-motorized households in the planning process for transport and mobility policy making appears to be an important factor. In addition, many respondents perceived that they were not on an equal footing with motorists when it came to policy decisions. There is also sometimes negative judgment and misunderstanding from motorized people they interact with, for example in the workplace. Some feel excluded from the labour market by this lack of mobility, while others say they are excluded from social functions that take place late in the evening due to shortfalls in the public transit schedules. The fact of not having access to certain places that one wants to frequent also comes up commonly as elements of the answer. And, a fact peculiar to Quebec City, the negative discourse towards non-motorized households (and many other marginal

²⁰² My own translation of them.

groups like welfare program users, the local Muslim community, immigrants, etc.), conveyed by local radio stations, often described as “trash radios”, also seems to lead to a form of exclusion linked to mobility.

6.5.3.1 *Lack of Being Included at the Political Level*

As discussed by Burchardt et al. (1999), lack of participation in political activity, including the policy making process can be a factor in social exclusion. According to Perrons & Skyers (2003, p. 265), while it might be part of policy to consider participation and consultation, it's not necessarily successfully implemented: “[...] in practice, recognition, participation and empowerment are largely discursive”. This was the case in our discussion with NMH on social exclusion. Respondents frequently say they are not consulted or not listened to by policy-makers during the consultations held or who felt they were left out of public transport policies:

[...] there we had gone to the public consultation, we left it so frustrated, it was unbelievable [...].

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Other respondents like Johanna and Élise below felt that transport policies were not geared towards their needs. This echoes what Lubitow, Rainer, & Bassett (2017, p. 11) found in their research on transit-dependents in Portland, Oregon:

[...] decisions about transportation costs, scheduling, and stop locations occur within a social environment that is not well-suited to recognize multiple social differences in mobility patterns. Rather, the ‘ideal rider’ who is white, male, able-bodied, financially stable, and primarily uses transport as a means to get to and from work is well-served by public transit, to the exclusion of many other types of riders.

[...] I sometimes feel that it is really not me they were thinking about when developing certain policies. I feel part of a minority.

(166-W) Johanna, 64 - Quebec City area (Ste-Foy) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

I think that the current policies in the world are more for rich people than the population, which is not the case for the general population, the majority ... the majority.

(227-W) Élise, 56 - Strasbourg area (Port du Rhin) - Revenue level: Modest - Household type: Single parent family - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

As stated by Turriffin (1994) cited by Perl & Pucher (1995, p. 279), consultation is not a strength of the Canadian transportation policy making: “[...] Canada’s urban transportation policymaking suffers from excessive insularity, in which professional and political elites shield their work from public input. Too often, ambiguity is heaped upon ambivalence as a way to avoid open conflict over controversial issues”. Magnusson (1983) cited by Perl et al. (1999, p. 15) affirms that this is particularly true at the regional government level in Canada, (the CMQ in this case): “[p]rovincial governments, which hold constitutional authority over municipal affairs, intentionally circumscribed the democratic participation in regional governments when legislating them into existence”.

6.5.3.2 Motorists Get Preferred Treatment

Another frequently recurring theme in the discussions on social exclusion is that the needs of motorists seem to be considered the most important, ahead of pedestrians, cyclists and other altermobiles in public policy or the political processes. Litman (1999, p. 27) suggests for example that the costs and externalities of car based mobility are unfairly distributed between motorized and non-motorized citizens. This was almost exclusively the case in the Quebec City area and in that area, it was also mentioned by a few participants not feeling socially excluded.

In this quote, Jack describes a frustrating situation where in order to save a few on-street car parking spots, a bike lane is planned to make an important detour instead of using the most direct path. He considers this situation to be the norm in the Quebec City area:

[...] often we think to ourselves, it does not make good sense, it annoys us a little to see that it is always, phew, the car passes before anything else [...] They think more to deteriorate the bike situation than to deteriorate the car situation. The main thing is to not degrade the car experience, not to deteriorate parking places. For the cars first, after if it hurts a bit to the bikes because the bikes finally they must make a big detour it is less of an issue. You know, but it's painful that it's never on the same footing.

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Here Nadine also feels that motorists are considered by policy makers more important than other road users or even the immediate local population. She refers to the demolition of a neighbourhood to make way for a highway exit as an example:

It is sure that there may be a certain exclusion in the sense that the decisions that are made are not according to your needs, but the needs of the motorists. [...] there was a Chinese neighbourhood that was razed for the needs of commuters [who come in town by car]. It's a pretty strong exclusion you know, we're demolishing your neighbourhood.

(111-W) Nadine, 27 - Quebec City area (St-Sauveur) - Revenue level: Modest - Household type: Roommates - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

In this segment, Thomas relates his thoughts on the public transit system which he feels is targeting motorists since it leaves out people who must rely on it outside business hours and it doesn't serve the entire area:

The public transport system is made for those who have a car or for people who know the schedules and know that it is simply impossible, you know to go at any time, anywhere.

(225-M) Thomas, 44 - Strasbourg area (Contades) - Revenue level: Modest - Household type: Family - Household size: 5 persons - Car-sharing: Yes - Feels socially excluded.

Other respondents from socially excluded NMH felt that the level of infrastructure investment for motorist compared to other modes of transport represented an unfair situation. This could be related to the fact that the provincial ministry of transport

announced a plan to add new lanes to some of the local highways while I was performing the interviews. This unilateral announcement by the province was often in discussed in the media and was decried by municipal politicians who were not consulted by the province while the tram project seemed to be jeopardized. The Quebec City tram project was later officially cancelled but for a while the municipal politicians could be noted for their dwindling support for this new major transit investment.

[...] sometimes it is unfair the investments in favour of motorists. But I'm not interested in politics, but it's true that it's unfair.

(59-W) Dominique, 62 - Quebec City area (Notre-Dame des Laurentides) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Doesn't feel socially excluded.

As mentioned by Nadine earlier, neighbourhoods were cut in half or demolished to make room for highways, some NMH had a feeling that this infrastructure on which they are not allowed as pedestrians or cyclists was adding to their feeling of relative unimportance compared to motorists in urban planning as Philippe expresses below:

If one can feel excluded? Yes. Yes, there is an exclusion [...] automotive infrastructure are as much space of freedom when you have a car than they are walls for those who do not. [...] when we see that the common space is planned according to those who own cars or who use them, besides I find that there is a blatant injustice that is visible.

(88-M) Philippe, 38 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

6.5.3.3 Judgment of Others and Isolation

Abric (2012) recalls the importance of social representations as a mechanism of social exclusion. As Lyet et al. (2010) found, negative judgement from others and the negative image dissipated in society is a factor of social exclusion. The NMH participants also discuss his aspect. There is also some misunderstanding on the part of others and respondents feel marginalized socially or politically as Gervais mentions it:

[...] generally when ... so there I said, there are people who call me crazy because we have two children today [without a car] so uh.

(289-M) Gervais, 43 - Strasbourg area (Schiltigheim) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Even though, like others feeling socially excluded in the Quebec City area Mireille sometimes felt misunderstood or alienated for not having a car, she related that in comparison to the rest of the province, with the exception on Montreal, the situation is Quebec City is not so bad:

In Quebec City it's not so bad. As I tell you I lived in several cities. Saint-Hyacinthe, Trois-Rivières. There it was: you have no car? How do you breathe? You know it was a bit like that. My god how are you going to manage? And it was true that it still created some isolation because, well, participation in activities was more difficult for me. [...] On the other hand, in Beauport there yes! There, I am more a little bizarre, a little weird [...] must be able to live with that look from others. Then, but as far as politics is concerned, more it seems to me at the municipal level, then yes, I feel really excluded... In the end yes it is so, I feel a little excluded from this mentality- You know, and often I say so, yes I live in Beauport, but I'm not a girl from Beauport [...]

(217-W) Mireille, 34 - Quebec City area (Beauport) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

Many participants related that feeling ridiculed by their fellow citizens was in cause with their feeling of being socially excluded in relation to their mobility as related by Émeline:

[...] there are always people who laugh that I do not have a car. Who asks if I was drunk and lost my licence because of that... Ah you do not earn enough money, stuff like that, they do not understand that it's really a choice. Yes, it happens, but I do not care! It is that person who is close-minded, I will not buy a car because of that [...]

(320-W) Émeline, 31 - Strasbourg area (Centre-ville) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

Adding to the feeling of being ridiculed, participants related to feeling marginalized and judged by others around them as discussed by Jade. In the Quebec City area, this was also related to the anti-alternative mobility discourse broadcasted on local radios. But I treat that issue separately in section 6.5.3.8 on p. 449 as it was unique to the Quebec City urban area and came-up frequently enough to warrant discussing it.

We are marginalized! It's yes, yes, but it does not affect me emotionally speaking. I don't make myself into a hero for it, but yes we are marginalized. There is an a priori for the car so when we call anywhere to know the way to get somewhere, well we are told like you take the 40²⁰³ then you do this, you do that. Like OK and if I do not have a car, how do we get to your place? You know.. oh well this is not obvious [...]. Well, herr because uh ... well because ... there is a question there is a status there if I'm not worthy of having a car it's because ... because that I do not have the money to have one, it is because ... and there I say not, I speak not of the judgments that the people make. I do not have the money to have one ... heum why I do not have the money to have it when I work? I'm not organized to be able to have that [people judge me wrongly].

(190-W) Jade, 48 - Quebec City area (St-Laurent, Île d'Orléans) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

The following example was not common, actually no such feeling was mentioned in the Strasbourg area. But in the Quebec City area a few participants mentioned that not having a car was an impediment to forming or keeping social relations, either because it was hard

²⁰³ Highway linking Quebec City to Ottawa via Montreal.

to join friends for outings or that they felt so misunderstood by motorized friends that now they can only relate to non-motorized individuals. Those examples are fortunately few and extreme but I thought I should include them to illustrate a complete picture of the many reasons why living without a car in a car dependent area can be socially excluding.

I would say there is a change that happens with dating. There are people who do not understand that it's not obvious for you to go to the cinema very far or who will not visit you because they find no parking at your place. Hum, but so there's a certain, there are some people that yes... Let's say I'm interested in a girl from Saint-Émile²⁰⁴ forget it! It's impossible. If there are things like... I do not know if it's important, but you know it's like you... It's to a point that I'm friends only with people who do not have a car. In any case, there is a change...

(195-M) Tobias, 37 - Quebec City area (Vieux Québec) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

As related by Étienne, some general feelings about public transit also added to the feeling of being socially excluded for not having a car. Some of the NMH participants from both urban areas discussed a general feeling that only poor, degenerate people took public transit which they rejected but still carried for them the impression of being socially excluded. This negative vision of public transit user (and cyclist) was openly broadcasted on the radio waves of some the Quebec City area's radio station (see section 6.5.3.8 on p. 449).

[...] there are people, I know people who after more than 25 years have never taken the tram. For political reasons! Ah yes! The people of the right do not take the tram. Because they consider that the tram is made for the proletarians, that they will be strangled, they will be strangled in the tram. That ... [laughing] It's [crazy] well, but it's like that.

(372-M) Étienne, 70 - Strasbourg area (Des quinzes) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: No - Doesn't feel socially excluded.

Finally, I'd like to share the comment from Bruno which shows that some respondents had very strong feelings about this issue of being judged and isolated. He even goes so far as calling the phenomena "social segregation".

²⁰⁴ A neighbourhood which is part of one of the old suburbs that were amalgamated to form the current Quebec City.

Well, yes I would say ... [4th zone citizen] it was not so much exaggerated there. Yes, no there is still a certain feeling of being set apart, a little ignored, not really valued. Because that's it. The whole population has a car, the whole population uses the highways²⁰⁵. [...] So these are the conditions that make for more social segregation than there is already, through transport. Yes there is some, some sense of exclusion [...]

(209-M) Bruno, 36 - Quebec City area (Lairet) - Revenue level: Modest - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

Upon reflection, all these issues of being judged by others for not owning a car reminds me of the importance of human dignity and once again I am compelled to cite critical theorist Max Horkheimer (1947/2004, p. 120) on this topic, reflecting on the importance of human dignity as an organizing principle of society:

The shackling of man's thoughts and actions by the forms of extremely developed industrialism, the decline of the idea of the individual under the impact of the all-embracing machinery of mass culture, create the prerequisites of the emancipation of reason. At all times, the good has shown the traces of the oppression in which it originated. Thus the idea of the dignity of man is born from the experience of barbarian forms of domination. During the most ruthless phases of feudalism, dignity was an attribute of might. Emperors and kings wore halos. They demanded and received veneration. Anyone who was negligent in obeisance was punished, anyone who committed lese majeste was put to death. Today, freed from its bloody origin, the notion of the dignity of the individual is one of the ideas defining a humane organization of society.

6.5.3.4 *The Car Is Compulsory for Work*

The car is also sometimes seen as essential to find or keep a job. This excludes some members of non-motorized households from the labour market or prevents them from accessing good jobs, adding to their feeling of being socially excluded. As Gervais says, some employers demand that their employees go to work by car:

²⁰⁵ Even excluding themselves.

I was almost forced to go to work by car. They said you need a car. So to avoid arguing for 107 years. I told them yes yes of course I will come to work by car and I went by bike.

(289-M) Gervais, 43 - Strasbourg area (Schiltigheim) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Other participants decried not having access to what they felt were better jobs, because important job sites, like the industrial parks and the airport in the Quebec City area were not serviced by public transit. As Mélanie and France indicates, this is problematic in both urban areas:

[...] the industrial districts, the airport, finally where there are jobs available then you know when you do not have a car, you know when you live in downtown you cannot park a car! But you know you may be interested in working at the airport because you might have a better salary than working at McDo in the upper-town.

(194-W) Mélanie, 35 - Quebec City area (La Cité) - Revenue level: Modest - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

There I know a guy, he does not have the [driver's] licence and like there are jobs that pass him under the nose because he has no licence it is different. Me, I have the licence I know I can get by if necessary to have a car.

(326-W) France, 51 - Strasbourg area (Les Quinzes) - Revenue level: Intermediate - Household type: Single parent family - Household size: 4 persons - Car-sharing: Yes - Doesn't feel socially excluded.

6.5.3.5 *Obligation to Leave Early*

Public transit schedules can sometimes lead to some form of exclusion through mobility for lack of late service, forcing NMH participants to miss out on evening events:

there are ... these two examples from last week and this week again well I had to leave earlier due to lack of public transit in the evening in my outlying neighbourhood. While other people [...] I had to leave earlier [for a lack of public transport in the evening in my outlying neighbourhood] the other people, well there were not many like me who left early, there were still a few. Good because others yes, it is a form of exclusion. The others certainly were motorized, they came by car...

(227-W) Élise, 56 - Strasbourg area (Port du Rhin) - Revenue level: Modest - Household type: Single parent family - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

6.5.3.6 *Problem of Territorial Accessibility*

A whole section of my research was devoted to understanding the mobility of non-motorized households and to seeing which places they cannot reach for lack of a car. Some respondents also mentioned this being an issue during the discussion on social exclusion. Confirming that the difficulties associated with reaching certain parts of the urban area made them feel socially excluded. While previous participants had issues with reaching job sites (see section 6.5.3.4 on p. 440), it was also an important and exclusionary issue for leisure or medical destinations as the following quotes relate:

[...] there are public places that are not served by buses. I know that in Courville there is a park with a municipal cottage and there are organizations that do meetings there and sometimes they tell me the meeting is going to take place there, but it is almost impossible to go there by public transit [...] I found it annoying so in fact they find that we are very problematic [for always asking the meeting to take place elsewhere].

(109-M) Denis, 41 - Quebec City area (Villeneuve) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: No - Feels socially excluded.

It's like for the cinema that is for sure. That's the kind of thing that you're wondering why there's so little bus access for those places. [...] It is as if somehow you even tell yourself for a young person who wants to do an activity there, go shopping there it was designed just for children whose parents have vehicles and will go to drive them wherever they want. It's... Or as I told you earlier ski centres or places ... you're not going to Val Cartier [outdoors amusement park] there but it's a bit ridiculous that there is no transport that go there because if it's a nice activity no, but it's a nice activity.

(150-W) Caroline, 46 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

Sometimes yes we feel excluded because we cannot go sometimes to places we would like to go like Wendake,²⁰⁶ for example. Or the cinema, sometimes it's doctors appointments, that the doctor [office] is far away and the buses are not going there. So you have to walk a long way. Things like that yes!

(176-W) Martine, 55 - Quebec City area (Montcalm) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

6.5.3.7 *The Role of Motorist's Behaviour Towards Other Road Users*

The case of dangerous and harassing motorists' behaviour towards other road users, mainly cyclists but also pedestrians has recently been investigated to a limited extent, primarily by the scientific community in Anglo-Saxon countries. Researchers found that motorists were bullying and harassing cyclists on the road by driving near them, throwing things at them or insulting them when passing them. This was the case in Australia (Heesch, Sahlqvist, & Garrard, 2011; O'Connor & Brown, 2010), in the United Kingdom (McBeth, 2009), in Israel (Kaplan & Prato, 2016) and in the USA (Albert, 1999; Arayata, 2013; Furth & Dulaski, 2010). And according to my discussion with NMH this was also the case in the Quebec City area and to a lesser degree the Strasbourg area as well.

Researchers studying motorists' attitude towards other road users also found that some motorists had a very negative attitude towards cyclists and sharing the road with them, thinking that use the road should be solely for motorists and considering cyclists as intruders on the streets (Kaplan & Prato, 2016; Rissel, Campbell, Ashley, & Jackson, 2002).

Although the phenomena of driver's harassment of other active mobility road users has not been associated with mobility-related social exclusion before, it appeared frequently in my discussion with NMH, especially, but not exclusively those feeling socially excluded. I believe this is an important finding of my research, linking this little-known and unsuspected issue²⁰⁷ to the mobility-related social exclusion. As suggested by Knoepfel, Grant, & Perl (1999, p. 150), this can cause serious discrimination issues: "[t]he discrimination issue becomes even more contentious when drivers challenge other users of urban road space (pedestrians, cycling, ; demonstrators, and so on) as being less legitimate; or vice versa".

²⁰⁶ Indian reservation in the Quebec City area.

²⁰⁷ Especially since I didn't personally experience this as a non-motorist during my research. This is because I didn't cycle during my stays in either urban area as the field work was done in winter.

Some participants described a 'war' situation. Between cyclists and motorists:

This is the most **perilous** part [of my journey to work] because when I come back there is an highway entrance/exit which means that I continue straight and they [motorists] turn and it is really ... It's a **risk** every time there! We are invisible but there is even a **war** I think [between cyclists and motorists].

(217-W) Mireille, 34 - Quebec City area (Beauport) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: No - Feels socially excluded.

As well as between motorists and the bus:

Here in Quebec City it is ah no its don't you dare cross the street at a pedestrian crossing! Even bus drivers are often **aggressive** towards **motorists**, you know there is a **war** between buses and cars.

(194-W) Mélanie, 35 - Quebec City area (La Cité) - Revenue level: Modest - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

Similar sentiments were shared in Strasbourg but were relatively less intense, as in the example of Laurence that felt that motorists didn't like cyclists and might be envious of their good situation in the city of Strasbourg:

But in the end, well, there is still in Strasbourg er I would say that motorists are not always very they do not always like bikes, well, some, [I] will not also generalize, yet there are many... They are used [to cyclists] but there are certain motorists that have the impression that cyclists are too privileged in Strasbourg. Ouch [laughing] yep it's *jealousy* of course but...

(376-W) Laurence, 63 - Strasbourg area (Gare) - Revenue level: Modest - Household type: Single parent family - Household size: 2 persons - Car-sharing: Yes - Doesn't feel socially excluded.

However, cyclists in both urban areas that felt socially excluded referred to encountering motorists:

In the car [...] there is an aggressiveness by opposition that I live very very badly. Motorists for me are in a constant and very aggressive stress at the wheel of their car because for them it is easy, they press on a pedal and then they move forward and there is an ego yes there was something wrong. [...] There is no tolerance, there is no empathy, [motorists] don't allow any mistake.

(341-W) Naomi, 38 - Strasbourg area (Wihrel) - Revenue level: Intermediate - Household type: Single parent family - Household size: 3 persons - Car-sharing: Yes - Feels socially excluded.

Some participants also mentioned having their own close encounters with bullying motorists:

Because people are afraid of cars. What I can understand, I manage to impose myself, I can free myself from the pressure of cars that tries to push me on the side or other but there are many who dare not and I can to understand them.

(289-M) Gervais, 43 - Strasbourg area (Schiltigheim) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

The behavior of some motorists which sometimes that can brush against us or cut us on the road one realizes [...]. It's not always easy...

(209-M) Bruno, 36 - Quebec City area (Lairet) - Revenue level: Modest - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

For example, precisely, to get to work to go faster, in fact the most direct route would not be by the bike path and before I did that, going through the city it goes much faster. And then, because in St-Sauveur the streets are narrower, the cars brushed against me a couple of times eh, well I take the bike path now from the St.-Charles River which is much longer, but it is more pleasant, but it is like annoying because it is that, it is to say that to be truly worry free one must have a track right to oneself if not well I would say that the cohabitation on the street with the motorists it's difficult and it's stressful.

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Even some pedestrians felt a sense of danger or disrespect from motorists:

The fact that people are constantly in their car, I think it is much more dangerous today to be a pedestrian, at least I feel more at risk as a pedestrian today than 20 years ago. Because motorists have stopped seeing themselves as pedestrians.

(109-M) Denis, 41 - Quebec City area (Villeneuve) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: No - Feels socially excluded.

Because even here I mean trying to cross [...] you have a nice little pedestrian light. Often I say to you that you must watch because the cars pass [...] I do not know how many times I pushed for the [pedestrian] signal, because there are some [cars] who take advantage of it to turn because the pedestrian light is there. But there that makes me mad!

(152-W) Thérèse, 64 - Quebec City area (Chaudière Ouest) - Revenue level: Intermediate - Household type: Single person - Household size: 1 person - Car-sharing: No - Doesn't feel socially excluded.

Sometimes you wait for a full set of traffic light [cycle] when you're on foot, there you know the cars they complain, but I went to other cities .. Its way worse here plus we get splashed [water or slush by cars running into puddles] people are not really conscious of pedestrians in Quebec City but you know I went to Vancouver, I went to Halifax, I stayed in Ontario and it was not as bad as in Quebec City.

(194-W) Mélanie, 35 - Quebec City area (La Cité) - Revenue level: Modest - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

As the previous segments demonstrated, NMH feel that there is an attitude problem on the part of motorists sharing the road with other users, be it public transit vehicles, cyclists or pedestrians. This was often part of the discourse of NMH that revealed feeling mobility-related social exclusion when we discussed that. The segments used in this section were from the entire corpus and not just the question of mobility-related social exclusion. Although not linked to social exclusion before, demands for improving the safety on the streets are not new and other authors have affirmed their importance for equity concerns of transportation policy, as was the case for Knoepfel et al. (2007, p. 405)

Efforts to enhance urban traffic safety, such as reducing speed limits in cities or traffic calming of roads in particular neighbourhoods, can complement sustainable urban mobility initiatives. The road safety issue has been a longstanding concern for both urban parents and senior citizens. As such, it offers another potential counterweight to the equity concerns that would arise from any efforts to limit or regulate urban mobility.

The authors also noted that motorists could be discriminating towards other road users: “[t]he discrimination issue becomes even more contentious when drivers challenge other

users of urban road space (pedestrians, cyclists, demonstrators, and so on) as being less legitimate; or vice versa” (ibid., p. 406).

Although the issue of motorists’ attitude was part of the discourse of NMH feeling socially excluded in both urban areas, as the quotations show, this was more prevalent in the discourse of the Canadian respondents than the French ones. This can be related to the next and last issue that cause NMH to feel social exclusion and is unique to the Quebec City area, the role of the negative media discourse, especially in the Quebec City “trash radios”.

6.5.3.8 *The Role of Quebec City Trash Radios*

A problem specific to the Quebec City area is that local radio broadcasters often take to what I would qualify as hate speech against altermobiles²⁰⁸ and encourage motorists to adopt dangerous behaviour towards them²⁰⁹. These radios seem to play a role in the exclusion felt by several non-motorized households encountered in the Quebec City area by fostering the conflicts between motorists and other road users. Some of the most explicit discussion which was the most interesting to include below are from NMH that didn’t feel socially excluded, but as discussed before the antagonism from motorists towards altermobiles is a factor in social exclusion²¹⁰ and socially excluded NMH participants equally mentioned the radios, as well as civil servants in Quebec City.

²⁰⁸ Of the kind: the road is just for the automobiles, not for the bicycles; Cyclists are dangerous on the road, they should go on the sidewalk; the bus is only for the welfare recipients it should not have priority, etc ...

²⁰⁹ Suggests to listener to drive very close to the curb to scare cyclists, or cutting off the bus on the highway to prevent it from going onto the curb separated reserved lanes.

²¹⁰ See section 6.5.3.7 The Role of Motorist’s Behaviour Towards Other Road Users on p. 444.

