

Master of Science in Geography

Transport disadvantage and social exclusion in economically-deprived neighborhoods in cities in the Global North: the case study of Brownsville, New York City

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Abstract

The aim of this thesis is to assess the condition of *transport disadvantage* and its impact on individuals' social exclusion in the context of socioeconomically-deprived neighborhoods in cities situated in developed countries, by focusing on the neighborhood of Brownsville, in New York City. Through semi-structured interviews, a specific framework of analysis of transport-related social exclusion and the operationalization of the concept of motility, this paper explores the strategies used to manage individual travel needs, as well as their priorities and perceptions in a context of rather insufficient access to public transportation due to both territorial and individual factors. The results yielded from this study reveal that, despite an acceptable amount of transportation options, residents of Brownsville often face barriers with their accessibility. More specifically, factors that are within the individual such as financial unaffordability, fear and health issues are those that are seen to pose a significant challenge to their mobility practices, and these problems are amplified by New York City's overall public transportation crisis, which is mainly felt in outer low-income areas. However, such barriers are not reported to significantly limit their degree of mobility, as they have developed a skilled set of coping strategies that have allowed them to overcome most of the obstacles they face. As a result, mobility is not seen to play a determining role on their degree of social exclusion, but there is no doubt that increased accessibility would further strengthen their participation in society.

Le but de ce travail est d'évaluer la condition de *transport disadvantage* (désavantage des transports) et son impact sur l'exclusion sociale des individus dans le contexte de quartiers socio-économiquement faibles dans des villes situées dans les pays développés, avec un focus sur le quartier de Brownsville, New York City. À l'aide des entretiens semi-directifs, un particulier cadre d'analyse de l'exclusion sociale causée par l'accès à la mobilité et le concept de motilité, cette recherche explore les stratégies employées par les usagers pour gérer les besoins de mobilité individuels, et ainsi les priorités et perceptions dans un contexte d'un accès plutôt insuffisant à la mobilité à cause de facteurs autant territoriales qu'individuels. Les résultats relèvent que, malgré une bonne quantité d'options de transport public, les résidents de Brownsville se retrouvent souvent devant des barrières à leur accessibilité. En particulier, ce sont des facteurs qui sont individuels comme l'abordabilité, la peur et les problèmes de santé qui limitent leur degré de mobilité, et ces problèmes sont amplifiés par l'actuel état de crise des transports publics à New York City, qui touche surtout les quartiers pauvres et périphériques. Cependant, ces barrières ne limitent pas considérablement leur degré de mobilité, comme ils ont développé des stratégies de compensation avancées qui lui permettent de surmonter la plupart d'obstacles. Donc, la mobilité ne joue pas un rôle significatif sur le degré d'inclusion sociale d'individus, mais il n'y a aucun doute qu'une accessibilité améliorée renforcerait encore plus leur participation dans la société.

Keywords: transport disadvantage, social exclusion, motility, accessibility, transport poverty

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1. Introduction

Access to employment opportunities, goods, people, services and information is one of the major factors at the heart of the economic development of today's society, and the ability to be mobile has always been a crucial contributor to economic and societal progress, as it enables the creation of vital connections with people and places (Stanley & Stanley, 2017). In spite of means of transportation's rapid technological advances and growing awareness of issues of spatial justice, not everybody has had the chance to benefit from such progress, due in part to unfortunate circumstances that, by different means, limit one's spatial mobility. Aside from the widely popular topics about environmental issues, which are often mentioned in transportation research, over the last decade there has been an ever-increasing consciousness of the social implications of mobility among scholars and policymakers. This has led to a flourishing literature seeking to explore the links between quality of access to mobility and poverty status, psychological well-being and individuals' degree of participation in society. Social exclusion and its relation to mobility practices and transportation accessibility is highly relevant to comprehend how to address the condition of transport disadvantage, as the two spheres interact with each other in one way or another to create the circumstances that prevent individuals from being mobile, with all the economic and social consequences that this implies.

Transport-related social exclusion is a phenomenon that for the most part exists in outer urban areas, where public transportation options are generally lacking and personal vehicle ownership is high, thus residents cannot avail themselves of the same number of employment opportunities, services and social interactions needed to satisfy basic needs (Gray, Shaw, & Farrington, 2006). Despite a higher degree of accessibility, this phenomenon can be also observed in urban areas, especially in those located in developing countries, where outer neighborhoods often suffer from a chronic lack of decent connectivity to central areas, where the majority of jobs and essential services are located, which in turn prevents individuals from improving their socio-economic status. The aim of this thesis is to review the characteristics of transport disadvantage and its subsequent social exclusionary processes that are taking place in urban areas that are mostly inhabited by economically deprived individuals, but that are situated in cities located in the developed world, where there is an even greater necessity to be mobile, with a particular focus on metropolitan areas in North America. The case study taken into consideration is that of Brownsville, a neighborhood situated in the borough of Brooklyn (New York City), where a large chunk of the population lags behind numerous indicators of well-being. The primary purpose is to investigate how New York City's current issues with its public transportation system, among the vastest in the world, have had its toll on the daily life of riders living in such types of neighborhoods, as it is riddled with overly frequent operational breakdowns and delays and it is becoming increasingly expensive to ride