Some cyclist respondents associate dangerous driver's behaviour towards them to the suggestions broadcasted on the radio:

It often happens for us to pester against the [trash] radios and what they say. [...] You know it happened to me before, I was on the bicycle there precisely it was this summer, I was on my bicycle there yep, I had the cart with the two girls attached to the back and not far from the police station, and worse, there's a car arriving. It's a pick-up truck and it arrives and it blocks me you know, and there it just stops and it goes, blocking me, but there at the height of bad luck it happened to a red light, so that there, well, I continue and go ahead, I stop, do you have a problem? And what does he say to me? You are a danger! [...] it was clearly a guy who had just listened to these radios [...]

(106-M) Raphaël, 32 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Others related to similar behaviour but towards public transit vehicles and the virulent discussions about adding reserved lanes for buses and carpooling on a major local highway:

[...] we can talk about the reserved lanes on Henri-Bourassa²¹¹ who made everyone talk enormously about quibbles and disturbances, they persisted and they signed, despite the fact that the public pressure, from the radio it has to be said, they were very very very violently against them, we can say. They cut off the buses that were going to take the reserved lane to keep them from entering. Drivers incited by trash radios, and people called in [to the radio show] to boast: "Yesss! I blocked one in the morning he could not take his lane." It mystifies me, not being from here I do not know that [...]

(22-M) Léo, 41 - Quebec City area (St-Roch) - Revenue level: Affluent - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Doesn't feel socially excluded.

²¹¹ A major north-south highway near the university and three colleges.

Some even called for the closure of a particular “trash radio” station as the only way to calm the situation:

[...] it also happens [stopping social exclusion] by closing-down CHOIX FM [trash radio], no it is a joke. I know that people who have frightened me with their car are probably people who listen to this kind of radio or have been encouraged in one way or another by speeches that they tend to say that the bike is not meant to be on the road. So it's in there for me there is I cannot talk about fighting, but it's almost like you have to fight to win your place on the road eh!

(147-M) Yvon, 32 - Quebec City area (St-Jean-Baptiste) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Doesn't feel socially excluded.

As discussed previously when relating the interview with civil servants²¹² the media's often negative picture of NMH and alternative mobility users adds to the feeling of being socially excluded. The link between these broadcasts and mobility-related social exclusion is not obvious but as Vincent & Bernard Barbeau (2012) affirm public insults can lead to a change in the way people perceive things, what is considered normal and can weaken the targets of the insulting discourse. Adding to the problem is the fact that such radios are very popular. Before losing its broadcasting license, due to too many serious complaints against it, radio station CHOIX-FM was the most popular radio in the Quebec City area market (Gingras, 2008, p. 1). The fact that 30'000 people marched down the Quebec City streets to decry the canceling of the broadcasting license, demanding freedom of expression and for the licence to be reinstated (idem) shows the broad popularity of this programming. Even if a judge from the Quebec Superior Court of Justice found that the broadcasts were “sexists, hateful, malicious, unfounded, hurtful and abusive [and that] they cause damage to the dignity, honour and integrity of human beings in general” (ibid., p. 8) the problem didn't disappear with the non-renewal of the station's licence.

²¹² See section 5.4.2.2.9 Sociological Aspects of Car Dependence on p. 281.

Although communication's analysts agree that this radio problem is unique to the Quebec City area in Canada (ibid., p. 1), negative images of transit users have been portrayed in the media elsewhere in Canada as in Figure 6:76²¹³ showing the example of a General Motors' car advertisement published in a Vancouver weekly magazine in 2003 (Metro Staff, 2003). This is not unique to Canada either as Rissel et al. (2010, p. 6) found that Australian newspaper represented cyclists in a negative perspective twice as often as portraying them in a positive outlook.

²¹³ I included this ad in part because it initially sparked my interest with negative representation of alternative mobility when I was looking for a research subject for this PhD thesis and it shows how a very negative image can be associated with transit riders. Somehow over the years this image has stayed with me. The ad was protested by the magazine readership and was later pulled by GM. Chavan, A. (2003, March 31). GM Pulls Ad That Labels Transit Riders "Creeps And Weirdos." Retrieved October 15, 2014, from <http://www.planetizen.com/node/9657>.

6.5.4 Top-Down: Social Exclusion for Public Servants

The similarities analysis of the discussions about mobility-related social exclusion with civil servants produced the word network in Figure 6:77. It contains six clusters: 'social', 'mobility', 'people', 'time', 'going' and 'together'. The 'going' cluster contains the transport modes 'public transit', 'bus', and 'tram'. The limited length of the discourse does not allow to successfully perform an Alceste analysis encompassing more than 70% of the corpus. It also prevents any specificities analysis from generating useful results.

Overall 'mobility' is the most popular word given in those answers and it appears civil servants recognize it as an important social value:

*At well for me **mobility** is a value, has an economic value and therefore has a social value, so in fact someone mobile is someone who socially considers himself and is considered socially valued.*

(406-M) Yann, >50 - Civil servant in Strasbourg.

Civil servants also mention the links between mobility and urban planning policies:

*I think this is the effect, **mobility** is the consequence of policies at the level of land planning of a territory that has by default an impact on the ability to be mobile, the urban form...*

(361-M) Mathieu, >50 - Civil servant in Quebec City.

Public servants discuss the effects of social exclusion:

*But someone who does not have a **car** and has no friends is really [laughing], but I think there is this question there too, I see misery, it is first and foremost affective.*

(406-M) Yann, >50 - Civil servant in Strasbourg.

Word Network - Social Exclusion from Public Servant Perspective

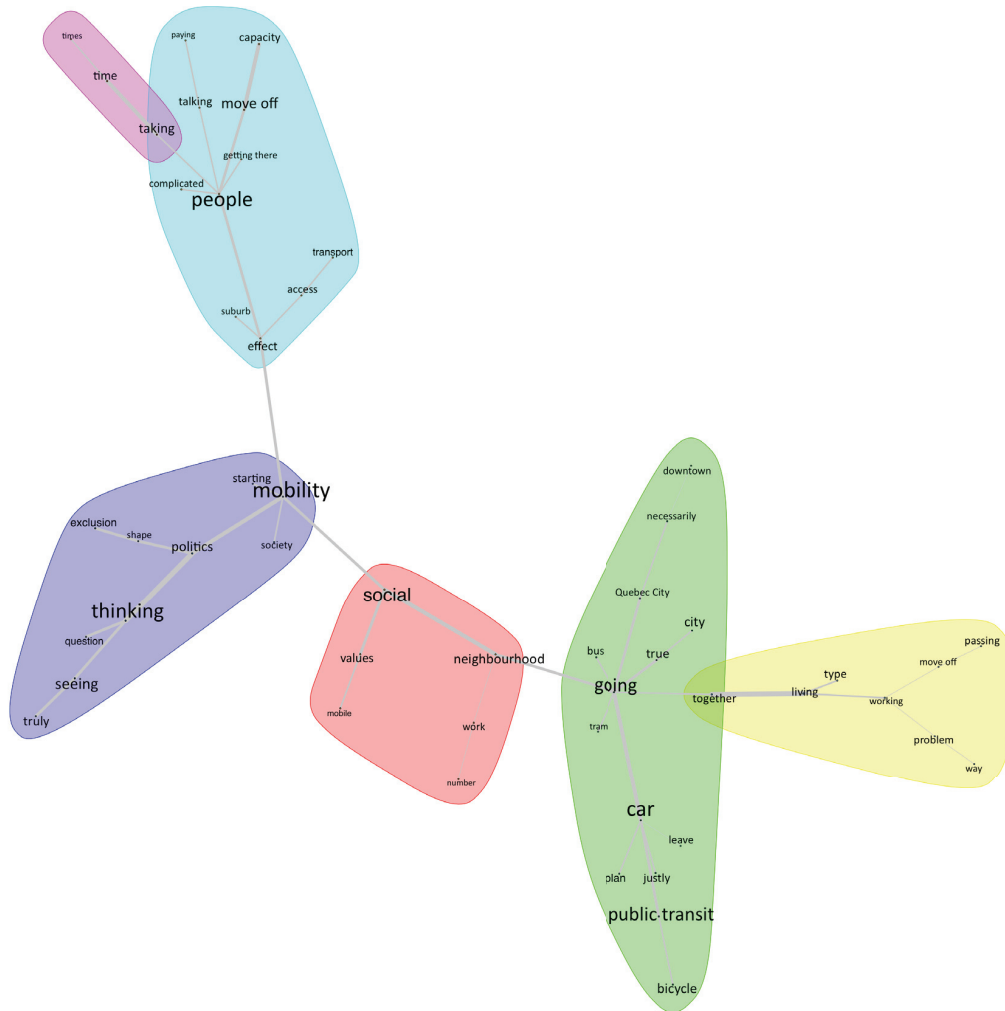


Figure 6:77 Word Network - Social Exclusion from the Perspective of Public Servants

When analyzing the answers for specificities peculiar to each urban area in the discussion about social exclusion (see Figure 6:78), I notice that the civil servants in the Quebec City area are more likely to mention the ‘car’ (factor: 0.3) and ‘public transit’ (factor: 0.4). They also appear less certain of what they say, as they specifically are more likely to say “I ‘think”” (factor: 1.5). Strasbourg area public servants were more likely to mention the ‘bicycle’ (factor: 2.2), while discussing social exclusion.



Figure 6:78 Specific Discourse of Social Exclusion by Urban Area

One particular item was sometimes mentioned by NMH when talking about policies, some participants claimed they felt that civil servants in charge of planning or public transit were obviously all motorized and didn't take transit or the bicycle in a regular manner, which added to their feeling of not being listened or understood, sometimes in cause with their feeling of social exclusion. In order to test this assumption, when I met with public servants at the end of the interview when asking for demographic information, I also I asked them if they use public transit, active mobility and how many cars there was in their household. It turns out some civil servants in Quebec City and in Strasbourg use active mobility on a daily basis to get to work, so the basic assumption of NMH was disproven. Two civil servants in the Strasbourg area also actually lived in non-motorized households of their own.

However, out of curiosity I ran a specificities analysis by putting on one side the public servants with either no car or one car and in the other group, the civil servants with two or more cars. These results are to be taken lightly as this would require a larger group than only the ten people surveyed, but it appears (see Figure 6:79) that being from a one car or non-motorized household and being from a two or more cars (the maximum was four cars) households might change the general tone of their answers. In the specific case of social exclusion, the civil servants with one car or no car were more likely to mention the ‘bicycle’

(factor: 1.1) while the public servants with two or more cars were more likely to talk about 'car' based mobility (factor: 1.2).



Figure 6:79 Specific Discourse of Social Exclusion by Number of Cars in the Public Servant's Household

Based on this preliminary result grounded strictly on the answers to the question of social exclusion and intrigued by the difference, I ran the same analysis on the entire content of answers by civil servants in Quebec City and Strasbourg and the results are also a little surprising with a difference in the underlying theme appearing as shown in Figure 6:80 and highlighted for easier readability in Figure 6:81.



Figure 6:80 Specific Discourse by Number of Cars in the Public Servant's Household



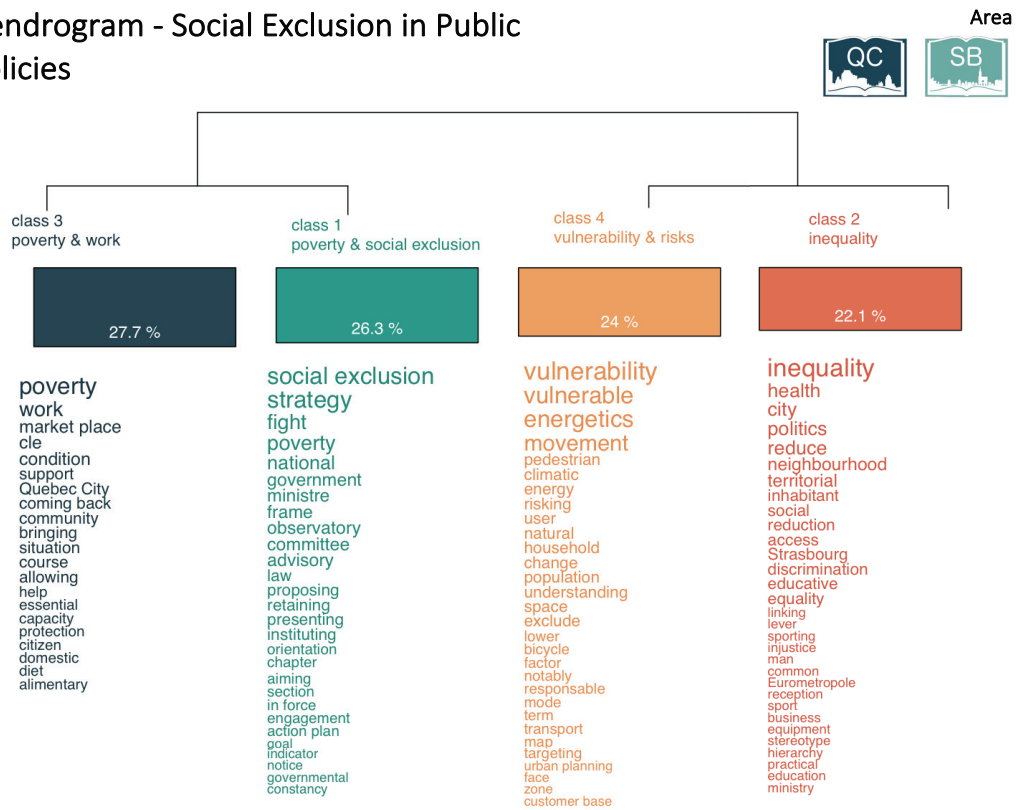
Figure 6:81 Highlights of Specific Discourse by Number of Cars in the Public Servant's Household

6.5.5 Top-Down: Social Exclusion in Public Policy

The focus of social exclusion policy was different between the two urban areas. My qualitative discourse analysis reveals that the link between social exclusion and mobility was addressed six times more often by the Strasbourg social exclusion policy documents than the Quebec City area policies. I also analyzed the segments of policy text that were mentioning social exclusion separately using the similarities analysis. The word network generated (see Figure 6:82) contains two interconnected main clusters for 'poverty' and 'inequality'. The 'poverty' cluster contains a connection to the 'social exclusion' node.

I analyzed the segments of policy text that were mentioning social exclusion separately using the Alceste analysis. The dendrogram produced contains four classes of discourse (see Figure 6:83). Class 3 is about poverty but also, its relation to work and it correlated with policies in the Quebec City urban area; and the Department/Province order of government. Class 1 talks about poverty and its links to social exclusion. It is correlated with policies in

Dendrogram - Social Exclusion in Public Policies



Class 3	P	Class 1	P	Class 4	P	Class 2	P
	<0.0001		<0.0001		<0.0001		<0.0001
	<0.0001		<0.0001		<0.0001		<0.0001
					<0.0001		<0.0001
					0.02650		

Figure 6:83 Dendrogram - Social Exclusion and Related Terms in Policies

When performing a specificities analysis on the segments mentioning “social exclusion” based on the urban areas (see Figure 6:84), it shows that the Quebec City area policies are more likely to include text referring to ‘poverty’ (factor: 50.4) and ‘social exclusion’ (factor: 14.3). The policies from the Strasbourg area corpus were more likely to include text referring to ‘inequality’ (factor: 28.3), ‘reducing’ (factor: 11), ‘neighbourhood’ (factor: 5.5), ‘priority neighbourhood’ (factor: 5.3) and ‘pedestrian’ (factor: 5). This related the unique focus of the Strasbourg area policies on reducing inequality and working on specific neighbourhoods, and the importance of fighting exclusion through its root cause of poverty in the Quebec City area policies.



Figure 6:84 Specific Discourse on Social Exclusion in Public Policy by Urban Area

Text segment characteristic of a Quebec City area policy:

An integrated service offer for families in situations of **poverty** and **social exclusion** is an added value to the national strategy to combat **poverty** and **social exclusion**.

Stratégie nationale de lutte contre la pauvreté et l'exclusion sociale
 Quebec, Province of, 2002

Text segment characteristic of a Strasbourg area policy:

[...] the project levers, five projects to see otherwise social and health, to highlight the fact that the **reduction of inequalities** and the levers on which to act belong to all the policies.

Le droit d'être heureux
 CUS, 2010

6.6 The Expectations of NMH Towards Public Authorities

I also discussed with NMH their expectations from the government, discussing what role, if any, the state should play for NMH. As seen in Figure 6:85 and Figure 6:86, a very large proportion of respondents believe that the government has a role to play towards non-motorized households. This line of questioning was undertaken with the goal of providing an answer to the sub-question regarding what can be done to improve the situation of NMH²¹⁵.

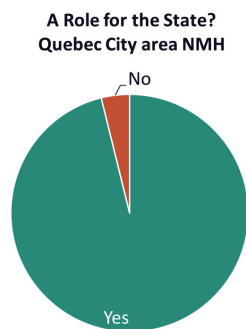


Figure 6:85 Role for The State - Quebec City Area

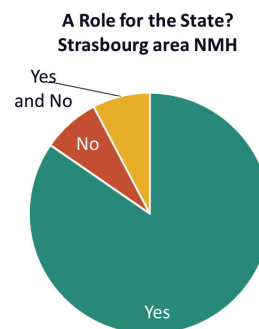


Figure 6:86 Role for The State - Strasbourg Area

I present sample verbatim quotes from the respondents in the discussion about whether the state has a role towards non-motorized households or whether it is rather a question of individual choice. The answers are selected to show the ranges of issues discussed by the NMH participants, a large majority of our participants being in favour of the state exercising a role in favour of reducing the need for the car for environmental and social reasons.

Ah, I really think it is an individual issue, after, well, the state hevm, in itself is not ideological the state, it will adapt to the demand of a population [...]

(226-W) Béatrice, 38 - Strasbourg area (Place de Haguenau) - Revenue level: Intermediate - Household type: Family - Household size: 3 persons - Car-sharing: No - Doesn't feel socially excluded.

²¹⁵ See section 3.7 on p. 111.

I think so, but that role is mostly in terms of town planning, in terms of land planning rather than direct assistance.

(81-W) Virginie, 28 - Quebec City area (Sillery) - Revenue level: Intermediate - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

There is a role for the state, I think it's fairly obvious.

(111-W) Nadine, 27 - Quebec City area (St-Sauveur) - Revenue level: Modest - Household type: Roommates - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

[...] I find that it goes further, that is to say that the state has a role in the environment, in the living space and in fact it also has a role, I would say not in education, but by proposing choices of life and that if the public transport is less and less well treated one removes something and especially one educates the people to take the car more and more.

(232-W) Mylène, 55 - Strasbourg area (Place de Haguenau) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: No - Doesn't feel socially excluded.

It's certain that they have a role. And once again at all levels, municipal and all that. Well, of course they have a role because they make it easier for people to travel by car by the choice they make. You know if you build highways and you expand the highways it will facilitate, if we invest in the road, the new roads [...]

(106-M) Raphaël, 32 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

The role of the state is to ensure that everyone is well served. At present, I think there is an imbalance in supply: the motorists versus all others [...]

(109-M) Denis, 41 - Quebec City area (Villeneuve) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: No - Feels socially excluded.

Well no, no there clearly, clearly the state has its role to play but currently it plays in favour of the motorists. I mean, look! Now, if we take ourselves seriously and if people in public administration take their roles seriously, we live in a time when there are important global issues and we have to make it so that political decisions help us to accept this reality and to reduce our ecological footprint. A lot of that goes through transportation.

(190-W) Jade, 48 - Quebec City area (St-Laurent, Île d'Orléans) - Revenue level: Modest - Household type: Single person - Household size: 1 person - Car-sharing: Yes - Feels socially excluded.

6.7 Bottom-Up: A Perfect World According to NMH²¹⁶

Near the end of the discussion with the NMH participants, after discussing their daily mobility, public policies and how to improve things for people living without a car, I asked them to think about an imaginary perfect world and, if there were no constraints, what

²¹⁶ Some of this material was discussed in an article presented at the 53rd Making Cities Livable Conference, see Villeneuve & Pattaroni (2016).

would be different for NMH in such a perfect world. The purpose of this exercise was to enable me to answer the sub-question relating to how to improve the situation for NMH²¹⁷.

The dendrogram in Figure 6:87 shows the results of the Alceste analysis which produced five classes of discourse. Class 4 is about cycling improvements that would be carried out in a perfect world. It is strongly associated with participants who didn't feel socially excluded and those living in single parent households. It presents a situation where the cycling network in Quebec City area is as developed as the one in Montreal. Class 1 describes changes and improvements to the car system. It is strongly associated with the discourse of families with children. The residential location is also part of that discourse. Class 3 describes a world where many impediments to alternative mobility are fixed, making it safer for kids and pedestrians. This class has a weak correlation with intermediate revenue group; household renting their residence; and members of the car-sharing system. Class 2 discusses a seamless integrated multimodal public transport system, where transfers between different subsystems are easy and efficient. It is associated with NMH respondents living as couples; and respondents from the affluent revenue group. Finally, class 5 takes into account that implementing this perfect world would be expensive even though it also creates financial and energy savings in other ways. It is correlated with respondents from roommates' households; as well as a weak correlation with those not having a driver's licence; being unemployed; and being 65 years old or more.

The similarities analysis produced a word network (see Figure 6:88) describing a "perfect world" for NMH. It contains four main clusters. The largest cluster is attributed to the 'car' which for most participants is still a significant transport mode, even even in an NMH-perfect world. In a perfect world, you don't have to take your car and cars gently share the road with other users. They are imagined as 'small', 'shared' and 'electric'. Nonetheless, they will always be around as most participants don't imagine cities without cars. However, a few participants go as far as saying that a perfect world is one without individual cars, a kind of carless utopia. But it's definitely a place where people don't need a car and can easily make do without one

The verb 'going' contains the second-largest cluster. The transport mode including 'by foot', 'train' and 'bus' (local and interurban) are highlighted. In this envisioned NMH-perfect world, children would be able to walk around without being afraid of cars or enduring the dangers of car pollution. You can also do your errands by walking to nearby stores and

²¹⁷ See section 3.7 What Is Needed to Improve the Mobility Situation and Reduce Social Exclusion of Non-Motorized Household? on p. 111

pedestrians don't have to wait so long to cross the street because cars no longer have priority on the road.

Buses are more frequent and more reliable and there are more routes; they also drive on 'reserved lanes' or have their own right of way. There are electronic signs showing the next vehicle and the possible connections. The bus has room for families with space equipped for strollers without making a fuss with other passengers. Going by bus being the most important way to go do your errands, people talk about a perfect world where you can easily bring back your errands on the bus which is faster than the car and has a place to store bigger items while on the way. In this vision of a world perfect for NMH, public transit is either much less expensive than now or even free. Public transit networks in the city are well connected and synchronized with the inter-city and suburban train networks and trains run more frequently than today. The car-sharing system is more flexible, offers more types of car and the cars are distributed across a larger area, including the suburbs.

The 'bicycle' also has its own cluster. In this one we find a desire for more 'cycling lanes' or even cycling 'highways' with their own right of way, creating more space for cycling at urban planning level. Grade-separated bike lanes are wider and cleared of snow during winter. Bicycles are respected and there are more places to shelter them from rain and snow. In this perfect world, cycle lanes can take you everywhere for leisure and for work, and electric bicycles are subsidized to make them accessible to everyone.

It is interesting to note that for this imaginative exercise, the NMH participants described a world very close to the current one. Maybe, just like the workers observed by Horkheimer (1947/2004, p. 101) and suffering under the "hell of fascism" who do not question the rules of the system, NMH :

[...] they have learned to take social injustice— even inequity within their own group—as a powerful fact, and to take powerful facts as the only things to be respected. Their minds are closed to dreams of a basically different world and to concepts that, instead of being mere classification of facts, are oriented toward real fulfilment of those dreams.

However, even if this perfect world is similar to the contemporary one, I do notice a few major differences between the two: in the imagined perfect world, priority is given to alternative mobility, not only in words but in the physical reality of road design and land planning. Alternative mobility is more affordable or free and public transit users are better informed. These ideas are for the most part already implementable.

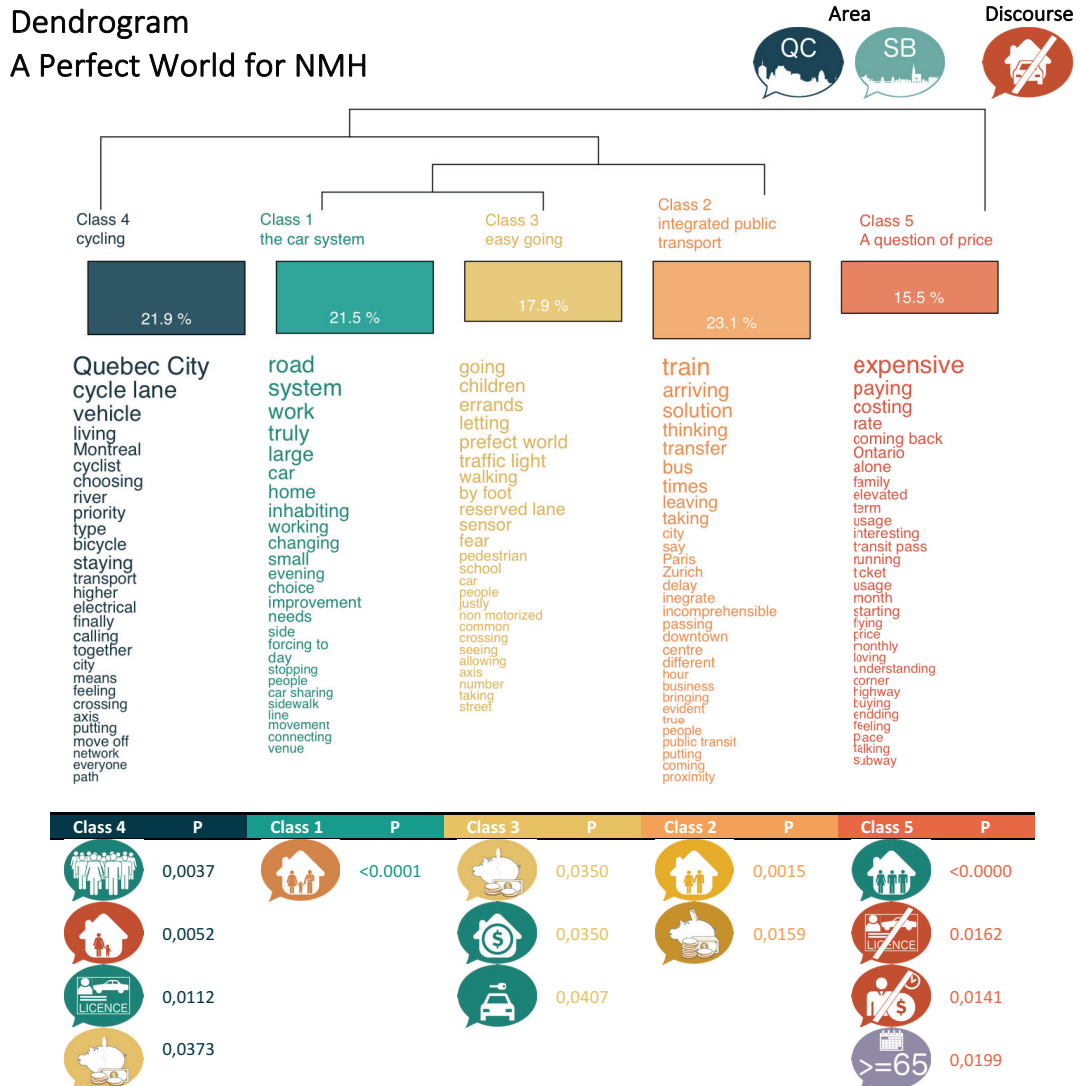


Figure 6:87 Dendrogram - A Perfect World for NMH

Text segments characteristic of class 1:

[...] for sure, a metro or tram **system**, the important thing is that it should be a **system** that does not use the **roads**, because if you use the same **roads** as the **cars**, you are caught in the same traffic, it's not an **improvement**.

(109-M) Denis, 41 - Quebec City area (Villeneuve) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: No - Feels socially excluded.

Text segments characteristic of class 2:

Firstly, well, inside the city, as I said, the buses are pretty good there, but it would take a more integrated system that makes it possible to bridge the peri-urban zones, the countryside and city centres.

(88-M) Philippe, 38 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

Text segments characteristic of class 3:

Yes, in a perfect world it would be possible that everyone could walk without fear [of being hit by a car].

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Text segments characteristic of class 4:

[...] in fact bike paths everywhere and when in addition the cyclists are more numerous, they are more visible and suddenly their rights are more respected, more bikes [...]

(273-W) Madeleine, 26 - Strasbourg area (Gare) - Revenue level: Modest - Household type: Couple - Household size: 2 persons - Car-sharing: No - Doesn't feel socially excluded.

Text segments characteristic of class 5:

In a perfect world things would be more equitable, we all pay the same price whether a poor person or a less poor person. What I find shocking is that we all pay the same price.

(94-M) Benoit, 44 - Quebec City area (Charlesbourg) - Revenue level: Modest - Household type: Roommates - Household size: 5 persons - Car-sharing: No - Feels socially excluded.

Word Network A Perfect World for NMH

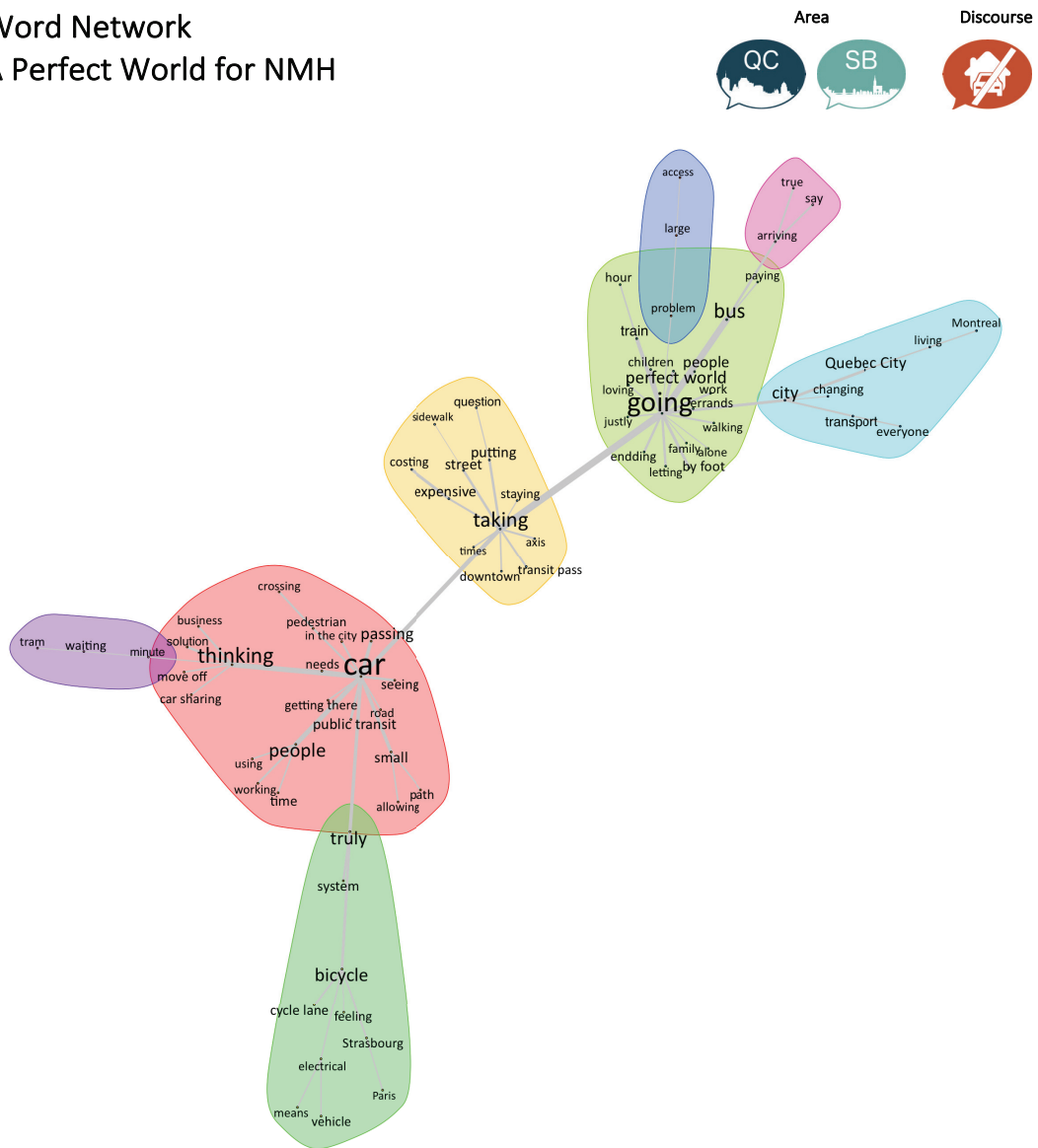


Figure 6:88 Word Network - A Perfect World for NMH

6.7.1.1 Gender Specific Discourse on a Perfect World for NMH

The gender specificities analysis of the “perfect world” discussion (see Figure 6:89) demonstrates a latent demand for improved cycling infrastructure among female participants. While the travel statistics (see previous chapter) show that women (even in NMH) use bicycles less than men for their daily mobility, this analysis reveals that they are more likely than men to mention ‘bicycle’ (factor: 2.8) and ‘cycle lane’ (factor: 1.6) as things that are improved in a perfect world for NMH. Women are also more likely to talk about the costs of things that would be either less ‘expensive’ (factor: 1.6) or that building a perfect world will be costly... They also more likely talk about the ‘tram’ (factor: 1.4) and the ‘train’ (factor: 0.9). On the other hand, men are more likely to talk about a perfect world where things are improved for ‘children’ (factor: 3) and ‘pedestrians’ (factor: 1) and take a ‘systems’ (factor: 1.7) approach while suggesting changes for the ‘city’ (factor: 2.9) itself.



Figure 6:89 Specific Discourse on a Perfect World for NMH by Gender

Text segments characteristic of women:

It's not like Montreal. I was doing a lot of **bicycle** in Montreal, in fact, I was moving essentially like that and there was still a fairly harmonious cohabitation. It is sure that there are still clashes, but we do not feel this anger [towards cyclists] over there.

(105-W) Arianne, 33 - Quebec City area (Vieux Limoilou) - Revenue level: Modest - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Doesn't feel socially excluded.

Text segments characteristic of men:

Because I understand that not everyone has the possibility to do active transport, therefore a city where in the periphery one would have several train stations and buses for the people who want to go to other cities.

(209-M) Bruno, 36 - Quebec City area (Lairer) - Revenue level: Modest - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

Well that's it, you could let your children walk around with no fear, that is to say there is a car that would run them over...

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

6.7.1.2 Urban Area Specific Discourse on a Perfect World for NMH

Considering the differences between visions of a perfect world in the two urban areas (see Figure 6:90), I note that Quebec City area participants, like they usually do, mention the 'bus' (factor: 4.3) more than their Strasbourg counterparts. They also envision a world with better 'cities' which are safer for 'children' (factor: 1.9) with improved pedestrian 'crossings' (factor: 0.6), that leave you enough time to cross and give you the priority as a pedestrian, making motorists wait for their turn instead of forcing pedestrians to wait outdoors. In Strasbourg, a perfect world is even better for 'bicycle' (factor: 3.6) and has improved 'train' (factor: 2.7) services, so you can easily do your 'errands' (factor: 2.6) nearby or transport them on transit vehicles while mobility is less 'expensive' (factor: 0.5).



Figure 6:90 Specific Discourse on a Perfect World for NMH by Urban Area

Text segments characteristic of the Quebec City area:

[...] that there should be places more suitable for families in the layout of the bus. For the stroller, there are things for strollers but I find that the layout is not family-friendly enough.

(111-W) Nadine, 27 - Quebec City area (St-Sauveur) - Revenue level: Modest - Household type: Roommates - Household size: 3 persons - Car-sharing: No - Feels socially excluded.

Text segment characteristic of the Strasbourg area:

[...] and I think the **train**, that is to say frankly the solution will be the **train**, but also the **train** of... that is to say the good connections, as Switzerland knows how to do them.

(232-W) Mylène, 55 - Strasbourg area (Place de Haguenau) - Revenue level: Affluent
- Household type: Couple - Household size: 2 persons - Car-sharing: No - Doesn't feel socially excluded.

6.7.1.3 Discourse on a Perfect World for NMH According to The Feeling of Being Socially Excluded or Not

When comparing the specificities analysis of those feeling excluded versus those who don't (see Figure 6:91), it appears that in both cases alternative mobility is top of their minds, albeit with a different focus. Those not feeling socially excluded are more likely to mention 'cycle lanes' (factor: 3.4), the 'train' (factor: 2.5), the 'bicycle' (factor: 1.8), 'pedestrian' (factor: 1.5) and 'crossing' (factor: 1.3). Those feeling socially excluded were more likely to talk about the 'bus' (factor: 2.8), going 'by foot' (factor: 2), 'children' (factor: 2), the 'city' (factor: 1.8) and 'public transit' (factor: 0.7).



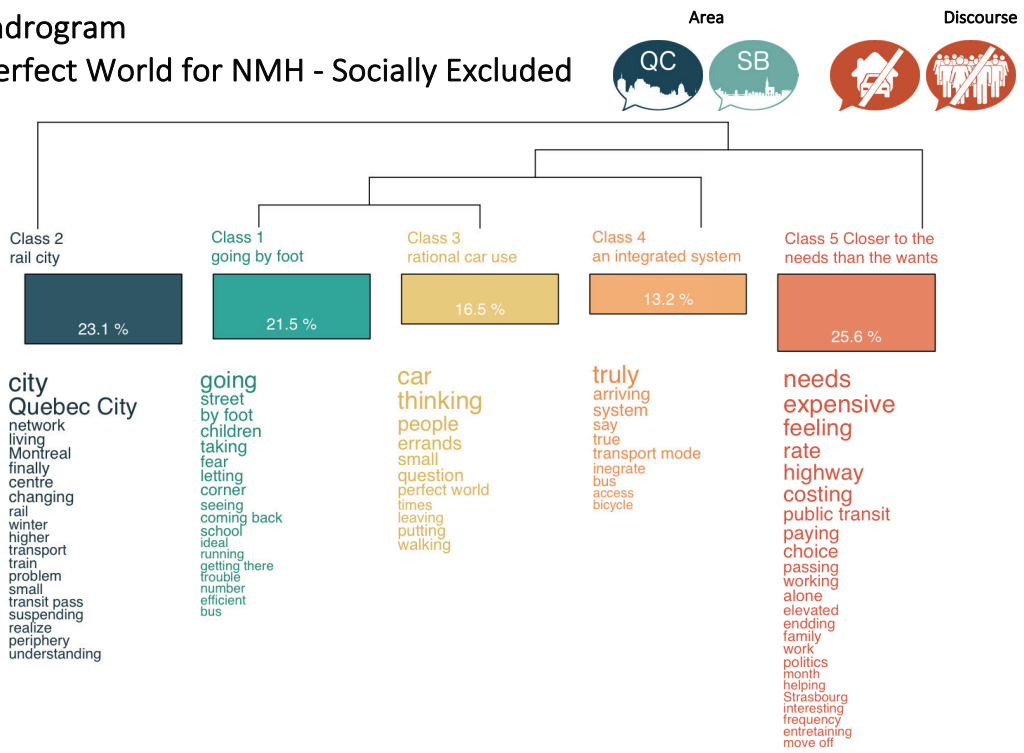
Figure 6:91 Specific Discourse on a Perfect World for NMH by Feeling Socially Excluded or Not

When performing the Alceste analysis on the discussion about an NMH-perfect world, but restricted to the answers of those feeling socially excluded in relation to their mobility, I obtain the dendrogram in Figure 6:92 with five classes of discourse. The second class of discourse describes a perfect world where cities are linked by an efficient and affordable rail-based network. This discourse is most strongly correlated with respondents from single-parent households, with women and with respondents in the intermediate revenue group. The first class discusses a world better for walking around and safer for children. Class 1 is most highly correlated with family households; who own their home; and respondents who

are members of the car-sharing system. The third class describes a world where cars still exist but are used only when necessary and cars peacefully share the road with other users. This discourse is most strongly associated with answers from participants who don't have a transit pass; are women; live in a single-person household; and respondents from the Strasbourg area. The fourth class discusses a place with an intermodal, integrated transportation system. This is the smallest class, representing only 13.2% of the answers in the analysis and is not associated with any particular variable. The fifth class is a perfect world where society is different, people have learned to focus on their needs and less on their many desires that they might carry out at the expense of others. This discourse is associated with participants who don't have a driver's licence; live in a roommate's household; and participants from the modest revenue group.

Dendrogram

A Perfect World for NMH - Socially Excluded



Class 2	P	Class 1	P	Class 3	P	Class 4	P	Class 5	P
	0,0001		<0,0001		0,0003				<0,0001
	0,0007		0,0003		0,0016				<0,0001
	0,0026		0,0051		0,0018				0,0023
	0,0085		0,0074		0,0033				
	0,0113		0,0351		0,0051				
	0,0147				0,0236				
	0,0148								

Figure 6:92 Dendrogram - A Perfect World for NMH who Feel Socially Excluded

Text segment characteristic of class 1:

It's like everyone does his thing, then it's like I'm **afraid** to **leave** them [children] alone, I'll go get them from **school** even though it's just four **streets** from here but it **scares** many people to **leave children** alone.

(214-M) Jack, 34 - Quebec City area (Vieux Limoilou) - Revenue level: Intermediate - Household type: Family - Household size: 4 persons - Car-sharing: Yes - Feels socially excluded.

Text segment characteristic of class 2:

[... describing a province of Quebec-wide rail network] then **Montreal** and we can go up to Chicoutimi and Rimouski and after that, it's a ... well ... finally everyone **lives** there, everyone **lives** on that **network** and connections between, that is where we are, there are four or five **centres** counting Trois-Rivières.

(88-M) Philippe, 38 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

Text segment characteristic of class 3:

What would we do better in the hypothetical? Yes, I **think** if it became more normal for **people** in general that there are **people** who do not have a **car**, that it's considered normal to **walk** and to ride a **bicycle** for utilitarian purposes.

(81-W) Virginie, 28 - Quebec City area (Sillery) - Revenue level: Intermediate - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

Text segment characteristic of class 4:

Oh la la... well, much more developed infrastructure than just **buses** there would require a train or something it would require a **truly integrated transport system**.

(88-M) Philippe, 38 - Quebec City area (Montcalm) - Revenue level: Intermediate - Household type: Single parent family - Household size: 2 persons - Car-sharing: No - Feels socially excluded.

Text segment characteristic of class 5:

Yes, then to have public transport nearby with a relatively high frequency, hum, yes I think you have to vary the transport modes, you have to adapt the distance, the mode of transport to the distance you need, eh!

(396-W) Sabine, 28 - Strasbourg area (Neudorf) - Revenue level: Affluent - Household type: Couple - Household size: 2 persons - Car-sharing: Yes - Feels socially excluded.

6.8 Top-Down: How Policy Portrays NMH

As was the case for car dependence, another object of this research was seldom directly mentioned in the policy documents. In fact, NMH only came up twice in the quantitative analysis. I looked at how policy portrays NMH in order to answer my sub-question about who is targeted by mobility and social exclusion policy²¹⁸.

The qualitative review of the policies revealed only nine quotations directly or indirectly mentioning NMH. This group is often represented as “transit dependents”, in reference to their supposed dependence on this mode of transport. As we show in the OD data, this is far from the truth as they are also great users of active transport modes. This is the case mostly in the Quebec policies. The French policies often refer to NMH in statistics, keeping track of this group for certain “priority” underprivileged neighbourhoods, for example.

²¹⁸ See section 3.5 To Whom Are Mobility and Social Exclusion Public Policy Addressed? on p. 110.

Sample policy excerpt portraying NMHt:

In low-density areas, public transport also has a social function. As in urban areas, it is for many people who live there the only means of transportation to get to work, to travel to health and educational institutions or to participate in leisure activities.

Le transport des personnes au Québec pour offrir de meilleurs choix aux citoyens : la politique québécoise du transport collectif
Quebec provincial government, 2006

More than one in two households has no car (the lowest rate of all City Priority Neighbourhoods).

Contrat de Ville de l'Eurométropole de Strasbourg 2015-2020 Convention-cadre
Bas-Rhin Department, 2015

6.8.1 Top-Down: Civil Servants on Policies Targeted for NMH

The similarities analysis of the discourse of civil servants expressing their thoughts on the specific challenges of NMH and the policies targeting them generated the word cloud in Figure 6:93. It contains six clusters centred around 'going' and 'car'. The 'car' cluster contains the word 'access' which is also linked to 'bicycle' and 'public transit' cluster. Civil servants discussed NMH 'specific' 'needs' in a separate cluster. The question of residential choice appears in the yellow 'living' cluster, as well as the challenge of 'work' related mobility in the blue cluster.

[...] in addition, we articulate with policies such as car-sharing so that really those who want to have a car for the weekend to go shopping or to ride to the countryside can have access to all this

(406-M) Yann, >50 - Civil servant in Strasbourg.

When looking for specificities in the discourse of civil servants based on the urban area, very few differences appear (see Figure 6:94). The civil servants in Quebec City discussed access more, because one of their policy programs bears the word 'access' (factor: 1.9). 'Public transit' (factor: 1) appears as the only transport mode more associated with their discourse. The civil servants in the Strasbourg area were more likely to mention 'bicycle' (factor: 0.8) and transport 'supply' (factor: 1.5) when talking about NMH.



Figure 6:94 Specific Discourse on NMH and Policy by Urban Area

6.8.2 Qualitative Analysis of Mobility and Social Exclusion Policy

In this section, I discuss the results of the qualitative analysis of the various social aspects included in mobility and social exclusion policy documents. From an overall perspective, the most mentioned social aspect was the situation of people with reduced mobility (because of a disability), followed by the situation of vulnerable population with limited financial resources. This was followed by discussions on social housing and access to the labour market. I performed this analysis in order to build an appropriate response to my sub-question regarding to whom social exclusion policies are addressed²¹⁹.

When comparing the focus on specific social aspects between the two urban areas (see Figure 6:95), the Quebec City area policies show a stronger focus on the situation of vulnerable and poor populations as well as promoting social inclusion, participation and openness. Strasbourg area policies had a stronger emphasis on social cohesion, gender equality, safety and solidarity.

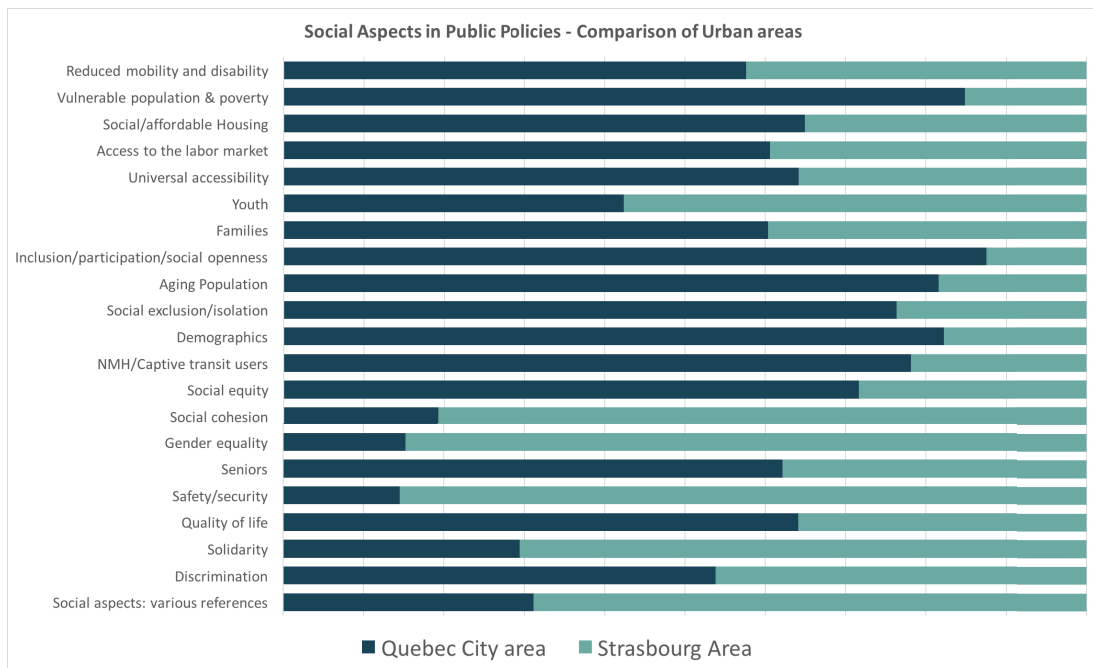


Figure 6:95 Most Frequent Themes About Social Aspects in Public Policy by Urban Area

²¹⁹ See section 3.5 To Whom Are Mobility and Social Exclusion Public Policy Addressed? on p. 110.

Using the same social topics but this time looking at their distributions between the various orders of government (see Figure 6:96), it appears that the social topics were discussed the most by the municipal order of government followed by the department/provincial order of government. The policy documents from the municipal order of government mentioned social exclusion and isolation more than other levels, as was the case for policies addressing solidarity and social equity. The regional/agglomeration order of government discussed the situation of people with reduced mobility more than all other levels, as well as demographic changes and telecommuting and flexible work hours. The department/province order of government paid particular attention to the issues of social and affordable housing as well as access to the labour market and non-motorized households/captive transit users. The national/federal policy documents did not emphasise in any particular topic.

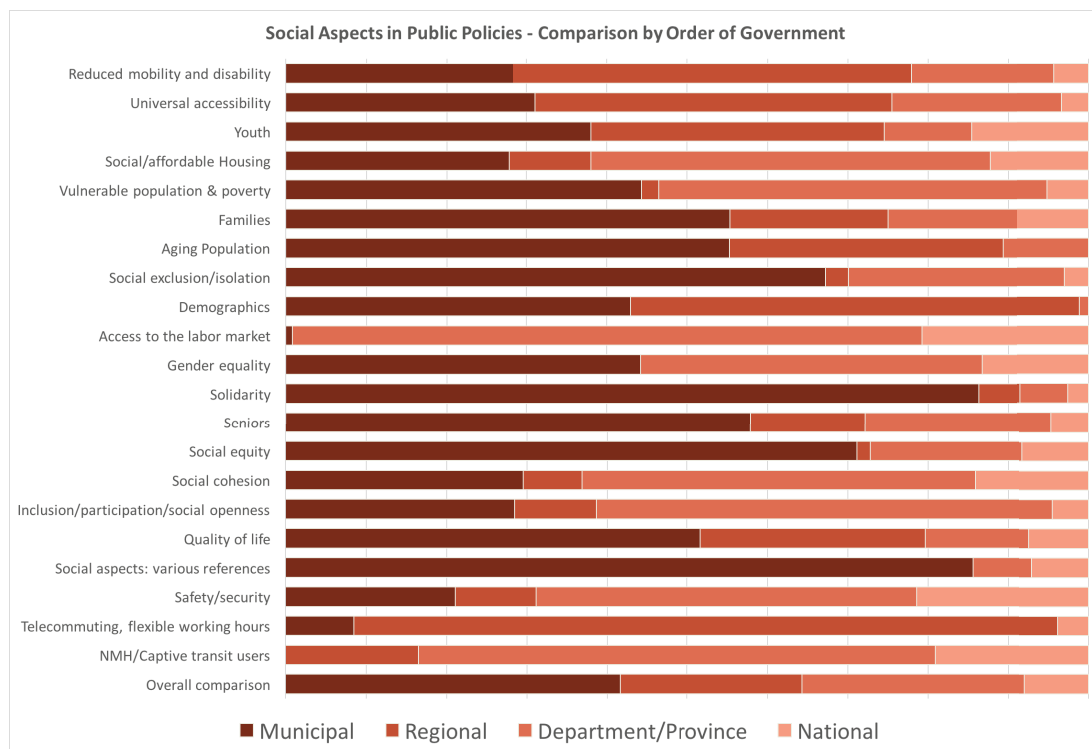


Figure 6:96 Most Frequent Themes About Social Aspects in Public Policy by Order of Government

6.8.3 Comparing the Policy and Civil Servant's Representations of NMH and NMH's Perception

When comparing the actual situation of the NMH participants with what is described in policy documents or with the answers of the civil servants, some aspects are similar and some differ. The NMH mentioned having accessibility issues for multiple purposes: for work, but also for leisure, shopping and health-related trips. Both policy documents and the

civil servants seemed to be aware of this accessibility problem and of the multiple trip purposes that might be affected by it.

As mentioned earlier, policy documents and civil servants still to some extent portray NMH as transit-dependent or captive transit users. There may be some truth to this vision in the Quebec City urban area with its high (36%) modal share of transit. However, both civil servants and policy seem to forget the high share of walking for NMH (42% in the Quebec City area and 55% in the Strasbourg area) or the high (11%) mode share for cycling among NMH in the Strasbourg area. They also fail to take into account that car-sharing now plays an important role in the mobility of NMH whose members have a driver's licence.

Segment characteristic of a reference to transit dependency at policy level:

As with many people (workers, low-income people, students, people with reduced mobility or without cars), **public transit is the only means of transportation** within their reach.

PLAN D'ACTION DE DÉVELOPPEMENT DURABLE 2009-2015
Province of Quebec, 2013

Policy referring to social exclusion related to mobility focuses on those with reduced mobility and considers how their general accessibility to services might be improved. Although this is indeed an important social issue, it is not the only one. As I have shown in section 6.5.3 on p. 432, there are many other factors that can cause mobility-related social exclusion.

Finally, policy portrays NMH as individuals from vulnerable segments of the population or actively facing poverty. Even if this is true for a some NMHs, as found in the OD survey demographic data, reality is more complex. If sustainable mobility and greenhouse gas emission reductions are indeed important policy objectives, then clear thinking and a more inclusive approach is needed on the part of policy makers to come to a more realistic vision of reduced motorization (households reducing their total number of vehicles) and completely non-motorized households.

6.9 Administrative Aspects and Policy Evidence in Mobility and Social Exclusion Policies

While reading and analyzing the policy documents for the various themes or “public problems” discussed, I was also interested in administrative aspects and I paid attention to

the various types of policy evidence presented within policy documents. I also covered the topic of policy evidence used to make decisions and inform policy makers during interviews with civil servants. The analysis in this section is helpful in answering the research sub-question about which policy evidence is used to make mobility and social exclusion policies²²⁰.

6.9.1 Administrative Aspects in Mobility and Social Exclusion Policy Documents

In this section, I present the results of my analysis looking at mobility and social exclusion policy from a public administration perspective with qualitative analysis codes that appeared during the inductive analysis of the documents (see Figure 6:97). The most frequent item was implementation details, the policy text often providing precise lists of steps that need to be taken to implement policies. This was similar to both sets of policy documents in each urban areas. The second most likely item consisted in descriptions of policy objectives, in few details but clearly enough, which appeared more frequently in the Quebec City area documents. Noting measures to ensure policy evaluation could be undertaken and presenting administrative reforms was a frequent occurrence in the Strasbourg area policy documents. The Quebec City area policy documents included policy recommendations for other levels of government, discussion about the fact that the municipal level of government is under the control and purview of the provincial order of government, as well as having quite ambitious policy objectives.

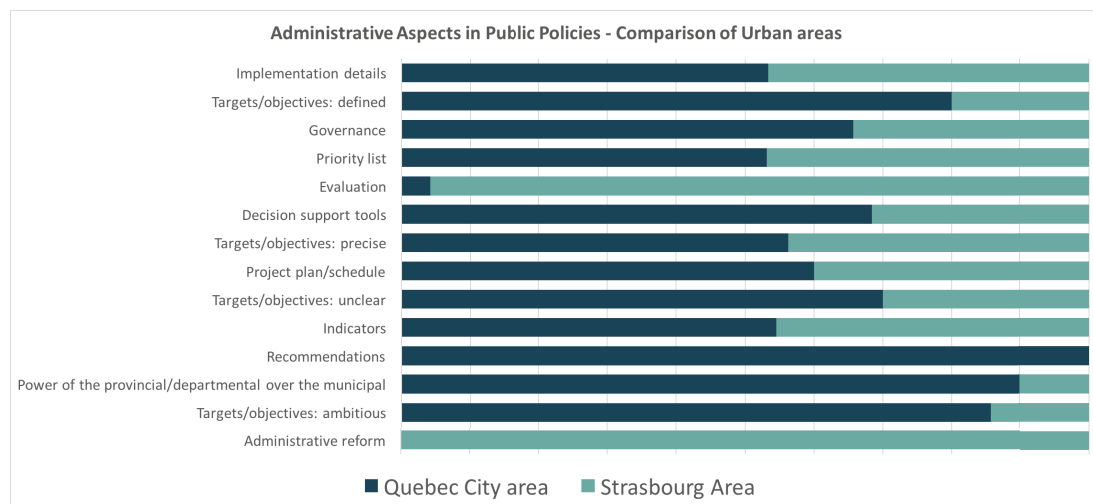


Figure 6:97 Most Frequent Themes About Administrative Aspects in Public Policy by Urban Area

²²⁰ See section 3.6 What Policy Evidence Are Used in Transport Policy Decisions? on p. 110.

When comparing administrative aspects from the order of government's point of view (see Figure 6:98), I note that all orders of government included implementation details as well as evaluation procedures in their mobility and social exclusion policy documents. The municipal order of government discussed project plans/schedules more than other orders of government, and had more unclear or ambiguous policy objectives. Policies from the municipal order of government were almost exclusive in making policy recommendations intended for other orders of government. This is in part due to the fact that the municipal order of government is less autonomous than the other levels in the Canadian political system. Regional governments discussed governance more than all other orders of government, and their policy documents were the only ones containing policy scenarios. The national/federal order of government was alone in having no ambitious policy objectives in their mobility and social exclusion policy documents. However, they discussed administrative reforms much more than any other order of government.

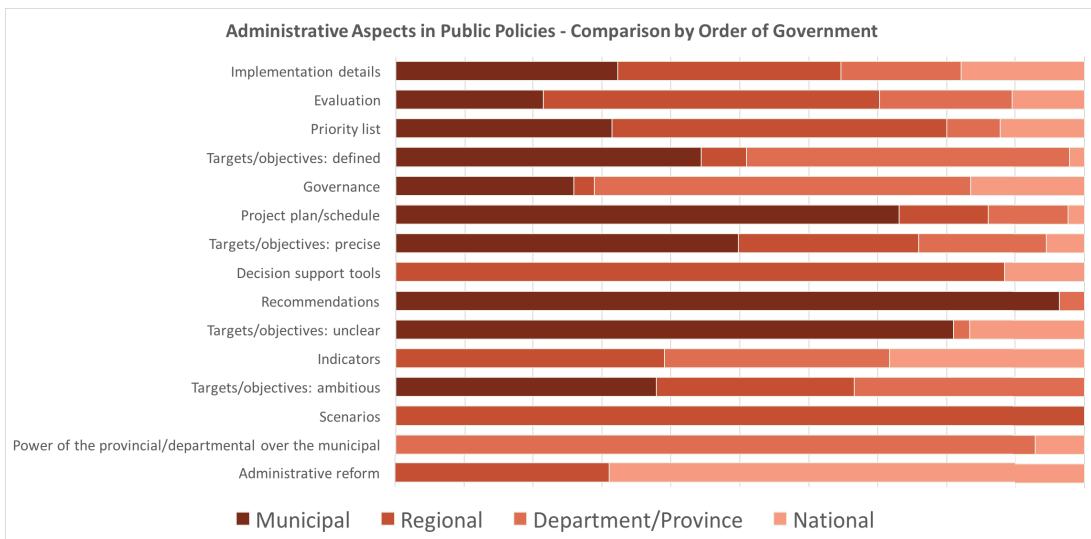


Figure 6:98 Most Frequent Themes About Administrative Aspects in Public Policy by Order of Government

6.9.2 Policy Evidence in Mobility and Social Exclusion Policies

As discussed in the review of literature, evidence-based policy making is not a concept specifically discussed by either of the two urban areas investigated. Nonetheless, research has found that even governments not strictly undertaking evidence based policy may have a focus on evidence. As such, I paid close attention to the evidence put forth in the policy documents while analyzing them. I also asked civil servants specifically about the policy evidence they used and discuss the results of these analyses in this section.

6.9.2.1 Policy Evidence from the Point of View of Civil Servants

The discussion with civil servants in both urban areas included a question about policy evidence²²¹. The IRaMuTeQ similarities analysis of civil servants' answers regarding policy evidence generated the word network in Figure 6:99. The network is centred around the (light green) cluster containing 'going' and 'politics'. The 'politics' node is connected to the 'data' (purple) cluster which contains two key actors: 'politicians' and 'technicians'. It is also connected to the 'truly' (blue) cluster which contains 'scientific', 'car', 'inhabitants', 'mobility' and 'public transit'. It is also connected to the 'decision' (mint green) cluster containing 'study', 'transport' and 'network'. The 'data' (purple) cluster is connected to the 'seeing' (yellow) cluster containing specific evidence about the 'modal' 'share', references to the 'origin-destination' 'survey' and 'transit' 'pass'. It is also connected to the 'elected officials' (red) cluster which includes 'number', 'vision', 'mayor' and 'citizens'.

From the chart, we can summarize that the important sources of policy evidence discussed by civil servants are the origin-destination survey, the official vision of elected officials, data from technicians inside the public administration, transport studies and some scientific evidence.

²²¹ See question nine on the civil servant semi-directed interview protocol in Appendix 2.

Word Network - Policy Evidence from Public Servant Perspective



Figure 6:99 Word Network - Policy Evidence from the Perspective of Public Servants

On both sides of the Atlantic, the political source of evidence is a major influence that the public administration refers to.

*Well, of course I can more or less express myself regarding the **political** aspect, because often this is the part that I would say... that for us is perhaps a little more, authoritarian.*

(386-M) Julien, [30-50] - Civil servant in Quebec City.

*[...] and it's not simple, I... I measure all the difficulty from time to time. I repeat it but there are **political** choices that I would not want to have to assume [...]*

(424-M) Sébastien, [30-50] - Civil servant in Strasbourg.

While political ideas play an important role, data from internal or statistical analysis is also important for public servants, even if some elected officials are not very interested in it. According to the civil servants interviewed, there is a will in the administration to make better use of data.

*[...] then the **data**, first I would like to say that there is **data** for the technicians, there is the **data** for the, for the elected officials. The **data** for the elected, I don't have elected officials who are very avid of **data**.*

(462-M) Lorris, [30-50] - Civil servant in Strasbourg.

*[...] then it is actually because the politician, he knows his constituents, and that's what he wants for his constituents otherwise, we try to effectively base more of our decisions on **data**.*

(386-M) Julien, [30-50] - Civil servant in Quebec City.

In the Quebec City area, the political vision is clearly the basis for daily actions by the public administration:

[...] for us the mayor has a vision, in fact the elected representatives have a vision of things and err, for us we have to manage the daily and eh we must take the necessary means to integrate this vision there in our daily actions.

(350-M) James, >50 - Civil servant in Quebec City.

Data, in the form of easily communicated statistics is particularly important in the Strasbourg urban area:

We must give, finally we need some numbers, figures that can be very communicable easily remembered, but it does not go too far that eh..

(462-M) Lorris, [30-50] - Civil servant in Strasbourg.

At the other end of the scale, according to a public servant in the Quebec City area transit authority, decisions on the organization of the transit system are mostly based on data from the OD survey and simulations, with little political involvement:

[...] then we place the transport network, we are very focussed on making decisions on the obvious evidence of data that exist inside or studies that are done as the origin-destination survey, we are seldom guided by political decisions.

(361-M) Mathieu, >50 - Civil servant in Quebec City.

6.9.2.2 Policy Evidence from the Point of View of Policy Documents

When comparing the various sources of evidence presented in policy documents from the comparative perspective between the two urban areas (Figure 6:100), it appears that the documents from the Quebec City urban area contain more reference to policy evidence, properly citing the source of knowledge that leads to decisions, than in Strasbourg. In particular, they more often refer to official statistics, evidence from administrative sources as well as grey literature (most often from think-tank organizations). The policy documents from the Strasbourg urban area contain more evidence from cases referred to as policy transfer²²².

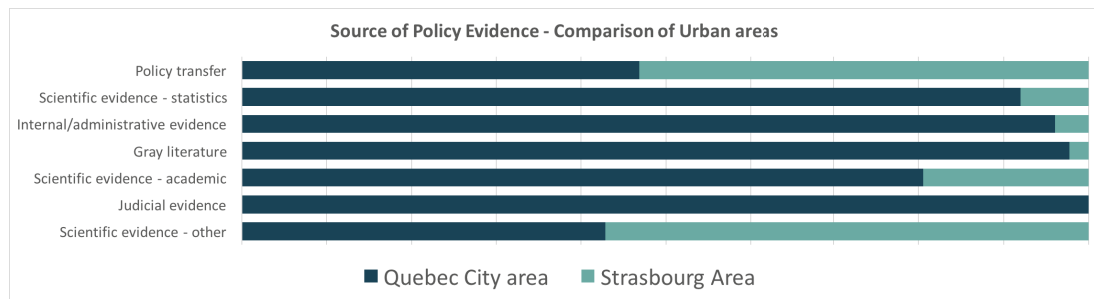


Figure 6:100 Most Frequent Sources of Policy Evidence in Public Policy by Urban Area

When comparing the use of evidence in policy documents using the four orders of government (see Figure 6:101) the regional and municipal orders stand out as making the most references to policy evidence. Policy transfer and grey literature are largely the domain of municipal policy documents. Statistics and judicial evidence (referring to law or judgments of the courts) is mainly the domain of regional policy texts.

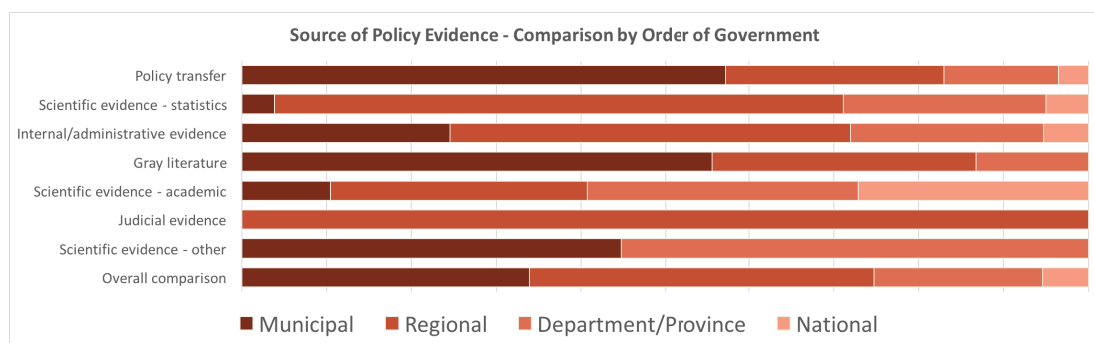


Figure 6:101 Most Frequent Sources of Policy Evidence in Public Policy by Order of Government

²²² Citing examples from other policy area as inspiration for policy that could work locally. See Dolowitz & Marsh (1996) for details on policy transfer.

6.10 Chapter Conclusion

The intent of this chapter was to discuss the empirical results related to the second objective of this thesis project: increasing knowledge of the situation of non-motorized households and of the mobility-related social exclusion associated with living in a car-dependent area. I specifically aimed to better understand, their daily mobility practises and their expectations from public authorities while investigating gender-based differences.

I began by discussing the reasons why these households do not have a car, in order to explore and answer my research sub-question about why households are motorless²²³. When indicating whether it was by choice or by constraint, only a quarter of the people I met affirmed living in a non-motorized household by constraint alone. For the rest of the NMH it was either a choice or a combination of choice and constraint. A larger share of the Quebec City area respondents reported living without a car by choice alone. Participants provided multiple reasons for not having a car. The main reasons were the possibility to reach most of their intended destinations with active mobility modes with the option of using the car-sharing system for areas less accessible by public transport or on foot. Multiple economic reasons were also cited. Female respondents were more likely to live in a NMH partly because they don't like driving or didn't have a driver's licence. For male respondents, the bicycle was an important enabler of living in a NMH and repair and maintenance issues were more often cited as a reason for getting rid of the car altogether. There were also significant differences in the enabling factors based on revenue levels. Different mobility options appeal to the various revenue groups and contributed to their decision to become or remain motorless. For participants in the modest revenue group this was public transit, whereas for the intermediate revenue group, it was specifically cycling, walking, the train and some public transit, while for the affluent revenue group, it was car-sharing. While car-sharing is a factor in enabling NMH to remain so and still fulfil their mobility needs over the entire urban area, I found that the OD survey data didn't contain any statistics on car-sharing or carpooling. The next iteration of these regularly scheduled studies in the Strasbourg and Quebec City areas should ask respondents if they are members of the car-sharing and carpooling systems. I also recommend adding to the two current car modes in the study, "car as the driver" and "car as a passenger" new options to document new practices. For example, the following new modes could be added: "car-sharing as the driver", "car-sharing as a passenger", "carpooling as the driver" "carpooling as a passenger", and "ride-sharing as a passenger" for the Uber-type ride-sharing.

²²³ See section 3.1 on p. 105.

The chapter also explored the daily mobility of NMH from a quantitative (OD Survey data) and a qualitative (NMH interview) perspective in order to formulate a response to the sub-question about the daily mobility of NMH²²⁴. While analyzing the daily mobility discussions with NMH, a few notable issues appeared with sidewalk snow removal in the Quebec City area hampering the pedestrian daily mobility of NMH in winter, while Strasbourg cyclists denoted some rather dangerous areas where the road is very narrow and cars are very close to them. The issue of forbidding cyclists from using the sidewalk around those areas was problematic in many cases.

Not having a car does limit accessibility to some parts of the urban area. In Quebec City, respondents described having to participate in fewer outdoor activities than when they had a car. In the Strasbourg area, NMH reported having to reduce the number of leisure trips they undertook as compared to when they had a car. Most problematic for the Strasbourg area was also the impossibility to go to stores with better prices for a lack of a car. In the Quebec City area, NMH had particular problems for health-related trips, as medical clinics there have been relocating increasingly to suburban, non-transit-served areas. An unforeseen difference appeared between the daily mobility of women and men while performing the discourse analysis. Carpooling was an option almost exclusively discussed by women, while car-sharing was more often discussed by men. I could not confirm the gender difference based on actual usage data since the OD survey data from both urban areas didn't capture this level of detail as mentioned earlier, I recommend taking into account this growing practice in future iterations of these studies.

In order to answer the research sub-questions about mobility related social exclusion²²⁵ and the intended targets of these policies²²⁶, the chapter also presented the results of my analysis on mobility-related social exclusion. As was the case for car dependence, mobility-related social exclusion seems more prevalent in the Quebec City area sample but this could be the result of the limited sample size. Further study with a larger sample size could clarify these results. Feeling socially excluded in relation to mobility is a very personal phenomenon. The causes of the feeling of social exclusion are numerous and vary from person to person. The mechanisms to alleviate mobility-related social exclusion also vary accordingly. Similar to car dependence, mobility-related social exclusion was seldom addressed directly in policies. However, any policy attempting to resolve the phenomenon should pay attention to its various causes. Unfortunately, there is not a single root cause that policy could directly address to eliminate mobility-related social exclusion, as revealed

²²⁴ See section 3.2 on p. 106.

²²⁵ See section 3.4 on p. 108.

²²⁶ See section 3.5 on p. 110.

by the multiple factors exposed during my discussions with NMH participants experiencing social exclusion.

As was expressed in policy documents, especially in the Quebec City urban area, lack of financial resources plays a definite role in mobility-related social exclusion. In my sample of NMH participants, the share of people feeling socially excluded decreased as financial means increased. The high cost of public transit pass was often a factor in the Quebec City area, where programs subsidizing transit pass based on household revenue, like those in the Strasbourg area, may prove beneficial. I also found that financial factors were more often cited by women participants than men participants.

Apart from economic factors, some political factors emerged from the discussions. Many socially excluded participants felt that they were not included in the policy consultations for policies surrounding the transportation system or that they were considered second-class citizens whose problems were less important than those faced by motorists. This power inequality between motorized and non-motorized households was often mentioned.

Territorial and land use factors were also discussed. The organization of cities oriented for car access felt exclusionary for many participants who mentioned difficulties with pedestrian access, with incoherent pedestrian crossings signals. Lack of respects for active modes by motorists, which were tolerated by the police, was also an issue. The absence of access to some key leisure and outdoors activities or lack of access to activities held later on in the evening was a contributing factor for many participants.

Some social factors also come into play. A certain number of participants mentioned feeling the questioning stare of others and having to justify themselves for not having a car. This was most often the case for households with children. They reported being misunderstood and feeling the ire of motorists towards them, especially those fuelled by the Quebec City area "trash radios". In the Strasbourg area, the requisite of having a car or a driver's licence to find any job, even one where no driving is required, was felt as a cause for the feeling of mobility-related social exclusion.

Almost all the participants felt that governments should be addressing the particular situation of NMH in the entire urban area. Having explored the various factors at play to cause the feeling of being socially excluded in some NMH, and having investigated the policy response to mobility and social exclusion in both urban areas, I also feel that a more coordinated policy response addressing the multiple factors is necessary if policy makers really want to confront mobility-related social exclusion and target NMH with policy.

Finally, in order to answer the sub-question related to policy evidence²²⁷ used in transport and social exclusion policies, I enquired about policy evidence used by civil servants when they participate in policy making. In both urban areas, the civil servants discussed using a broad array of policy evidence while also stating that the most important sources of evidence are, in order: political sources, internal administrative sources and official statistics. The analysis of policy documents showed that the Quebec City area policies are more likely to cite the source of evidence used in the process than the Strasbourg area policies, except for the case of policy evidence from “policy transfer” —that is, references to policies in place elsewhere, which was used extensively by some Strasbourg area policies.

²²⁷ See section 3.6 on p. 110.

Photo credit for next page:
Abdallah. (2013). *Québec*. Retrieved from https://commons.wikimedia.org/wiki/File:Pont_Pierre-Laporte_2013.jpg

7

Discussion & Conclusion

“On that first day of October, on the Champs Élysées, I was assisting at the titanic reawakening of a comparatively new phenomenon, which three months of summer had calmed down a little—traffic. Motors in all directions, going at all speeds. I was overwhelmed, an enthusiastic rapture filled me. Not the rapture of the shining coachwork under the gleaming lights, but the rapture of power. The simple and ingenuous pleasure of being in the center of so much power, so much speed. We are a part of it. We are part of that race whose dawn is just awakening. We have confidence in this new society, which will in the end arrive at a magnificent expression of its power. We believe in it. Its power is like a torrent swollen by storms; a destructive fury”

Le Corbusier (1929/1987, p. xxiii)

For this thesis project my general objective was to build on existing research in order to extend the knowledge on the situation of non-motorized households and understanding the car dependence and social exclusion related to mobility. My results show that car dependence and mobility-related social exclusion can be found in Canadian and French settings, even in the Strasbourg urban area, the French leader for cycling facilities and usage and one of the leaders for rapid transit in medium sized cities. Looking for the cause of mobility-related social exclusion, I found that for the most part the factors causing non-motorized households to feel socially excluded are the same on both sides of the Atlantic. These comprehend not being included in the policy making process and the mobility policies it generates, the feeling that authorities treat motorists more generously than other forms of mobility, feeling judged and misunderstood by fellow citizens, requiring a car for access to the job market, being forced to miss social functions in the evening, being unable to access some parts of the urban area, regularly facing aggressive behaviour from motorists and negative media coverage regarding alternative mobility users. The results show the complex and intricate ways in which policies can have a positive or negative effect on mobility-related social exclusion.

I concretize the research by investigating the question from three different points of view. The view from people directly affected by car dependence, the participants from non-motorized households, the civil servants charged with enabling and building policies dealing with mobility and finally the public policy documents from multiple orders of government related to transport and social exclusion currently in place in the two urban areas. I carried out the research by bridging knowledge in the three different disciplines that are urban sociology, public policy and transport geography. My research explored the links between social exclusion, car dependence and transport and social exclusion policies for non-motorized households who are to various degrees excluded from car mobility and potentially socially excluded. Comparing urban areas in North America and Europe it comprises two case studies: Quebec City (Canada) and Strasbourg (France). Instead of organizing the thesis in two different case studies, I enquired at every question and presented all the results from a resolutely comparative perspective. Juxtaposing the results at every opportunity; the two urban areas, the two genders, discourse from the various public administration departments or the different revenue groups, etc. I fused the strategies of comparative policy and comparative urban studies.

Using a mixed method approach, I combined qualitative and quantitative research tools to examine how the interactions of various transport policies, levels of car dependence and urban planning affect mobility-related social exclusion with a special attention to gender-based differences. Moreover, the growth of urban car traffic refers to heavy societal

dynamics that go beyond the local level. A number of structural changes, such as dual working couples activity within households, the rise of recreational activities or individuation, have the effect of modifying the modal demand for travel for the benefit of the automobile, a means of transport that is both efficient, flexible and comfortable, and more fundamentally the forms of mobility themselves (Ascher, 1998; Orfeuil, 2001). Mobility will shape the future of cities and urban regions and I took on this research with the hope of contributing to the development of future urban areas that are less car-dependent, more just and more equitable.

In this chapter I conclude by discussing the most important findings for the two main objectives of the research. Then I discuss every sub-question presented in Chapter 3 and provide answers to the interrogation brought up in that chapter by using the findings of the research. I present some of the challenges I faced during the project and formulate policy recommendations based on the results. Finally, I look to the future and present potential next step to further explore mobility-related social exclusion from a policy perspective.

7.1 Objective One: Understanding Car Dependence

At the end of this research, the current events happening in both urban areas as I write this conclusion reflects their contrasted situations. While the Quebec City urban area authorities just cancelled their bus rapid transit project (BRT), followed by the Quebec City mayor hosting a series of public consultations on the next steps for replacing the ill-fated BRT²²⁸, the Strasbourg area transit authority opened its latest extension of the tram network, linking to the German city of Kehl for the first time since 1945 to much celebration, symbolizing the major differences between the two urban areas. A nice coincidence also illustrates the differences. Faced with a similar safety problem caused by the difficult cohabitation between cyclists and pedestrians in very touristic areas, both Quebec City and Strasbourg administrations took measures to solve the problem. In both cases, the problematic street is in the historical centre, a very touristic spot quite inviting for many pedestrians. The two solutions limit car traffic on a 300-meter stretch of street, using different methods and soliciting divergent reactions which illustrate, with a case from the daily news, some of my findings relative to car dependence while comparing the two urban areas.

In June 2017, the Quebec municipal government removed one dedicated car lane on Dalhousie Street, replacing it by a two-way bicycle lane, in order to incite cyclists to leave

²²⁸ See Gaudreau (2017) for further details.

the pedestrians alone and improve the safety of cyclists and pedestrians²²⁹. The removal of one single car lane generated many reactions and had the local trash radios and a vocal part of the population up in arms, in the context of an upcoming municipal election in November. Car dependence seems encrusted in the local politics and stands to be an important issue in the upcoming Quebec City municipal election. Meanwhile the Strasbourg administration took a different approach, they launched the first “bike street”²³⁰ in France on Division-Leclerc Street²³¹. On a similar stretch of 300 metres the “bike street” makes bicycles the highest priority vehicle on that street, forcing cars to follow behind them by prohibiting cars from passing bicycles. Contrary to the Quebec City area, looking at the press surrounding the launch of the initiative, the Strasbourg project didn’t elicit the ire of motorists and was generally applauded.

My first objective in doing this thesis project was to develop a better understanding of car dependence by using a comparative approach. Documenting car dependence and comparing its prevalence in different regions of North America and Europe and analyzing the public policies related to it to explain why the social dimension of mobility is neglected in policy making and its effects underestimated. This example from the news shows a significant difference between the two urban areas, the Quebec City urban area seems more car dependent than its European counterpart of Strasbourg as the knee jerk reaction of parts of the population demonstrates.

The most common literature on car dependence treats it as an individual’s phenomena at a what Mattioli (2014, p. 380) calls a “micro-social” scale. However, the literature focuses on the behaviour of “car-dependent” individuals. By taking the opposite approach of looking at car dependence from the perspective of NMH the study revealed another side of the phenomena. For example, participants from NMH reported feeling odd for not owning a car. They reported being considered by others who own cars as the ones who are dependent for not having one, as opposed to car-dependent individual’s perceived independence afforded by car ownership. Litman (1999, p. 4) reported on the important costs of car dependence for households’ budget. From the perspective of NMH, my study also revealed the economic side of car-dependence from the opposite perspective. Participants from NMH often felt that owning a car had negative repercussion on their independence as it comes with financial burdens of car payments, vehicle repairs and maintenance. They reported feeling freed from these burdens. They also felt freed from and logistical burdens like finding a parking spot, moving the car during snow removal, presenting a point of view

²²⁹ See Nadeau (2017) for further details.

²³⁰ Vélorue in French.

²³¹ See Antoine (2017) for further details.

not often explored in the literature. Finally, some participants also referred to car dependence from an addiction's perspective reflecting a high level of knowledge on the issue and describing a situation similar to some of the definitions discussed in Chapter 2²³².

For civil servants, car dependence was considered a problem and the Dupuy's (1999a) vicious circle of low-density residential development preventing proper affordable transit solutions to be implemented was described by the participants from public administrations. They consider that some of the population is car dependent, which makes implementing restrictive measures on the car challenging. When discussing policy solutions, the main challenge brought up by civil servants were urban sprawl and political aspects related to urban planning. Paradoxically, this was even more of a problem for the French civil servants in the Strasbourg urban area, even though it is already a lot denser than the Quebec City urban area.

The policies in place to address transport and social exclusion contained three distinct sets of discourses. They either discussed social aspects, mobility & land planning aspects or legal & regulatory aspects. Each order of government also had different focus, but car dependence per se was almost absent from policy documents, corroborating my hypothesis that it is not considered an important issue by public policy. When discussed it was mainly by regional/agglomeration and municipal government bodies. From an overall point of view, the two urban areas appear to be bound in opposite directions. In the Quebec City area policies clearly contain reassuring statements expressing that restricting car usage is not the objective but rather the creation of additional options for those who would prefer to use other modes. In the Strasbourg area, the discourse was much different as suggested by Hérán (2001) the authorities are clearly working to reduce the efficiency of the car system and impose limitations on parking, clearly stating the need to restrict car use for the common good from an economic, social and environmental outlook.

7.2 Objective Two: Understanding NMH and Mobility-Related Social Exclusion

My second objective for the thesis was to develop a better understanding of the situation of non-motorized households (NMH) in different contexts by using a comparative approach. Increasing the knowledge on the situation of non-motorized households to better understand their perceptions vis-à-vis car dependence and the potential social exclusion related to it, while getting an understanding of their daily mobility practises and expectations of public authorities as well as investigating gender-based differences.

²³² See section 2.2.3.5 Addiction to the Car on p. 47.

The recent events described earlier about the removal of a 300-metre stretch of car lane to make more room for cyclists simultaneously in both urban areas to contrasted reactions also illustrate this part of the research question. The hawkish reaction of some motorists and local businesses opposed to this lane reduction in downtown Quebec City certainly adds to the feeling of social exclusion for cyclists, and, as demonstrated in section 5.1.5 on p. 182 exploring daily mobility differences between MH and NMH, the NMH use the bicycle for their daily mobility more than MH in both areas. Fearing for their safety, seeing another negative reaction to their presence on the road certainly does not elicit a feeling of being socially included. But one must note that in this instance the municipal government is refusing to compromise and taking a stand for cyclists which can in effect reduce the social exclusion feeling. The recent adoption of a cycling strategic vision document²³³ takes a new direction and might lead to lasting positive changes for cyclists. NMH in the Strasbourg area have shown to feel less socially excluded in relation to their mobility. Cyclists in the Strasbourg area represent a more important part of the population as this mode is used in a much greater proportion than in the Quebec City area. The less contentious reception to the removal of the car lane in Strasbourg also illustrates part of the reason why mobility-related social exclusion is less important in the urban area.

While the Quebec City BRT project could have increased the efficiency of their bus trips, which is a very important mode of transport for NMH in that urban area, the cancelling of the project once again demonstrates that improving the efficiency of the transit system is not a “real” priority and might reinforce the already higher feeling of social exclusion in the area. Meanwhile the opening of the Strasbourg tram extension accomplishes two important improvements from NMH in that area. It links the *Port du Rhin* neighbourhood with an efficient, frequent and comfortable transit service, an area where residents felt disconnected and segregated from the rest of the urban region. It also connects to new low price shopping opportunities only available on the German side of the border, enabling NMH to more easily avail themselves of these low price offers. Two positive repercussions that stand to reduce the feeling of mobility-related social exclusion in the area.

For this chapter I reported a lot on the interview material gathered from NMH participants in the Quebec City and Strasbourg area during the winter of 2014 and spring of 2015. They explained why they don't have a car, showing that it's not always by constraints but rather by choice comforting the findings of Demoli (2012, p. 18). Even though a greater share of the Quebec City sample of NMH respondents were from the modest revenue group, a greater share of them declared not having a car by choice, fitting the “captive-by-choice” category

²³³ This was not covered by the research as it was released after that part of the research was completed.

of transit users described by van Lierop & El-Geneidy (2017). While counterintuitively, since more participants in the Strasbourg area were from the affluent revenue group, a greater share of that area's NMH respondents declared not having a car by constraints or a combination of both. They expressed their usage of the various transport modes which was compared and found similar to the modal shares from the OD survey data. NMH participants also broached certain problems and difficulties they face with the various modes and for some of the trip purposes. For example, I found out that crowded buses were the number one inconvenience in both areas and that the low frequency and schedule matching were top problems experienced by NMH bus riders. I also found out that the main problems for NMH cyclist was that some areas were dangerous for them and that they had safety concerns related to the cohabitation with pedestrians and motorists.

Regarding the feeling of being socially excluded, NMH respondents that felt socially excluded had four main topics of discussion to explain their feeling. They discussed their experience on the bus, the requirement of a driver licence and a car for finding a job, thoughts and feeling about the car and feeling excluded from political discussion and policies in place. The civil servants that I met were aware of the issue and acknowledged the link between accessibility and social exclusion. Social exclusion was addressed directly by some of the policy documents analyzed. The policies from the Quebec City area targeted vulnerable and poor populations in particular while policies from the Strasbourg area targeted social cohesion, gender equality, safety and solidarity.

7.3 Answering the Research Questions

In this final discussion, I return to the various research questions presented in chapter 3 and provide answers based on the findings. The main research question around which the study was operationalized was **“What are the roles and impacts of car dependence, public policies and the architecture of the city on mobility-related social exclusion?”**

7.3.1 Why Is a Household Motorless?

Considering that western cities are to some degree car dependent, I wanted to find out the reasons that would push certain households to remain without a car. Traditionally the literature has portrayed non-motorized households as transit dependent or transit captive users (Bochner & Stuart, 1978; Jacques et al., 2013; Jin et al., 2004; Le Breton, 1999; Wells & Thill, 2012; Zhao et al., 2014). In this research I found that NMH were not all that “captive” or “transit dependent”.

While the literature about NMH abundantly describes their proportions in diverse societies as well as the associated mobility disadvantage repercussions to these households, the question of the reasons why households are not motorized is not often investigated. Few studies concentrate on understanding the reasons why NMH are without a car. This dissertation provides a unique contribution by shedding some light on the motivations and constraints behind the phenomena with the combination of data from quantitative and qualitative analysis.

According to the NMH participants, the answer is often a combination of choice and constraints. The availability of active transportation options and the fact that with car-sharing driving to an inaccessible area is still possible. A residential location within an accessible area was an important enabling factor in choosing to become or remain motorless. The most frequent constraint was of an economic nature. For example, the cost of a repair was too high to keep the car. Some differences appeared between women and men whereas more women declared that not having their driver licence was part of the constraints forcing them to have no car than men.

The OD data comparison can also explain some of the reasons for not owning a car. The revenue level comparison clearly shows that the NMH population contains a lot more modest revenue households in both urban areas, which can be related to the economic reasons for owning a car. The home ownership status is also indicative of the economic hardships felt by and NMH, in both urban areas the NMH contain a lot more apartment renters while MH contain a lot more home owners. The NMH group has a lot more women and a lot more retirees who usually have lower revenue. The driver licence statistics are also very indicative. In both urban areas 66% of NMH don't have the driver licence, while in the Quebec City area only 7% of the MH population doesn't have the licence and in the Strasbourg area, only 26% of the MH population doesn't have it. The analysis of the OD survey paints a different picture than the interview with NMH, while the participants that I met indicated more often that it was a choice, the survey data points to more constraints. For example, the lack of a driver licence or the increased likelihood of being in the modest revenue group might force the NMH population into remaining motorless.

7.3.2 How Do Non-Motorized Households Cope with Their Lack of Car for Their Daily Mobility?

After looking at the reasons for which households decide or are forced not to own a car, I now look to their daily mobility. How do they do to get to work, shopping, etc. and what transport mode do they use in comparison to MH? Depending on the urban area the main NMH mode of transport is either the bicycle, the tram or the train in Strasbourg area and

the bus in the Quebec City area. The relative importance of the bus in the Quebec City area shows that the term transit dependent or captive transit users, which I avoided, might be still useful as a research object in the north-american context.

However, in both urban areas the car still plays a role in the daily mobility of NMH with the NMH of the Quebec City area making more use of car rides from friends and family, and the Strasbourg urban area making more use of carpooling and borrowing cars from friends and family. An interesting difference appeared between men and women when analyzing their response to their daily mobility. Women were much more likely to mention carpooling while men were much more likely to mention car-sharing. A difference that makes sense when I take into account that a greater number of women don't have a driver licence forbidding them from using the car-sharing system.

As discussed in the literature review²³⁴, my findings on the daily mobility of NMH versus MH show important differences, echoing the findings of previous research (Chevalier, 2002; Dupuy, 1999a; Motte-Baumvol, 2007a; Power, 2001). The OD survey data shows that NMH obviously rely much less on the car than their motorized counterparts. The households located in the Quebec City urban area still rely on the car slightly more than their Strasbourg urban area equivalents. In all the cases NMH rely heavily on walking when compared to their MH counterparts. Cycling is also more used by the NMH than the MH. The OD survey data comparison between the two urban areas also revealed, to my surprise, that public transit has an overall greater modal share in the Quebec City urban area than the Strasbourg urban area for both the NMH and the MH, even if the public transit supply of the French region is much more developed than its Canadian counterpart. This difference can be explained by the larger share of active mobility in the Strasbourg area, at the expense of the public transit share.

7.3.3 Is Car Dependence a Public Policy Problem?

I discussed car dependence with all the participants, from NMH and the civil servants that I met in Strasbourg and Quebec City. As I expected both sets of respondents find car dependence to be a problem in their area. NMH relate to car dependence as a habit and discuss the spatial territorial causes of car dependence. They also see it as a generalized problem in their area and a vicious circle. Civil servants in both areas agreed that car dependence was indeed a public policy problem in their respective area. In the session with civil servants, urban sprawl was often associated with car dependence. Civil servants in both areas described a lack of political will as a reason for not solving the issue, and the Quebec

²³⁴ See section 2.2.4 on p. 57.

City area civil servants explained having to tone down policy text in order to make it more palatable to the car-dependent population and keep policy socially acceptable for the citizens. Even if civil servants were expressively familiar with the concept of car dependence it seldom appears in either area's policy documents, confirming my suspicion that car dependence is not considered an important issue by public policy. This echoes similar findings from a study of car dependence and workfare policies in the UK, the US and France by Fol et al. (2007).

The clear lack of political will, the high popularity of the car as a mode of transport, the largely car-dependent population, especially in the Quebec City area, all combine to explain the lack of focus on car dependence as a cause of social exclusion in public policy documents.

These findings offer a different perspective when compared to the literature on car dependence and policy. By combining the view from civil servants with the discourse analysis of policy documents with the "bottom-up" view from the NMH's perspective, this thesis contributes a new piece to the puzzle of understanding the interactions between car dependence and policy.

7.3.4 Are Members of Non-Motorized Households Feeling Socially Excluded Related to Their Mobility?

To the question of whether or not members of non-motorized households feel socially excluded, I can affirm that certainly some do. The majority of the participants from the Quebec City area did feel socially excluded related to their mobility while in the Strasbourg area less than half of the non-motorized household participants felt socially excluded in relation to their mobility. This affirmative answer has to be qualified since it's based on a small sample of around 30 household participants in each urban area. However it confirms the results of previous studies looking at mobility-related social exclusion (Barry, 1998; Bradshaw, Great Britain, & Social Exclusion Unit, 2004; Cass et al., 2005; Currie & Delbosc, 2011; J. Stanley et al., 2011).

I also found that social exclusion related to mobility increases as the revenue of the NMH household declines. The source of social exclusion can be related to the fact of having to find an alternative, which is not always easy, in order to reach some rather inaccessible destinations. Relying on the bus with all its inconveniences also causes mobility-related social exclusion. Having to wait a long time, having to leave early during evening outings and make numerous detours instead of using a direct route causes some people to feel

excluded. Once again, the issue of the bus only users in the Quebec City area and their specific factors of social exclusion related to the bus as the “only” mode of transport versus the participants from Strasbourg who had access to trams, trains and buses reiterates the potential usefulness of integrating transit dependents as a category of research. The focus on the more encompassing non-motorized household object of research was a limitation in trying to explain this. Further research considering transit dependents as a subcategory of NMH might be able to better understand the situation where those with access to trams and regional railways feel less marginalized than those who rely only on the bus for public transit.

The participants that felt socially excluded also mentioned feeling left out of the political process and not being listened to during public consultations. Some participants likewise felt excluded for not having a driver's licence, especially in France. Non-motorized households also revealed that some motorists' aggressive behaviour and refusal to share the road with alternative mobility users was a factor causing social exclusion. Finally, the judgment of others who either literally could not understand how they could live without a car or thought didn't have a car because of drunk driving or being too poor to be able to afford a car, was also causing social exclusion.

I discussed with NMH the territorial accessibility without a car for their respective urban area and whether it related to social exclusion. In both instances, NMH were forced to abandon some destination and some activities. With activities like skiing and hiking being frequent answers. In both areas not having a car forced participants to shop at stores with higher prices as low-cost options couldn't be reached without a car. Seeing as the revenue level of NMH was generally lower than MH this was considered an injustice by the participants and a factor for feeling socially excluded for not having a car.

While the OD survey data did not contain any measures of social exclusion, a look at OD survey data for both areas showed that an NMH had much lower revenues than MH, they were also much more likely to rent than own their residence which was the opposite for MH. The NMH population contained a lot more students, retirees and unemployed than the MH population. When analyzing the public policy documents, I found out that NMH were literally absent from all the policy analyzed. This can partly explain why the participants did not feel included in policy.

7.3.5 To Whom Are Mobility and Social Exclusion Public Policy Addressed?

Since NMH were not directly included in policy documents, to whom are the mobility and social exclusion policy addressed? Even if it's not mentioned directly, I noticed that some policies were addressed to non-motorized households. This was the case for example the priority neighbourhood transportation strategy in the Strasbourg urban area, where the French government is actively trying to remove segregation by linking poor neighbourhoods to the rest of the area. The discussion with civil servants was not conclusive when it came to whether or not public policies were addressed specifically for the non-motorized households. But the result is conclusive with the analysis of Taylor & Morris (2014) who found when comparing policies across 50 public transit systems in the USA that non-motorized households are not the focus of transport policy anymore.

7.3.6 What Policy Evidence Are Used in Transport Policy Decisions?

Policy evidence is the data used to make policies following a scientific basis (Cairney, 2016). Terry (2012) found that policy evidence was seldom used in the UK transport policy making process. I found that in the case of the Quebec City and Strasbourg areas, policy and the civil servants were indicating to be using policy evidence in the decision making process.

When discussing with the civil servants in both areas, a major source of policy evidence used in steering the policy-making exercise for transportation policy came directly from the political actors. Even if some political actor didn't express much interest in evidence in the form of data, civil servants ranked it high in importance and data from either statistical or internal analysis was often cited as a source of policy evidence during the discussions. For the transit authority, the most important source of policy making evidence was the OD survey data, the same I used for part of this thesis.

The policy document analysis showed that political influence didn't appear as such in the policy documents. No political program or ideology being directly cited for the reasoning behind public action. However, an important source of policy evidence, which was not brought up by the civil servants, turned out to be the most often cited by the policy documents. Indeed, policy transfer or citing policy from other jurisdictions as a source of inspiration was the most frequent source of policy evidence used in both urban areas. However, as Lucas (2003) indicates there is a lack of data showing policy makers "whether people are able to safely and affordably access the places they need to go", even to this day. This also seems to be the case in the Quebec City and Strasbourg urban areas.

7.3.7 What Is Needed to Improve the Mobility Situation and Reduce Social Exclusion of Non-Motorized Household?

The sub-question specific to finding new ways to improve the situation of NMH, especially those facing mobility-related social exclusion, was an important source of inspiration for undertaking this thesis research in the first place. It was also part of the reason for choosing to realize the project within an urban sociology laboratory. For the last four years, this question has constantly remained in the back of my head, at each and every step of the research process. I combine multiple elements from the interview discussions with NMH respondents to formulate my recommendations²³⁵. In order to improve the general area accessibility for NMH policy makers should improve the public transit system. Increasing the service coverage from a geographic and time based perspective. In order to improve the management of different transport flows, policy should increase flow segregation between pedestrians and cyclists as well as between cyclists and motorists. Communication campaigns should target motorists, in order to work on reducing their aggressive behaviour and increase respect for other road users. In order for the non-motorized to feel included in the policy process, they need to be included in consultation process and policy should evaluate having objectives targeting specifically their needs. So that women from NMH can feel more included and take advantage of active mobility, public authorities need to keep improving the cycling and pedestrian facilities, while taking into account that cycling is not only a recreational activity but also a utilitarian transport mode. Finally, policy makers need to make sure that new transit lines connecting major sites of employment, currently inaccessible by alternative mobility become accessible and should work with employers to eliminate barriers to employment for those not having a car or a driver's licence.

7.4 Challenges Encountered

A four-year scientific undertaking, a first experience as a researcher alone on a research project, even with the graceful direction of Professor Vincent Kaufmann, this couldn't avoid being challenging at times. These challenges influenced the output that you read in this thesis and were formative. As such, I take this opportunity to briefly discuss them.

Even with previous project management skills and experience, four years is a lot of time and it is a challenge to manage. At the beginning, it seemed like I had all the time in the world. At the half point it still seemed like two years was more than enough to do all that I had planned. When only one year was left, I realized there was still a lot to do and only one year left. At that point, some difficult choices had to be made. All the interviews with non-motorized households and civil servants, the origin destination Data had been gathered for

²³⁵ See section 7.5 (p. 509) for a complete discussion on of the proposed improvements.

both French-speaking cities. I had done a lot of the preparation work for two more fieldwork in English-speaking urban areas Cardiff, in England and Minneapolis, in the United States of America. But the traditional discourse analysis of more than 3000 pages of policy documents was taking a lot more time and energy than I had anticipated. As a result, in order to keep the quality of the analysis level very high, I decided with the help of Prof. Kaufmann to focus only on those two urban areas for which the data that was already gathered and to drop the two English-speaking field works. This was a hard decision to take, especially since I had started writing the entire thesis in English. This would have potentially enriched the comparison and me allowed to produce more generalizable results. But I could not have kept the high-level of attention and scrutiny that are used in the traditional discourse analysis of policy documents if I had included more fieldwork.

At the beginning of the project I knew the social situation I wanted to explore and better understand, with the desire to try and really learn from the situation and attempt my very first inductive research project. Being used to having the hypotheses that need to be tested, the inductive approach was sometimes stressful as it seemed I didn't know exactly what I was looking for. The readers can imagine that an experienced software development project manager sometimes felt destabilized by running an inductive research project with what appeared, in comparison to a software project plan quite a fuzzy research plan. This was my choice as I wanted to really explore mobility-related social exclusion from the perspective of NMH without a priori. However, when other PhD candidates, colleagues in the Urban sociology lab where sharing their research projects I was always envious of their clear-cut path with precise hypotheses and this was stressful. This is why I decided after having completed the non-motorized household interview to actually organize the questioning into specific sub-questions and hypotheses as presented in Chapter 3. The work really was inductive, but this strategy enabled me to more confidently map the work of the thesis.

I have been unable to give a clear-cut answer to the policy question as to why the social aspects of transport policies are often ignored by policy makers. If I have one regret at the end of the thesis project, it is my inability to provide a definitive answer to this question.

The last challenge that I discuss is the time-intensive process required to portray in English a lexicometric analysis that was performed using French as input. All the charts, dendrograms, word networks and word clouds generated by IRaMuTeQ were generated in French and had to be manually translated into English to be included in the thesis. Since the output of these charts are graphic files, this meant that every word had to be translated manually and then manipulated into place within the graphic editing software requiring long hours of work. It was also challenging to keep using the same translation across every

single type of charts. To ensure the systematic usage of the same terms across the two languages, I use my programming skills and created my very own translator software which took as input the original French text and created as output the English words translated in text format that could be copied and pasted. Then all that was left to be done manually was the graphics editing. Yet this was still a very time-consuming endeavour.

7.5 Policy Recommendations

As discussed previously at the beginning of the thesis project I had the intention of generating policy recommendations. During the transcription of the non-motorized household conversations, especially the ones from the Quebec City interviews, where respondent conferred me as their representative, their “voice to the authorities”, I came to realize that this had to be an important priority. The policy recommendations are the output of the whole analysis.

7.5.1 Improvements to the Public Transit System

Considering that the public transit system is an important alternative to car-based modes, especially for those who do not own a driver licence, multiple improvements requested by the NMH interviewed could be implemented to improve the system and in return to potentially reduce mobility-related social exclusion.

I also recommend increasing the service area and frequency of the transit system, for example ensuring that industrial parks which are an important source of employment are served by the public transit system.

If the public transit system is to take into account the lifestyles of the non-motorized population, then it must stop being geared only for the commuters go to work, but take into account leisure destinations and schedules have to be taken into account. In order to reduce the isolation, felt by not being able to participate in evening events, an effort could be made to offer late-night service on some days of the week and the weekend, potentially using smaller vehicles than the trams or large buses. Some key destinations were often mentioned multiple times, and therefore transport policies should make an effort to offer ways to reach these key destinations. In my cases, the airport and its employment area as well as movie theatres were completely inaccessible in Quebec City while sports facilities like skiing and snowshoeing areas were hard to reach in both cities.

This improved public transit supply also needs to be communicated to non-motorized households and be available at affordable prices. While this was not an issue in the

Strasbourg area since it has implemented social pricing for the public transit service, many of the non-motorized households met in the Quebec City area found public transit to be too expensive. Governments that really wants to tackle social exclusion, like the Quebec provincial government should investigate implementing similar policies.

Participants often felt that their time was not considered as important as the time of other road users. Often, this was related to inefficient and slow bus routes of transit vehicles being stuck in traffic. In order to reduce this feeling of unjustly slowing down NMH versus MH, I also suggest organizing bus routes in a more efficient way that makes them more direct and more competitive with car-based modes, by granting transit vehicles their own right of way.

Finally, if public transit is to really take into account NMH and intends to reduce mobility-related social exclusion, the layout of public transit vehicle has to be improved. Providing more space for families with children and accommodating trips with the purpose of shopping also have to be taken into account. This means organizing the bus layout so that room is provided for setting down packages elsewhere than the often wet and dirty floor.

7.5.2 Improvements to the Management of the Various Transport Flows

Part of the issue of mobility-related social exclusion stems from the feeling that NMH are considered to not having a place on the roads. Policies that increase flow segregation between pedestrians and cyclists in between cyclists and motorists should be evaluated. Communicating to motorists that they have to share the road with other users and enforcing the law, for example at pedestrian crossings or when motorists have aggressive behaviours towards other road users, would improve the situation for all alternative mobility users including NMH who sometimes feel excluded. However, cyclists must also learn to share the road and respect the safety code if they hope to get the respect they deserve from motorists. The NMH also discussed allocating more space to alternative mobility and reducing the space allocated to cars by, for example, dedicating some streets to pedestrian flows and planning neighbourhoods enabling active mobility like transit-oriented developments, widening sidewalks and adding more trees instead of parking spaces. As suggested by Knoepfel et al. (2007, p. 402) policy makers need to go beyond the interests of motorists or public transit authorities alone and need to really include active mobility in the policy framework if we indeed intend to achieve any level of sustainable mobility.

7.5.3 Improvements to the Public Consultation Process

In order to tackle mobility-related social exclusion I recommend reviewing the consultation process around mobility and transport policies to make the process more inclusive and open to the point of view of non-motorized households. As Vodoz & Ruzicka-Rossier state (2010),

it is important to involve the “*profane*” city dwellers in the urban planning and consultation process. Policy makers should work with civil society groups representing non-motorized households and ensure that consultation meetings are hosted in location well served by public transit and alternate modes of transport at the time of the meeting. A communication effort should be made to ensure that non-motorized households are invited to the meetings and their point of view should be taken into consideration. Existing policies should be reviewed in a framework akin to gender based mainstreaming (Dauphin, 2006; Grace, 1997; Nelson, Meadows, Cannon, Morton, & Martin, 2002; Squires, 2008; Walby, 2005) to highlight when policies favour motorists to the detriment of other more sustainable modes of transport and determine ways to remediate those.

7.5.4 Cycling Improvements

NMH respondents reported experiencing some difficulties with cycling facilities. Some of them being dangerous due to the narrow space between cyclists and motorists or due to the speed difference between pedestrians and cyclists often sharing the same portion of transport infrastructure. While some very nice recreational cycling lanes have been implemented, sometimes, a lack of direct cycling lanes for utilitarian purposes was a problem for NMH, mostly, but not only those in the Quebec City urban area. Although women are known to cycle less than men, they more often complained about cycling facilities and more often requested improvements. Snow plowing of the cycling infrastructure would ensure that NMH who use their bicycle for work and running errands can do so even in the winter, another issue that was felt by NMH as an injustice towards them as roads are the priority in the clearing of snow. Subsidy for the purchase of electrical bicycle or a bike-sharing system that includes electrical bicycles would also enable better inclusion of the NMH. Based on the analysis of the NMH interview material I also recommend working with employers to provide bike shelters and showers for cyclists at the workplace.

7.5.5 Access to Employment

As discussed earlier, I recommend improving the coverage of the public transit system to high employment areas, not only in terms of transit route servicing the area but also in terms of serving the area in the evening to accommodate various work schedules. But authorities, especially in France should investigate regulating the discrimination of potential workers who don't have a driver licence. A possibility would be to legislate in order to prevent employers from enquiring about the driver licence status of applicants when the job description does not require driving in order to eliminate this unfair discrimination for some NMH. Governments could also work with the private sector to offer transit pass subsidy for employees.

7.6 Unique Contributions

Existing research has covered the topic of mobility-related social exclusion. However, I feel that my novel mixed methods approach of combining lexicometric and traditional discourse analysis of policy documents but also bottom-up discussions with non-motorized households enable a new point of view to emerge. I am particularly pleased having learned the tools of lexicometric analysis and applying them to public policy. This hybrid methodology could be reused in other mobility related research. The gender-based outlook which acted as a backdrop for the entire analysis is also unique in research looking at transport and social execution policies. Some of the factors that I found to be causing mobility-related social exclusion had not been associated with the phenomena before. For example, linking motorists' aggressive behaviour towards other road users and social exclusion as I could, based on the lexicometric and qualitative analysis of discussions with NMH is a unique contribution of this research that opens new possibility for policy to work on reducing mobility-related social exclusion. Finally, my attempt at crafting a research framework around three different disciplines namely urban sociology, public policy and transport geography, while quite challenging, offers a unique perspective on this question.

7.7 Next Steps

Many question remains about car dependence at the end of this thesis research project. For example, I wonder how households with multiple workers who have to share a single car cope with the car dependence of their urban area. As Nutley & Thomas (1995, p. 37) stated, “[a] commonly overlooked fact is that the largest group of people with potential mobility problems are those within one-car households who are unable to use the vehicle when required”. The perspective of such households could add a better understanding of about a much larger share of the population than my specific focus on the non-motorized households. Further enquiry taking into account their point of view could take this research to a new level.

The finding of linking motorist aggressive behaviour to mobility-related social exclusion needs to be further explored. Recent events with aggressive motorists in Canada, as was the case of a 65-year-old stopping and attacking a 74 year old cyclist with a club for “slowing down traffic” in Peterborough, Ontario (Network, 2017; Vandonk, 2017), puts this issue on the foreground. Research to understand how such grave behaviour is becoming acceptable, at least for the perpetrators and how it can be prevented should be undertaken as it certainly plays a role in mobility-related social exclusion. The link with this aggressively and car dependence also needs to be explored.

My research proposes a qualitative understanding of mobility-related social exclusion with the comparative outlook, however, it relies on two small samples of around 30 people in each group and area. While it enables an understanding of the factors leading to social exclusion, it does not enable an understanding and a measurement of the prevalence of mobility-related social exclusion. The results show a glimpse that appears to indicate that social exclusion is more prevalent in the Quebec City urban area than the Strasbourg area but the results are not conclusive. Research implementing a broader population using a quantitative questionnaire would enable negating this drawback and help find the extent of mobility-related social exclusion.

Although I intended to explain why the social aspect mobility is neglected in policy making and its effects underestimated. My analysis was unable to fully explain why. The low political weight of transit users versus motorists and the lack of political will for fixing the issue mentioned by civil servants are part of the answer. Further enquiry with civil servants could look into addressing, as an example, why the mobility aspects of social exclusion are not taken into account and integrated in social exclusion policy. Research to answer this question should also look at the sociological aspects linked to the deep rootedness of car dependence in certain area. This study is also limited due to the small number of civil servants involved. The discussion with the ten civil servants served an exploratory purpose and the initial results show the interest in applying this mixed method approach with public servants semi-directed interview material and suggests undertaking a similar approach with a larger number of civil servants so that the statistical association, for example with demographic variables can be statistically relevant.

My PhD project was not action research but it was not intended to be a theoretical only project to be read by academics alone in their ivory towers. As I stated in chapter 3 when presenting my research question, I believe in a social science that promotes the construction of a better society. As a public policy analyst, I believe in research that creates tools that can be used by public policy practitioners in the field to put into practice research findings. As such I intended to develop a car dependence index as part of this research project. In the end, just like the comparison with English-speaking cities, a lack of time resulted in the removal of this poorly developed concept from the research project. As a follow-up to the thesis I would like to spend further time and develop a car dependence index using geographic information systems (GIS) that would measure an indicator of car dependence combining data from various sources which would be associated with maps of the studied urban. Such an index could be used in policy and land-planning decision-making to favour a reduction of mobility-related social exclusion and the attenuation of car dependence. I also intend to present the results of this PhD research in French to a conference aimed at

transport policy practitioners attended by the public authorities of both urban areas under study so that my work can be useful to them.

Having further developed our understanding of mobility-related social exclusion and explored the link between the phenomena and the various public policies in place as well as car dependence, I hope that this research can be used by public administrations willing to tackle social exclusion to improve the situation of non-motorized households in our car dependent cities so that living without a car doesn't have to equate living socially excluded. In this perspective, it is incumbent upon public policy to embark on the path of improving the situation of non-motorized households and finally crafting policies to tackle the root of car dependence instead of going after its symptoms. With the rising concern over greenhouse gas emission and climate changes, cities have to step up and take a leadership role to enable a more sustainable mobility. As demonstrated by the OD survey analysis, non-motorized households are already contributing to a reduction of the transport system ecological footprint by espousing a more active mobility. We owe it to them to enable this non-motorized way of living without facing mobility-related social exclusion so that more of our urban population can imitate them and reduce their reliance on the car as the main mode of transportation.

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Appendices

Appendix 1. Non-Motorized Household Semi-Directed Interview Protocol

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ARCHITECTURE ET SCIENCES DE LA VILLE



Guide d'entretien - Ménage non motorisé

Numéro de participant : _____ Date: _____

→ Activer mode avion - ● Démarrer l'enregistrement

La dépendance automobile

- Présenter brièvement la recherche et la dépendance automobile (le cercle vicieux)

1) Qu'est-ce que ça vous évoque la dépendance automobile?

Vivre sans auto à Strasbourg

2) Depuis combien de temps n'avez-vous pas d'automobile? Comment ça s'est passé, pourquoi - choix, convictions ou contrainte?

3) Sur une échelle de 0 à 10, 0 = contrainte totale = préfère moins manger pour avoir une auto
10 = choix total, même millionnaire j'en aurais pas, dangereux...

4) Est-ce qu'il y a des secteurs de la ville que vous ne fréquentez pas, mais que vous aimeriez fréquenter, faute d'auto?

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Guide d'entretien - Ménage non motorisé



Numéro de participant : _____

5) Est-ce qu'il y a des activités dont vous vous privez faute d'auto?

6) Rareté des déplacements ?

Quantifier et qualifier les déplacements

7) Travail

8) Loisirs (cinéma, excursions, sports, etc...)

9) Achats

10 11 12 13
Autre (santé , éducation, famille, etc...)

Guide d'entretien - Ménage non motorisé

Numéro de participant : _____

Solutions

14) Comment vous débrouillez-vous sans auto?

15) Comment rendre la situation meilleure?

16) Et dans un monde parfait? (abribus= chauffés)

17) Est-ce que vous avez un abonnement de transports publics ?
- Pourquoi ? Depuis quand ? -

18) Est-ce que vous possédez d'autres moyens de transport ?
- Vélo, trottinette, roller, skateboard, ...

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Guide d'entretien - Ménage non motorisé



Numéro de participant : _____

Politiques publiques - ce que le gouvernement fait

19) Quelles politiques publiques existent pour vous rendre la vie plus facile?

20) Comment évalueriez-vous ces politiques publiques?

21) Perceptions des TC

22) Suggestions d'améliorations des politiques existantes

23) Nouvelles politiques publiques à mettre en place

Guide d'entretien - Ménage non motorisé

Numéro de participant : _____

24) Isolement, Exclusion sociale?

Gagnon et Saillant (2009, p. 2) définissent l'exclusion sociale comme: «une situation intolérable ou une condition injuste, la mise à l'écart de personnes et de groupes privés de leurs droits, de la sécurité, de l'accès à certains biens et d'une pleine participation à la société [...]».

Perception et solutions

25) Rôle de l'état

■ Arrêter l'enregistrement

Données démographiques

Type et nombre de personnes du ménage : ___ adultes ___ enfants | _____

Depuis combien de temps habiter vous à cet endroit, l'endroit précédent était où? _____

Abonnement TC _____ Citiz Alsace _____ Permis de conduire _____

Année de naissance : _____

Plus haut niveau de scolarité complété : _____

Actif ou non : _____

Emploi : _____

Proprio ou locataire : _____

Niveau de revenu du ménage : _____ € / année

Quartier: _____

Adresse: _____

Autres personnes à contacter : _____

Numéro de participant : _____

Date: _____

→ Activer mode avion – ● Démarrer l'enregistrement

Présenter brièvement la recherche

Dépendance automobile, MNM, exclusion sociale, entretiens avec 30 ménages QC-SB, +2 villes

Rôle de la personne rencontrée

1) Pouvez-vous décrire votre rôle et ce qui vous a mené ici?

2) Jouez-vous un rôle dans le développement des politiques publiques de mobilité/transport ?

Élaboration de la politique

- 3) Décrire le processus d'élaboration
 - Point de départ (programme du parti, ministre, fonctionnaires, etc.)
 - Étapes d'élaboration des politiques (qui est consulté ?)
 - Principales personnes impliquées et pourquoi
 - Acteurs internes et externes
 - Grandes étapes entourant les décisions prises à l'égard du contenu de la politique
 - Style de décision (autoritaire, consensuel, rationnel, réglementé, négocié, etc.)



Numéro de participant : _____

Objectifs divergents sociaux et économiques

- Efficience, objectifs économiques vs objectifs sociaux
 - Ex : RTC pas plage Baje de Beauport, pas assez de passagers : « Nous sommes un organisme parapublic. À chaque fois qu'on investit un dollar, on s'assure une certaine rentabilité » (Rémy Normand, 2016)
- 8) Comment décident-tu des priorités, quels objectifs sont plus importants ?
- Pouvez-vous donner des exemples ?

- 9) Quelles données sont utilisées pour faire les choix ?
- Evidence based policy (politique basée sur les faits) (3 sources : politiques, scientifiques, pratique meo)

Numéro de participant : _____

Ressortissants

10) À qui s'adressent les politiques de mobilité/transport ?

- Ressortissants?
- MNM?

MNM

11) Défis particuliers pour les MNM?

12) Solutions pour les MNM? Les politiques s'adressent-elles à eux?

Programme doctoral en
ARCHITECTURE ET SCIENCES DE LA VILLE

Guide d'entretien – Administration publique



Numéro de participant : _____

Isolement, exclusion sociale liée à la mobilité

Gagnon et Saillant (2009, p. 2) définissent l'exclusion sociale comme: «une situation intolérable ou une condition injuste, la mise à l'écart de personnes et de groupes privés de leurs droits, de la sécurité, de l'accès à certains biens et d'une pleine participation à la société [...]».

- 13) Pensez-vous qu'il y ai un lien entre exclusion sociale et mobilité ?
- Équité sociale dans PMD 2011

14) Est-ce que les politiques publiques de mobilité ont un rôle à jouer ?

15) Des activités ou des endroits que l'on ne peut fréquenter sans auto quand on vie dans l'Eurométropole de Strasbourg xp?

Numéro de participant : _____

Vivre sans auto à Québec

16) Selon vous est-il possible de vivre à Strasbourg sans auto et d'y élever une famille convenablement ?

■ Arrêter l'enregistrement

Données démographiques

Titre : _____

Département : _____

Nombre d'année en poste : _____

Année de naissance : _____

Plus haut niveau de scolarité complété : _____

Abonnement TC _____ Autopartage _____ Permis de conduire _____

Nb de véhicules au foyer : _____

Quelle est la dernière fois où vous avez utilisé les TC pour venir au bureau ?

Dans quelles circonstances ?

Appendix 3. Facebook Status Post when Recruiting Participants in Strasbourg

The screenshot shows a Facebook profile for Dominic Villeneuve. The page displays two status posts from February 2015. The first post, dated 18 février 2015, is from Québec, Canada. The second post, dated 16 février 2015, is from Évian-les-Bains, Rhône-Alpes, France. Both posts are about recruiting participants for a research project. The posts include text, a link to a research page, and interaction options like 'J'aime', 'Commenter', and 'Partager'. The right sidebar shows sponsored ads for 'Cartes Cadeaux CGN' and 'NetApp Success Story'.

Post 1 (18 février 2015 - Québec, Canada):

Ma recherche doctorale continue, cette fois à Strasbourg (France). Si vous connaissez quelqu'un qui y habite et qui n'a pas de voiture, faites-lui part de mon annonce:

Recherche de participants - rencontre de 60 à 90 minutes

Dans le cadre d'une étude pour la réalisation d'une thèse intitulée «Ménages non motorisés, dépendance automobile et politiques publiques: une comparaison entre l'Amérique du Nord et l'Europe» financée par le Conseil de recherches en sciences humaines et menée par Dominic Villeneuve du Laboratoire d...

DOMINICVILLENEUVE.CA

Post 2 (16 février 2015 - Évian-les-Bains, Rhône-Alpes, France):

Dans le cadre de sa thèse, mon collègue recherche des individus de l'agglomération de Strasbourg, sans voiture. Si vous avez un peu de temps, suivez le lien :

Recherche de participants - rencontre de 60 à 90 minutes

Dans le cadre d'une étude pour la réalisation d'une thèse intitulée «Ménages non motorisés, dépendance automobile et politiques publiques: une comparaison entre l'Amérique du Nord et l'Europe» financée par le Conseil de recherches en sciences humaines et menée par Dominic Villeneuve du Laboratoire d...

DOMINICVILLENEUVE.CA

Commentaire (16 février 2015, à 18:07 - J'aime):

Dominic Villeneuve Merci [nom] c'est suer sympa de m'aider à trouver des gens pour la recherche

Appendix 4. Web Page Recruiting Participants in Quebec City

DominicVilleneuve.ca

English
[Bienvenue](#) [Participants demandés](#) [Recherche](#) [Biographie](#) [Contact](#) [Communications](#)

Recherche de participants - rencontre de 60 à 90 minutes

Dans le cadre d'une étude pour la réalisation d'une thèse intitulée «Ménages non motorisés, dépendance automobile et politiques publiques: une comparaison entre l'Amérique du Nord et l'Europe» financée par le Conseil de recherches en sciences humaines et menée par Dominic Villeneuve du **Laboratoire de sociologie urbaine** de l'EPFL, je suis à la recherche de personnes vivant **sans voiture** dans la grande région de Québec afin de pouvoir discuter avec eux de 60 à 90 minutes environ.

Nous aborderons la question des déplacements dans cette région plutôt dépendante à l'automobile et des solutions (existantes ou non) pour remédier à ce problème.

Je suis à la recherche de personnes :

Dont le ménage ***ne possède pas de voiture***

- Habitant sur la rive sud de Québec
- Familles habitant avec des enfants en banlieue
- Familles habitant avec des enfants dans le centre-ville
- Couples sans enfants
- Personnes habitant seules (avec ou sans emploi)
- Des personnes qui ne possèdent pas d'automobile parce qu'ils n'ont pas le choix et d'autres qui ont fait ce choix par convictions

L'étude se déroulera du 27 novembre 2014 au 8 janvier 2015.
Les participants à cette étude ne recevront pas d'indemnité.

Pour plus de renseignements ou pour participer, contactez-moi au 418- [redacted] ou par courriel au dominic.villeneuve@epfl.ch

http://dominicvilleneuve.ca/Francais/Participants_demandes.html Page 1 sur 1

Appendix 6. Quebec City Policy Documents Used for Analysis

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Appendix 8. Quebec City OD Data Complete Description

Enquête O-D QUÉBEC 2011			
Structure standardisée du fichier « plat »			
STRUCTURE DU FICHIER plat version 3 de l'enquête O-D Québec 2011 (semaine)			
<i>173 variables et 152 723 enregistrements dont 139 599 déplacements, 26 441 logis et 60 349 personnes</i>			
Nom du champ	Type	Longueur	Description
ipere	N	6	Numéro séquentiel unique
version	C	5	Version du fichier plat
date_prod	C	10	Date de production du fichier plat
VARIABLES RELATIVES AUX LOGIS			
nolog	N	11	Numéro du logis
tlog	N	1	Enregistrement de tête associé au ménage : 1 : pour la 1 ^{ère} occurrence nul : pour les suivantes
facmen	N	5.2	Facteur d'expansion basé sur le nombre de logis occupés du recensement de 2011 par strate et par nombre de personnes dans le logis. Ce facteur de pondération ne doit être utilisé que pour estimer les caractéristiques des logis.
media	N	1	Entendu parler de l'étude dans les médias 1. par courrier 2. par les média électroniques 3. par les médias imprimés; 4. autre (bouche à oreille, pub, etc.) 5. pas entendu parler
nbper	N	2	Nombre de personnes du logis
nbveh	N	2	Nombre de véhicules du logis
revenu	N	1	Classe revenu total du ménage (avant impôt) 1. 0 \$ à 29 999 \$ 2. 30 000 \$ à 59 999 \$ 3. 60 000 \$ à 89 999 \$ 4. 90 000 \$ à 119 999 \$ 5. 120 000 \$ à 149 999 \$ 6. 150 000 \$ à 179,999 \$ 7. 180,000 \$ à 209,999 \$ 8. 210,000 \$ et plus 9. Refus / Ne sait pas
typlog	N	2	Type d'habitation • <u>Propriétaire</u> : 11. Propriétaire : Maison individuelle 12. Propriétaire : Maison jumelée (semi-détaché) 13. Propriétaire : Maison en rangée 14. Propriétaire : Appartement ou Condo 15. Propriétaire : Autre (ex. : maison mobile, chalet, etc.) • <u>Locataire</u> : 21. Locataire : Maison individuelle 22. Locataire : Maison jumelée (semi-détaché) 23. Locataire : Maison en rangée 24. Locataire : Appartement ou Condo 25. Locataire : Autre (ex. : maison mobile, chalet, etc.) 99. Refus / ne sait pas
langue	N	1	Langue dans laquelle a été menée l'entrevue 1 : français 2 : anglais
xionlog	N	11.6	Coordonnée X du logis provenant du système de référence spatiale NAD83 (en degré décimaux)
yilatlog	N	10.6	Coordonnée Y du logis provenant du système de référence spatiale NAD83 (en degré décimaux)
xmtmlog	N	9.2	Coordonnée X du logis en projection MTM (NAD83) zone 7
ymtmlog	N	10.2	Coordonnée Y du logis en projection MTM (NAD83) zone 7
sdrlog	N	7	Subdivision de recensement 2011 du logis
smlog	N	4.1	Secteur municipal du logis (69 secteurs municipaux, voir Annexe 1)

Enquête O-D QUÉBEC 2011			
Structure standardisée du fichier « plat »			
STRUCTURE DU FICHIER plat version 3 de l'enquête O-D Québec 2011 (semaine)			
<i>173 variables et 152 723 enregistrements dont 139 599 déplacements, 26 441 logis et 60 349 personnes</i>			
Nom du champ	Type	Longueur	Description
mobil	N	1	Est-ce que la personne a effectuée un déplacement la veille du jour de l'entrevue 1. Oui 2. Non 3. N/A (enfant de moins de 5 ans) 4. Refus / ne sait pas
occpoc	N	1	Occupation de la personne : 1. Travailleur à temps complet 2. Travailleur à temps partiel 3. Étudiant / élève 4. Retraité 5. Sans emploi 6. Au foyer 7. Autre 8. Refus 9. Non applicable (enfant de moins de 5 ans)
typeocc	C	1	Code associé au type d'occupation de la personne (Voir annexe 3)
tpe	N	1	Statut d'étudiant à temps partiel 1. Oui 2. Non 3. Refus
tpt	N	1	Statut de travailleur à temps partiel 1. Oui 2. Non 3. Refus
teletrav	N	1	Travail à domicile (télétravail) 1. Oui 2. Non 3. Refus/ne sait pas
lieuocc	N	2	Code du type de lieu d'occupation ou d'études 1 : Domicile 2 : Sur la route / sans lieu fixe de travail 3 : Municipalité (si hors-territoire) 4 : Générateur 5 : Adresse 6 : Intersection 12 : Non applicable (enfant de moins de 5 ans, retraité, sans emploi, au foyer, autre, refus,)
geneocc	N	6	Code associé au générateur du lieu d'occupation
civocc	N	6	Code de la tranche d'adresse du numéro civique du lieu d'occupation
ncivocc	N	6	Numéro civique du lieu d'occupation
rueocc	N	6	Code de la rue du lieu d'occupation
interocc	N	6	Code associé à l'intersection du lieu d'occupation
municocc	N	6	Code de la municipalité du lieu d'occupation
lieuoccimp	C	1	Code permettant d'identifier que le lieu d'occupation ou d'études a été imputé (si la variable n'est pas vide) : R : sur base de rue connue M : sur base de municipalité connue Z : sans base de localisation connue
xmtmocc	N	9.2	Coordonnée x du lieu d'occupation provenant du système MTM (NAD83) zone 7
ymtmocc	N	10.2	Coordonnée y du lieu d'occupation provenant du système MTM (NAD83) zone 7
xlonocc	N	10.6	Coordonnée x du lieu d'occupation provenant du système Latitude Longitude NAD83
ylatocc	N	9.6	Coordonnée y du lieu d'occupation provenant du système Latitude Longitude NAD83
sdrocc	N	7	Subdivision de recensement 2011 de l'occupation (nul si extérieur de la province de Québec)
srocc	N	10.2	Secteur de recensement 2011 du lieu d'occupation (nul si hors Région métropolitaine de recensement (RMR) et Agglomération de recensement (AR))
smocc	N	4.1	Secteur municipal de l'origine (voir annexe 1)
ztoocc	N	3	Zone de transport de l'occupation (1 à 774)
loccodocc	N	8	Code de localisation hors-territoire du lieu d'occupation

Enquête O-D QUÉBEC 2011			
Structure standardisée du fichier « plat »			
STRUCTURE DU FICHIER plat version 3 de l'enquête O-D Québec 2011 (semaine)			
<i>173 variables et 152 723 enregistrements dont 139 599 déplacements, 26 441 logis et 60 349 personnes</i>			
Nom du champ	Type	Longueur	Description
stat	N	1	1. Gratuit (stationnement public ou privé, hors-rue ou sur rue) 2. Stationnement fourni par l'employeur 3. Stationnement payant 4. Refus / ne sait pas
termstat	N	1	1. Jour 2. Semaine 3. Mois 4. An
coutstat	N	3	Montant payé pour le stationnement (\$).
vehoccup	N	1	Indique le nombre de personnes qui occupaient le véhicule que conduisait le répondant 1 2 ... 9 ou plus 0 Refus/ne sait pas
facper	N	5.2	Facteur de pondération basé sur la population totale des personnes par cohorte d'âge et de sexe par strate à partir des données de recensement 2011. Ce facteur de pondération doit être utilisé pour estimer les caractéristiques des personnes.
nbdpl	N	2	Nombre de déplacements de la personne
VARIABLES RELATIVES AUX DÉPLACEMENTS			
facdep	N	5.2	Facteur de pondération basé sur la population totale des personnes de 5 ans et plus par cohorte d'âge et de sexe et par regroupement de strate à partir des données du recensement 2011. Ce facteur de pondération : <ul style="list-style-type: none"> • doit être utilisé pour estimer les caractéristiques des déplacements des personnes; • tient compte des personnes dont la variable Mobil est égale à « Refus/ne sait pas » ou « Rejet »; • est aussi ajusté pour corriger la représentativité par jour de semaine.
cledeplacement	N	9	Numéro de déplacement de la personne dans le logis.
nodep	N	2	Numéro de déplacement de la personne
hrede	N	4	Heure de départ (hhmm = 0400 à 2800)
heure	N	2	Heure de départ (deux premiers nombres de hrede hh = 04 à 28)
ghrede	N	2	Groupe d'heure de départ 1. 6h00 à 8h59 2. 9h00 à 14h59 3. 15h00 à 17h59 4. 18h00 à 23h59 5. 4h00 à 5h59 et 24h à 28h00 (minuit à 4h00 le lendemain)
hredeimp	N	1	Code permettant d'identifier que l'heure de départ a été imputée 1 : oui 9 : oui, heure imputée à partir d'une heure approximative (minutes = 99)
periode	N	1	Période de la journée : 1. PPAM – 6h00 à 8h59 2. Jour – 9h00 à 14h59 3. PPPM – 15h00 à 17h59 4. Soir/Nuit – 4h00 à 5h59 / 18h00 à 23h59 / 24h00 à 28h00 (minuit à 4h00 le lendemain)

Enquête O-D QUÉBEC 2011			
Structure standardisée du fichier « plat »			
STRUCTURE DU FICHIER plat version 3 de l'enquête O-D Québec 2011 (semaine)			
<i>173 variables et 152 723 enregistrements dont 139 599 déplacements, 26 441 logis et 60 349 personnes</i>			
Nom du champ	Type	Longueur	Description
motif	N	2	Motif du déplacement : 1. Travail (au lieu habituel) 2. Travail (autre qu'au lieu habituel) / rendez-vous d'affaire 3. Sur la route (pour le travail) 4. Études / École 5. Magasinage et commissions (ex. : épicerie, cordonnier, réparation auto, etc.) 6. Restaurant 7. Loisirs 8. Visite d'amis, parenté 9. Santé et soins personnels 10. Reconduire quelqu'un 11. Aller chercher quelqu'un 12. Retour au domicile 13. Autre
motif_gr	N	1	Groupe de motifs du déplacement : 1. Travail (motif = 1, 2, 3) 2. Étude (motif = 4) 3. Magasinage (motif = 5) 4. Loisirs (motif = 6, 7, 8) 5. Autres (motif = 9, 10, 11, 13) 6. Retour au domicile (motif = 12)
motifimp	N	1	Code permettant d'identifier que le motif a été imputé 1 : oui
mode1	N	2	Premier mode emprunté <u>Modes privés</u> 1. Auto - Conducteur 2. Auto - Passager 3. Taxi 4. Moto ou scooter 5. Vélo <u>Modes collectifs</u> 6. Autobus ou taxibus public [RTC, ST Lévis, Autocars des Chutes, service TC d'une MRC] 7. Autobus scolaire. [autobus jaune] 8. Autres autobus ou minibus 9. Transport adapté <u>Modes externes</u> 10. Autocar interurbain ou nolisé 11. Train VIA Rail 12. Avion <u>Autres modes</u> 13. À pied (déplacement entier) 14. Traversier 15. Autres 16. Refus / ne sait pas
modeimp	N	1	Code permettant d'identifier que le mode 1 a été imputé 1 : oui
mode2	N	2	Deuxième mode emprunté (voir description du mode2)
mode3	N	2	Troisième mode emprunté (voir description du mode3)
lig1	N	4	Code associé à la 1 ^{ère} ligne de transport en commun empruntée
lig2	N	4	Code associé à la 2 ^{ème} ligne de transport en commun empruntée
lig3	N	4	Code associé à la 3 ^{ème} ligne de transport en commun empruntée
lig4	N	4	Code associé à la 4 ^{ème} ligne de transport en commun empruntée

Enquête O-D QUÉBEC 2011			
Structure standardisée du fichier « plat »			
STRUCTURE DU FICHIER plat version 3 de l'enquête O-D Québec 2011 (semaine)			
<i>173 variables et 152 723 enregistrements dont 139 599 déplacements, 26 441 logis et 60 349 personnes</i>			
Nom du champ	Type	Longueur	Description
cpont	N	1	Pont emprunté 1. Pont Pierre-Laporte 2. Pont de Québec 3. Traversier Québec-Lévis 4. Autre pont ou traversier (hors-territoire) 5. Refus/ Ne sait pas 6. Non-applicable
lieuori	N	1	Code du type de lieu associé à l'origine 1 : Domicile 2 : Lieu habituel de travail / étude 3 : Municipalité (si hors territoire) 4 : Générateur 5 : Adresse 6 : Intersection
geneori	N	6	Code du générateur de l'origine
ncivori	N	6	Numéro civique de l'origine
civori	N	6	Code de la tranche d'adresses du numéro civique de l'origine
rueori	N	6	Code de la rue de l'origine
interori	N	6	Code de l'intersection de l'origine
municori	N	6	Code de la municipalité de l'origine
xlonori	N	11.6	Coordonnée x du lieu d'origine provenant du système Latitude Longitude NAD83
ylatori	N	10.6	Coordonnée y du lieu d'origine provenant du système Latitude Longitude NAD83
xmtmori	N	9.2	Coordonnée x du lieu d'origine en projection MTM zone 7 (NAD83)
ymtmori	N	10.2	Coordonnée y du lieu d'origine en projection MTM zone 7 (NAD83)
sdori	N	7	Subdivision de recensement 2011 de l'origine (nul si extérieur du Québec)
srori	N	10.2	Secteur de recensement 2011 de l'origine (nul si hors Région métropolitaine de recensement (RMR) et Agglomération de recensement (AR))
smori	N	4.1	Secteur municipal de l'origine (voir annexe 1)
ztori	N	3	Zone de transport de l'origine (1 à 774)
loccodori	N	8	Code de localisation hors-territoire du lieu d'origine
xlonoridecal	N	11.6	Coordonnée x décalée du lieu d'origine provenant du système Latitude Longitude NAD83
ylatoridecal	N	10.6	Coordonnée y décalée du lieu d'origine provenant du système Latitude Longitude NAD83
xmtmoridecal	N	9.2	Coordonnée x décalée du lieu d'origine en projection MTM zone 7 (NAD83)
ymtmoridecal	N	10.2	Coordonnée y décalée du lieu d'origine en projection MTM zone 7 (NAD83)
sdroridecal	N	7	Subdivision de recensement 2011 de l'origine (coordonnée décalée) (nul si extérieur du Québec)
sroridecal	N	10.2	Secteur de recensement 2011 de l'origine (coordonnée décalée) (nul si hors Région métropolitaine de recensement (RMR) et Agglomération de recensement (AR))
smoridecal	N	4.1	Secteur municipal de l'origine (voir annexe 1)
ztoridecal	N	3	Zone de transport de l'origine décalée (1 à 774)
lieudes	N	1	Code du type de lieu associé à la destination 1 : domicile 2 : lieu de travail / étude habituel 3 : municipalité (si hors territoire) 4 : générateur 5 : adresse 6 : intersection
genesdes	N	6	Code du générateur de la destination
ncivdes	N	6	Code de la tranche d'adresses du numéro civique de la destination
civdes	N	6	Numéro civique de la destination
ruedes	N	6	Code de la rue de la destination
interdes	N	6	Code de l'intersection de la destination
municdes	N	6	Code de la municipalité de la destination

Enquête O-D QUÉBEC 2011			
Structure standardisée du fichier « plat »			
STRUCTURE DU FICHIER plat version 3 de l'enquête O-D Québec 2011 (semaine)			
<i>173 variables et 152 723 enregistrements dont 139 599 déplacements, 26 441 logis et 60 349 personnes</i>			
Nom du champ	Type	Longueur	Description
lieudesimp	C	1	Code permettant d'identifier que le lieu de destination a été imputé (si la variable n'est pas vide) : R : sur base de rue connue M : sur base de municipalité connue Z : sans base de localisation connue
xlondes	N	11.6	Coordonnée x du lieu de destination provenant du système Latitude Longitude NAD83
ylatdes	N	10.6	Coordonnée y du lieu de destination provenant du système Latitude Longitude NAD83
xmtmdes	N	9.2	Coordonnée x du lieu de destination en projection MTM (NAD83) zone 7
ytmtdes	N	10.2	Coordonnée y du lieu de destination en projection MTM (NAD83) zone 7
sdrdes	N	7	Subdivision de recensement 2011 de la destination (nul si extérieur du Québec)
srdes	N	10.2	Secteur de recensement 2011 de la destination (nul si hors Région métropolitaine de recensement (RMR) et Agglomération de recensement (AR))
smdes	N	4.1	Secteur municipal de la destination (voir annexe 1)
ztdes	N	3	Zone de transport de l'origine (1 à 774)
locoddes	N	8	Code de localisation hors-territoire du lieu de destination
xlondesdecal	N	11.6	Coordonnée x décalée du lieu de destination provenant du système Latitude Longitude NAD83
ylatdesdecal	N	10.6	Coordonnée y décalée du lieu de destination provenant du système Latitude Longitude NAD83
xmtmdesdecal	N	9.2	Coordonnée x décalée du lieu de destination provenant du système MTM (NAD83) zone 7
ytmtdesdecal	N	10.2	Coordonnée y décalée du lieu de destination provenant du système MTM (NAD83) zone 7
sdrdesdecal	N	7	Subdivision de recensement 2011 de la destination (coordonnée décalée) (nul si extérieur du Québec)
srdesdecal	N	10.2	Secteur de recensement 2011 de la destination (coordonnée décalée) (nul si hors Région métropolitaine de recensement (RMR) et Agglomération de recensement (AR))
smdesdecal	N	4.1	Secteur municipal de la destination (voir annexe 1)
ztdesdecal	N	3	Zone de transport de la destination décalée (1 à 774)
dist	N	10.5	Distance à vol d'oiseau, en kilomètres, entre l'origine connue et la destination connue
hrearv	N	4	Heure d'arrivée à destination. Concerne le répondant uniquement. <i>Si l'heure exacte n'est pas connue, l'heure approximative est saisie avec « 99 » pour les minutes]</i> <i>« 9999 » = refus / ne sait pas.</i>
covoiturage	N	1	le conducteur du véhicule était : 1. Un membre de votre ménage 2. Un collègue de travail ou d'études 3. Autre 4. Refus /ne sait pas
nbjnc	N	1	Indique le nombre de jonctions du déplacement de la personne
lieujct1	N	1	Code du type de lieu de la 1 ^{ère} jonction si CLIEU=1 3. Municipalité 4. Générateur 5. Adresse 6. Intersection 9. Coordonnées géographiques
genejct1	N	6	Code du générateur de la 1 ^{ère} jonction
ncivjct1	N	4	Numéro civique de la 1 ^{ère} jonction
civjct1	N	6	Code de la tranche d'adresses du numéro civique de la 1 ^{ère} jonction
ruejct1	N	5	Code de la rue de la 1 ^{ère} jonction

Appendix 9. Strasbourg OD Data Complete Description

Fiche ménage (Men.txt)	Intitulé de la variable
Variable	
FICHE	CODE FICHE, =1
DATEJJ	JOUR DE REALISATION
DATEMM	MOIS DE REALISATION
DATEAA	ANNEE DE REALISATION
SECT1	SECTEUR DE TIRAGE
SECT2	ZONE FINE DE RESIDENCE
ECH	NUMERO D'ECHANTILLON
JOURSEM DEP	JOUR DES DEPLACEMENTS
M1	TYPE D'HABITAT
M2	TYPE D'OCCUPATION
M3	POSSESSION DU TELEPHONE AU DOMICILE
M4	INSCRIPTION DANS L'ANNUAIRE
M5	POSSESSION D'UNE CONNEXION INTERNET
M6	VOITURES PARTICULIERES A DISPOSITION
M7A1	GENRE DU VEHICULE NUMERO 1
M8A1	TYPE D'ENERGIE DU VEHICULE NUMERO 1
M9A1	ANNEE DE PREMIERE MISE EN CIRCULATION DU VEHICULE NUMERO 1
M10A1	PUISSANCE FISCALE DU VEHICULE NUMERO 1
M11A1	TYPE DE POSSESSION DU VEHICULE NUMERO 1
M12A1	LIEU DE STATIONNEMENT LA NUIT DU VEHICULE NUMERO 1
M13A1	TYPE DE STATIONNEMENT LA NUIT DU VEHICULE NUMERO 1
M7A2	GENRE DU VEHICULE NUMERO 2
M8A2	TYPE D'ENERGIE DU VEHICULE NUMERO 2
M9A2	ANNEE DE PREMIERE MISE EN CIRCULATION DU VEHICULE NUMERO 2
M10A2	PUISSANCE FISCALE DU VEHICULE NUMERO 2
M11A2	TYPE DE POSSESSION DU VEHICULE NUMERO 2
M12A2	LIEU DE STATIONNEMENT LA NUIT DU VEHICULE NUMERO 2
M13A2	TYPE DE STATIONNEMENT LA NUIT DU VEHICULE NUMERO 2
M7A3	GENRE DU VEHICULE NUMERO 3
M8A3	TYPE D'ENERGIE DU VEHICULE NUMERO 3
M9A3	ANNEE DE PREMIERE MISE EN CIRCULATION DU VEHICULE NUMERO 3
M10A3	PUISSANCE FISCALE DU VEHICULE NUMERO 3
M11A3	TYPE DE POSSESSION DU VEHICULE NUMERO 3
M12A3	LIEU DE STATIONNEMENT LA NUIT DU VEHICULE NUMERO 3
M13A3	TYPE DE STATIONNEMENT LA NUIT DU VEHICULE NUMERO 3
M7A4	GENRE DU VEHICULE NUMERO 4
M8A4	TYPE D'ENERGIE DU VEHICULE NUMERO 4
M9A4	ANNEE DE PREMIERE MISE EN CIRCULATION DU VEHICULE NUMERO 4
M10A4	PUISSANCE FISCALE DU VEHICULE NUMERO 4
M11A4	TYPE DE POSSESSION DU VEHICULE NUMERO 4
M12A4	LIEU DE STATIONNEMENT LA NUIT DU VEHICULE NUMERO 4
M13A4	TYPE DE STATIONNEMENT LA NUIT DU VEHICULE NUMERO 4
Coeff	COEFFICIENT DE REDRESSEMENT
L1	TYPE D'ENVIRONNEMENT DE L'HABITAT
L2	DUREE TOTALE DU PRET
L3	PLACES DE STATIONNEMENT RESERVEES
L4	ANNEE D'EMMENAGEMENT
L5A1	ANNEE D'ACQUISITION DU VEHICULE NUMERO 1
L32A1	TARIF DU STATIONNEMENT DU VEHICULE NUMERO 1
L5A2	ANNEE D'ACQUISITION DU VEHICULE NUMERO 2
L32A2	TARIF DU STATIONNEMENT DU VEHICULE NUMERO 2
L5A3	ANNEE D'ACQUISITION DU VEHICULE NUMERO 3
L32A3	TARIF DU STATIONNEMENT DU VEHICULE NUMERO 3
L5A4	ANNEE D'ACQUISITION DU VEHICULE NUMERO 4
L32A4	TARIF DU STATIONNEMENT DU VEHICULE NUMERO 4
L6	NOMBRE DE VELOS DU MENAGE
L7	OFFRE DE TRANSPORTS EN COMMUN DU LOGEMENT
L8	EVOLUTION DE L'OFFRE DE TRANSPORTS EN COMMUN DU LOGEMENT
L9	INFLUENCE DE L'OFFRE DE TRANSPORTS EN COMMUN DU LOGEMENT
L31	REVENUS ANNUELS
R1	REMBOURSEMENT MENSUEL EMPRUNT IMMOBILIER
R2	LOYER MENSUEL
R3	CHARGES MENSUELLES
R4	REMBOURSEMENT MENSUEL CREDIT AUTO/MOTO
Variable	
Fiche personnes (PER.TXT)	Intitulé de la variable
FICHE	CODE FICHE, =2
SECT1	SECTEUR DE TIRAGE
SECT2	ZONE FINE DE RESIDENCE
ECH	NUMERO D'ECHANTILLON
NUMPERS	NUMERO DE LA PERSONNE
P2	SEXE
P3	LIEN AVEC LA PERSONNE DE REFERENCE
P4	AGE
P5	POSSESSION D'UN TELEPHONE PORTABLE
P6	POSSESSION D'UNE ADRESSE DE MESSAGERIE ELECTRONIQUE
P7	POSSESSION DU PERMIS DE CONDUIRE
P8	DERNIER ETABLISSEMENT SCOLAIRE FREQUENTE
P9	OCCUPATION PRINCIPALE
P10	OCCUPATION SECONDAIRE
Codif PCS	PCS
P14	TRAVAIL OU ETUDES A DOMICILE
P15SECTEUR	LIEU DE TRAVAIL OU D'ETUDES (OCCUPATION PRINCIPALE)
P16	DISPOSITION D'UNE VOITURE EN GENERAL (DEPLACEMENTS DOMICILE TRAVAIL OU ETUDES)
P17	PROBLEMES DE STATIONNEMENT EN GENERAL (SUR LIEU DE TRAVAIL OU ETUDES)
P18	DIFFICULTES DE STATIONNEMENT SUR LIEU DE TRAVAIL OU ETUDES

P19	FREQUENCE D'UTILISATION EN SEMAINE : BICYCLETTE
P20	FREQUENCE D'UTILISATION EN SEMAINE : 2 ROUES A MOTEUR
P21	FREQUENCE D'UTILISATION EN SEMAINE : VOITURE CONDUCTEUR
P22	FREQUENCE D'UTILISATION EN SEMAINE : VOITURE PASSAGER
P23	FREQUENCE D'UTILISATION EN SEMAINE : ENSEMBLE DU RESEAU URBAIN
P24	FREQUENCE D'UTILISATION EN SEMAINE : TCSP
P25	SITUATION DE LA PERSONNE LA VEILLE
P1	TYPE DE LA PERSONNE
P12A1	POSSESSION D'UN ABONNEMENT TC EN GENERAL (NUMERO 1)
P12B1	GRATUITE DE L'ABONNEMENT TC (NUMERO 1)
P13A1	VALIDITE DE L'ABONNEMENT TC LA VEILLE (NUMERO 1)
P12A2	POSSESSION D'UN ABONNEMENT TC EN GENERAL (NUMERO 2)
P12B2	GRATUITE DE L'ABONNEMENT TC (NUMERO 2)
P13A2	VALIDITE DE L'ABONNEMENT TC LA VEILLE (NUMERO 2)
P12A3	POSSESSION D'UN ABONNEMENT TC EN GENERAL (NUMERO 3)
P12B3	GRATUITE DE L'ABONNEMENT TC (NUMERO 3)
P13A3	VALIDITE DE L'ABONNEMENT TC LA VEILLE (NUMERO 3)
L10	PRIX DE REVIENT DES ABONNEMENTS TC
L11	ANNEE DE DEBUT DE TRAVAIL SUR LE LIEU DE TRAVAIL
L12	LIEU DE STATIONNEMENT VELOS SUR LE LIEU DE TRAVAIL
P24A	FREQUENCE D'UTILISATION EN SEMAINE : RESEAU 67
P24B	FREQUENCE D'UTILISATION EN SEMAINE : TER
Coef	COEFFICIENT DE REDRESSEMENT

Fiche déplacements (DEP.TXT)	
Variable	Intitulé de la variable
FICHE	CODE FICHE, =3
SECT1	SECTEUR DE TIRAGE
SECT2	ZONE FINE DE RESIDENCE
ECH	NUMERO D'ECHANTILLON
NUMPERS	NUMERO DE LA PERSONNE
NUMDEP	NUMERO DU DEPLACEMENT
D2A	MOTIF D'ORIGINE
D2B	MOTIF D'ORIGINE DE LA PERSONNE ACCOMPAGNEE
D3	ZONE D'ORIGINE
D4	HEURE DE DEPART
D5A	MOTIF DE DESTINATION
D5B	MOTIF DE DESTINATION DE LA PERSONNE ACCOMPAGNEE
D6	NOMBRE D'ARRETS DANS LA TOURNEE
D7	ZONE D'ARRIVEE
D8	HEURE D'ARRIVEE
D9	DUREE DU DEPLACEMENT
D10	NOMBRE DE MODES MECANISES
D11	PRISE EN CHARGE DU COUT DU DEPLACEMENT
Coef	COEFFICIENT DE REDRESSEMENT

Fiche trajets (TRA.TXT)	
Variable	Intitulé de la variable
FICHE	CODE FICHE, =4
SECT1	SECTEUR DE TIRAGE
SECT2	ZONE FINE DE RESIDENCE
ECH	NUMERO D'ECHANTILLON
NUMPERS	NUMERO DE LA PERSONNE
NUMDEP	NUMERO DU DEPLACEMENT
NUMTRAJ	NUMERO DU TRAJET
T2	TEMPS DE MARCHÉ A PIEDS AU DEPART
T3	MODE DE TRANSPORT UTILISE
T4	ZONE DE DEPART DU MODE MECANISE
T5	ZONE D'ARRIVEE DU MODE MECANISE
T6	TEMPS DE MARCHÉ A PIEDS A L'ARRIVEE
T7	NUMERO DU VEHICULE PARTICULIER
T8	NOMBRE D'OCCUPANTS
T9	LIEU DE STATIONNEMENT
T10	NATURE DU STATIONNEMENT
T11	DUREE DE RECHERCHE DU STATIONNEMENT
L15	STATIONNEMENT DES DEUX ROUES
L16	UTILISATION DU RESEAU AUTOROUTIER
Coef	COEFFICIENT DE REDRESSEMENT

Fiche opinion (OPI.TXT)	
Variable	Intitulé de la variable
FICHE	CODE FICHE, =5
SECT1	SECTEUR DE TIRAGE
SECT2	ZONE FINE DE RESIDENCE
ECH	NUMERO D'ECHANTILLON
NUMPERS	NUMERO DE LA PERSONNE
O1A1	ENVIRONNEMENT, CADRE DE VIE
O1A2	LOISIRS
O1A3	EDUCATION
O1A4	TRANSPORTS, CIRCULATION
O1A5	EMPLOI
O1A6	LOGEMENT
O1A7	SECURITE
O2	POINT LE PLUS IMPORTANT
O3A1	RISQUES D'ACCIDENTS
O3A2	BRUIT DE LA CIRCULATION
O3A3	DEPLACEMENTS A PIEDS
O3A4	DEPLACEMENTS A VELO

O3A5	DEPLACEMENTS DEUX ROUES MOTORISES
O3A6	TRANSPORTS COLLECTIFS
O3A7	POLLUTION AUTOMOBILE
O3A8	STATIONNEMENT
O3A9	CIRCULATION
O4	POINT LE PLUS IMPORTANT
O5A1	CONTINUER A CONSTRUIRE DES PARKINGS AU CENTRE VILLE
O5A2	LE VELO EN VILLE C'EST L'AVENIR
O5A3	EN VILLE ON EST OBLIGE D'UTILISER SA VOITURE
O5A4	LIMITE LA VOITURE EN VILLE GENE L'ACTIVITE ECONOMIQUE
O5A5	IL FAUT DEVELOPPER LES TRANSPORTS COLLECTIFS AU RISQUE DE GENERER LES AUTOMOBILISTES
O5A6	POUR AMELIORER LA CIRCULATION EN VILLE IL FAUT LIMITER L'USAGE DE LA VOITURE
O5A7	IL FAUT REPRIMER PLUS SEVEREMENT LE STATIONNEMENT INTERDIT
O6A1	ADJECTIF VOITURE 1
O6A2	ADJECTIF VOITURE 2
O6A3	ADJECTIF VOITURE 3
O7A1	ADJECTIF TRANSPORTS COLLECTIFS 1
O7A2	ADJECTIF TRANSPORTS COLLECTIFS 2
O7A3	ADJECTIF TRANSPORTS COLLECTIFS 3
O8A1	ADJECTIF VELO 1
O8A2	ADJECTIF VELO 2
O8A3	ADJECTIF VELO 3
L20	CONNAISSANCE DU NOM DE L'ARRET DE TC LE PLUS PROCHE DU DOMICILE
L21	NOM DE L'ARRET
L22	NUMERO DE LA LIGNE
L23	CONNAISSANCE DU NOM DE LA GARE LA PLUS PROCHE DU DOMICILE
L24	METEO DE LA VEILLE
L25	PASSAGE EN ALLEMAGNE DURANT L'ANNEE ECOULEE
L26	MOTIF LE PLUS FREQUENT DES DEPLACEMENTS VERS L'ALLEMAGNE
L27	FREQUENCE DES DEPLACEMENTS EN ALLEMAGNE
L28	COMMUNE LA PLUS VISITEE EN ALLEMAGNE
L29	MODE DE TRANSPORT UTILISE POUR ALLER DANS CETTE COMMUNE
L17A1	SORTIE SAMEDI DERNIER POUR ACTIVITE TRAVAIL
L18A1	SECTEUR DE LA COMMUNE DE REALISATION DE L'ACTIVITE TRAVAIL
L18B1	ZONE FINE DE LA COMMUNE DE REALISATION DE L'ACTIVITE TRAVAIL
L19A1	PREMIER MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE TRAVAIL
L19B1	SECOND MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE TRAVAIL
L17A2	SORTIE SAMEDI DERNIER POUR ACTIVITE ETUDE
L18A2	SECTEUR DE LA COMMUNE DE REALISATION DE L'ACTIVITE ETUDE
L18B2	ZONE FINE DE LA COMMUNE DE REALISATION DE L'ACTIVITE ETUDE
L19A2	PREMIER MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE ETUDE
L19B2	SECOND MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE ETUDE
L17A3	SORTIE SAMEDI DERNIER POUR ACTIVITE ACHAT EN CENTRE COMMERCIAL
L18A3	SECTEUR DE LA COMMUNE DE REALISATION DE L'ACTIVITE ACHAT EN CENTRE COMMERCIAL
L18B3	ZONE FINE DE LA COMMUNE DE REALISATION DE L'ACTIVITE ACHAT EN CENTRE COMMERCIAL
L19A3	PREMIER MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE ACHAT EN CENTRE COMMERCIAL
L19B3	SECOND MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE ACHAT EN CENTRE COMMERCIAL
L17A4	SORTIE SAMEDI DERNIER POUR ACTIVITE AUTRE ACHAT
L18A4	SECTEUR DE LA COMMUNE DE REALISATION DE L'ACTIVITE AUTRE ACHAT
L18B4	ZONE FINE DE LA COMMUNE DE REALISATION DE L'ACTIVITE AUTRE ACHAT
L19A4	PREMIER MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE AUTRE ACHAT
L19B4	SECOND MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE AUTRE ACHAT
L17A5	SORTIE SAMEDI DERNIER POUR ACTIVITE SANTE, DEMARCHE
L18A5	SECTEUR DE LA COMMUNE DE REALISATION DE L'ACTIVITE SANTE, DEMARCHE
L18B5	ZONE FINE DE LA COMMUNE DE REALISATION DE L'ACTIVITE SANTE, DEMARCHE
L19A5	PREMIER MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE SANTE, DEMARCHE
L19B5	SECOND MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE SANTE, DEMARCHE
L17A6	SORTIE SAMEDI DERNIER POUR ACTIVITE LOISIRS
L18A6	SECTEUR DE LA COMMUNE DE REALISATION DE L'ACTIVITE LOISIRS
L18B6	ZONE FINE DE LA COMMUNE DE REALISATION DE L'ACTIVITE LOISIRS
L19A6	PREMIER MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE LOISIRS
L19B6	SECOND MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE LOISIRS
L17A7	SORTIE SAMEDI DERNIER POUR ACTIVITE PROMENADE
L18A7	SECTEUR DE LA COMMUNE DE REALISATION DE L'ACTIVITE PROMENADE
L18B7	ZONE FINE DE LA COMMUNE DE REALISATION DE L'ACTIVITE PROMENADE
L19A7	PREMIER MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE PROMENADE
L19B7	SECOND MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE PROMENADE
L17A8	SORTIE SAMEDI DERNIER POUR ACTIVITE RESTAURATION
L18A8	SECTEUR DE LA COMMUNE DE REALISATION DE L'ACTIVITE RESTAURATION
L18B8	ZONE FINE DE LA COMMUNE DE REALISATION DE L'ACTIVITE RESTAURATION
L19A8	PREMIER MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE RESTAURATION
L19B8	SECOND MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE RESTAURATION
L17A9	SORTIE SAMEDI DERNIER POUR ACTIVITE VISITE
L18A9	SECTEUR DE LA COMMUNE DE REALISATION DE L'ACTIVITE VISITE
L18B9	ZONE FINE DE LA COMMUNE DE REALISATION DE L'ACTIVITE VISITE
L19A9	PREMIER MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE VISITE
L19B9	SECOND MODE DE TRANSPORT UTILISE POUR REALISER L'ACTIVITE VISITE
L30A1	PREMIERE RAISON DE LA FAIBLE UTILISATION DU VELO
L30A2	SECONDE RAISON DE LA FAIBLE UTILISATION DU VELO
Coef	COEFFICIENT DE REDRESSEMENT

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Detailed Academic CV

Personal information

Dominic Villeneuve

- Doctoral Assistant
- Birth Date: July 16, 1975, Quebec City, Canada
- Nationality: Canadian
- Languages
 - French (first language)
 - English (fluent with English/French translation & interpretation experience)
- Web Site: <http://DominicVilleneuve.ca>
- OrcID profile: <http://orcid.org/0000-0002-4564-6644>



Education

- Oct. 2013 - present École polytechnique fédérale de Lausanne (EPFL)
Docteur ès Sciences (PhD) - Architecture and Sciences of the City
Under the supervision of prof. Vincent Kaufmann
- Sept. 2011 - Aug. 2013 University of Ottawa
Master of Arts in Public Administration
Under the supervision of Anne Mévellec
- Sept. 2008 - Aug. 2011 University of Ottawa
Joint Honours Baccalaureate in Social Science - Public Adm. and Political Science
Graduated Summa Cum Laude
- Sept. 1992 - Apr. 1995 College of Sainte-Foy
College Diploma (DEC) in Computer Science
Graduated Meritas
- May 4-7, 2015 TEA COST Action Training School in Thessaloniki, Greece
- Sept. 2012, Sept. 2011 Graduate Teaching Assistant workshop at University of Ottawa

Communications

Peer-reviewed books/monographs

Master Thesis

Villeneuve, D. (2013). *La nouvelle prédominance du mode partenariat public-privé dans la production de tramways au Canada* (Université d'Ottawa, Ottawa, Ont.). Retrieved from <http://www.ruor.uottawa.ca/fr/handle/10393/26137>

Peer-reviewed conference proceedings

Villeneuve, D. (2014). The new prevalence of public-private partnerships in the production of Light Rail Transit Systems in Canada, in: *14th Swiss Transport Research Conference*. Monte Verità, Switzerland. Retrieved from <http://www.strc.ch/conferences/2014/Villeneuve.pdf>

Contributions to books

Book chapter

Villeneuve, D. (forthcoming). Conjuguer l'analyse lexicométrique et l'analyse de discours traditionnelle pour comprendre la mobilité quotidienne des ménages non motorisés. In : J. Meissonnier, S. Vincent, M. Rabaud, & V. Kaufmann (Eds.), *L'hybridation des méthodes d'analyse des comportements de mobilité*.

Commissioned Scientific Reports

Dubois, Y., Kaufmann, V., Munafò, S., Tabbone, L. & **Villeneuve, D.** (2015). *Modes de vie, logiques de choix modal et pratiques de mobilité à Strasbourg et dans le Bas-Rhin*.

Noschis, K., Pedrazzini, Y., Dubois, P. & **Villeneuve, D.** (2015). *Habiter avec son âge: rapport final de l'étude exploratoire*. Lausanne: LASUR / EPFL.

Dictionary Definitions

Landrière, S., **Villeneuve, D.**, Kaufmann, V., & Gay, C. (2017a). Mobilisation, une définition. *Forum Vies Mobiles*. Retrieved from <http://fr.forumviesmobiles.org/reperes/mobilisation-3609>

Landrière, S., **Villeneuve, D.**, Kaufmann, V., & Gay, C. (2017b). Mobilization - a definition. *Forum Vies Mobiles*. Retrieved from <http://en.forumviesmobiles.org/marks/mobilization-3612>

Oral contributions to conferences

Villeneuve, D. (2016a). *Mobility practices of non-motorized households, the cases of Quebec City and Strasbourg*. Presented at Swiss Mobility Conference, Lausanne, Switzerland. Retrieved from <http://www.unil.ch/igd/files/live/sites/igd/files/Colloques/SMC-2016-presentations/Villeneuve-SMC-2016.pdf>

Villeneuve, D. (2016b). *Comment inclure les instruments des politiques publiques de mobilité dans la mesure de la dépendance automobile ?* Presented at 53e colloque de l'ASRDLF, Gatineau, Canada.

Villeneuve, D. (2016c). *Quelles politiques pour atténuer l'exclusion sociale des ménages non motorisés ? L'apport des méthodes mixtes*. Presented at XXe Congrès de l'AISLF - Sociétés en mouvement, sociologie en changement, Montréal, Canada.

Villeneuve, D. (2016d). *Policy Recommendations: Just Mobility in the City: The Case of Non-Motorized Households in Car Dependent Cities*. Presented at 53rd International Making Cities Livable Conference on CARING FOR OUR COMMON HOME: SUSTAINABLE, HEALTHY, JUST CITIES & SETTLEMENTS, Rome, Italy.

Villeneuve, D. (2016e). Comparing the effects of car-dependence on non-motorized households - a mixed method approach. Presented at 1ères rencontres de l'EDAR : méthodologie et processus de recherche, Lausanne, Suisse.

Villeneuve, D. (2016f). *Réflexions sur l'expérience de terrain d'un doctorant canadien basé en Suisse menant sa recherche en France et au Québec*. Presented at Terrains à l'étranger - journée d'étude thématique de l'ADSHS, Tours, France.

Villeneuve, D. (2014). *The new prevalence of public-private partnerships in the production of Light Rail Transit Systems in Canada*. Presented at 14th Swiss Transport Research Conference, Monte Verità, Switzerland.

Villeneuve, D. (2013a). *Résultats préliminaires: La nouvelle prédominance du mode partenariat public-privé dans la production de tramways au Canada*. Presented at 10e Colloque de la Relève VRM La ville de demain. Anticiper, débattre et agir, Montréal, Québec, Canada.

Villeneuve, D. (2013b). *Résultats préliminaires: La nouvelle prédominance du mode partenariat public-privé dans la production de tramways au Canada*. Presented at Conférence des étudiant(e)s diplômé(e)s en Administration publique. Ottawa, Ont.

Villeneuve, D. (2012). Les Partenariats Public-Privé comme mode de gouvernance des projets de trains légers sur rail – Problème ou solution? Presented at Conférence des étudiant(e)s diplômé(e)s en Administration publique, Ottawa, Ontario.

Mévellec, A., Tremblay, M. & **Villeneuve, D.** (2011). Portrait des élues et élus municipaux québécois : faut-il revoir l'image d'épinal de l'homme, âgé, apolitique et amateur? In *ST 14 : La légitimation de l'acte de votation en Europe. Regards croisés sur les rapports représentants/représentés*. Bruxelles, Belgique.

Other artefacts with documented use

- Villeneuve, D.** (forthcoming). Les ambiances sonores du tramway de Strasbourg. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *URBy-me Use Case 1 - Confirm trip mode and purpose*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *URBy-me Use case 2 - Generic survey while traveling*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *URBy-me Use Case 3 - Gamification*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *URBy-me Use Case 4 - Synching data with the Cloud*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *URBy-me Use Case 5 - User reporting problem with the app*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *URBy-me Use Case 6 - Reporting*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *URBy-me Use Case 7 - First time user starts the app*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *URBy-me Use Case 8 - Saving data locally*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *URBy-me Use Case 9 - User provides transport system feedback*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *URBy-me Use Case 10 - Invite other users*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *URBy-me Use Case 11 - Back-end cloud service*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2016). *Venture: URBy-me Business Plan*. Lausanne, Switzerland.
- Simas, F. O. & **Villeneuve, D.** (2016). *AIT Brazil: URBy-me Business Proposal*. Lausanne, Switzerland.
- Villeneuve, D.** & Simas, F. O. (2015). *PostVenture: URBy-me Business Concept*. Lausanne, Switzerland.

Unpublished work

Non peer-reviewed conference papers

- Villeneuve, D.** (2016). Comment inclure les instruments des politiques publiques de mobilité dans la mesure de la dépendance automobile ? In *53e colloque de l'ASRDLF*. Gatineau, Canada.
- Villeneuve, D.** & Kaufmann, V. (2016). Quelles politiques pour atténuer l'exclusion sociale des ménages non motorisés ? L'apport des méthodes mixtes. In *CR20 : Comparaisons internationales Repenser les comparaisons internationales : enjeux épistémologiques et méthodologiques* (p. 19). Montréal, Canada.
- Villeneuve, D.** & Pattaroni, L. (2016). JUST MOBILITY IN THE CITY: THE CASE OF NON-MOTORIZED HOUSEHOLDS IN CAR-DEPENDENT CITIES. In at 53rd International Making Cities Livable Conference on CARING FOR OUR COMMON HOME: SUSTAINABLE, HEALTHY, JUST CITIES & SETTLEMENTS, Rome, Italie.
- Villeneuve, D.** (2013). Résultats préliminaires: La nouvelle prédominance du mode partenariat public-privé dans la production de tramways au Canada. In *10e Colloque de la Relève VRM La ville de demain. Anticiper, débattre et agir*. Montréal, Québec, Canada. Retrieved from http://www.vrm.ca/wp-content/uploads/Releve10_Villeneuve_Dominic.pdf
- Mévellec, A., Tremblay, M. & **Villeneuve, D.** (2011). Portrait des élues et élus municipaux québécois : faut-il revoir l'image d'épinal de l'homme, âgé, apolitique et amateur? In 4e congrès international des associations francophones de science politique, Bruxelles, Belgique.

Non peer-reviewed research papers

Villeneuve, D. (2016). *RAPPORT PRELIMINAIRE DE RECHERCHE Ménages non motorisés, dépendance automobile et politiques publiques: une comparaison entre l'Amérique du Nord et l'Europe*. Lausanne, Switzerland: École polytechnique fédérale de Lausanne.

Mévellec, A., Tremblay, M. & **Villeneuve, D.** (2013). *Recherche sur l'état de la démocratie municipale dans les villes moyennes et grandes du Québec Rapports aux participants* (p. 23). Ottawa, Ont.: Université d'Ottawa.

Employment history

Urban Sociology Lab (LaSUR), EPFL, Lausanne, Switzerland

Oct. 2013 to present **Doctoral assistant** - supervisor: V. Kaufmann

- Design, prepare and execute doctoral dissertation research and write thesis
- Collaborate on various research projects of the lab
- Webmaster of the lab's web site

University of Ottawa, Ottawa, Ontario, Canada

Jan. - Aug. 2012, Jan. 2010 - Aug. 2011, Sept. - Dec. 2009, Mar. - Apr. 2009, Nov. 2008 **Research assistant** - supervisors: A. Mévellec, M. Tremblay, N. Burlone

- Collaborate on data analysis and writing of various research papers and presentations on municipal politics and political sociology of gender differences
- Prepare, distribute, administer and analyze an online and paper-based survey
- Perform literature research and analysis on various policy matters

Ball Janik LLP, Washington, DC, United States of America - supervisor: V. Cram

May - Aug. 2009 **Political Affairs Intern - Transit and Transportation policy**

- Attend United States Congressional hearings and write summary reports
- Perform various duties assisting the lobbyists at the firm

Microsoft Canada Co, Toronto, Ontario, Canada - 1996 to 2008

Jul. 2004 - Jul. 2008 **MSN Channel Manager - International Localization** - supervisor: S. Evans

- Collaborate with the international product team to represent the requirements of the Canadian market in the product planning and development cycle

Jul. 2001 - Jul. 2004 **International Program Manager** - supervisor: C. Richard

- Release and manage various localized MSN products including Hotmail, MSN home page, My page, MSN Messenger, working with North American and European headquarters based teams.

Jan. 1999 - Jul. 2001 **Production Lead** - supervisor: K. Cairns

- Develop back-end and front-end internet software for various MSN services

Nov. 1996 - Jan. 1999 **Technical Support Engineer** - supervisor: P. Butler

- Provide phone-based technical support in French and English for developers

VOLUNTEER WORK EXPERIENCES

June 2015 - present **Co-Founder and Chief Technology Officer** - URBy-me, Lausanne, Switzerland

Dec. 2012 - Apr. 2013 **Ski Patroller** - Edelweiss Ski Resort, Wakefield, Quebec, Canada

Sept. 2005, 2006, 2007 **French Interpreter** - Toronto International Film Festival, Toronto, Ontario, Canada

Jan. 2005 - Dec. 2013 **Riding advocate** - Juvenile Diabetes Research Foundation Advocacy committee

Institutional responsibilities

University of Ottawa, Ottawa, Canada

June 2010 - Aug. 2013 **Student representative** - Senate Standing Committee on Francophone Affairs and Official Languages

- Elected by the University of Ottawa Senate

Approved research projects

- Policies for urban public transport mass transit dependent people funded by the Joseph-Armand Bombardier Canada Graduate Scholarships Program Doctoral Scholarship

Teaching activities

Global Issues - Mobility, EPFL, Lausanne

Feb. - June 2014, 2015, 2016, 2017

- Collaborate to create the Global Issues Mobility class content
- Prepare and give various lectures
- Supervise student work during class and evaluate their poster and presentation

Principles and Challenges of Public Administration - University of Ottawa, Ottawa, Canada

Sept. - Dec. 2011 and Sept. - Dec. 2012

- Supervise student workshops on various themes related to the class subject matter and help them with the preparation of their course assignments
- Mark student assignments (exam, papers and presentations)
- Prepare and give a 90-minutes lecture on Public-Private Partnerships

Memberships and individual scientific reviewing activities

- Peer-reviewed an article at the request of the scientific committee of the scientific journal *Espace Temps* in November 2016

Active memberships in scientific societies, fellowships in renowned academies

- Member of the Golden Key International Honour Society
- Member of the Canadian Urban Transit Association
- Member of the Canadian Transportation Research Forum

Organisation of conferences

Sept. 2011 - May 2012 **Co-Chair** - Public Administration Graduate Student Conference Steering Committee

- Lead a team of 10 students to organize a conference for Public Administration graduate students
- Select papers to be included in the conference and organize the panels
- Host the event, presenting speakers and following the agenda

Sept. 2012 - May 2013 **Director of Communications** - Public Administration Graduate Student Conference Steering Committee






























- Handle web, print and e-mail participant communications

- Select papers to be included in the conference and organize the panels
- Host the event, presenting speakers and following the agenda

Prizes, awards, fellowships

- | | |
|-----------|---|
| May. 2016 | <ul style="list-style-type: none"> • InnoSeed ENAC grant for the URBy-me start-up project (http://urby-me.com) to create a new smartphone based origin-destination survey research method in collaboration with Fernando Simas |
| Mar. 2015 | <ul style="list-style-type: none"> • Scholarship to attend TEA COST action Transit Equity Assessment Summer School in Thessaloniki, Greece |
| May 2013 | <ul style="list-style-type: none"> • Joseph-Armand Bombardier Canada Graduate Scholarships Program Doctoral Scholarship • 1st prize for a MA thesis results presentation - 10e Colloque de la Relève Ville, Région, Monde |
| May 2012 | <ul style="list-style-type: none"> • Dean's scholarship - Faculty of Graduate and Postdoctoral studies • Ontario Graduate Scholarship • University of Ottawa Graduate Excellence Scholarship • School of Political Studies Graduate Scholarship |
| Aug. 2011 | <ul style="list-style-type: none"> • University of Ottawa Social Science Dean's Merit List 2010-2011 |
| May 2011 | <ul style="list-style-type: none"> • Joseph-Armand Bombardier Canada Graduate Scholarships - Master's Scholarship • University of Ottawa Graduate Excellence Scholarship • School of Political Studies Graduate Scholarship |
| Aug. 2010 | <ul style="list-style-type: none"> • University of Ottawa Social Science Dean's Merit List 2009-2010 |
| Apr. 2010 | <ul style="list-style-type: none"> • International Mobility Scholarship NMUN, valued at CAD 528 |
| Aug. 2009 | <ul style="list-style-type: none"> • University of Ottawa Social Science Dean's Merit List 2008-2009 |
| Apr. 2009 | <ul style="list-style-type: none"> • Faculty of Social Science TWC Internship subsidy |
| May 2008 | <ul style="list-style-type: none"> • Canada's University Scholarship - French language school • French Studies Bursary |

Icon Cheat Sheet

Icons for data from Non-Motorized Households			
	Quebec City		Respondent doesn't feel socially excluded
	Strasbourg		Respondent feels socially excluded
	Motorized households		The household is member of the car-sharing system
	Non-motorized households		The household is not member of the car-sharing system
	Women respondent		At least one member of the household has a transit pass
	Men respondent		No member of the household has a transit pass
	Modest revenue level		Respondent has a driver's licence
	Middle revenue level		Respondent doesn't have driver's licence
	Affluent revenue level		Household owns their residence
	Household type: Single person		Household is renting their residence
	Household type: Roommates		Respondent is employed
	Household type: Couple		Respondent is unemployed
	Household type: Family		Age: 18 to 40
	Household type: Single Parent Family		Age: 41 to 64
			Age: 65 and more

Icons for data from Public servants

	Public Servants
	Quebec City administration
	Strasbourg administration
	Department: Transit Authority
	Department: Transportation
	Department: Land planning

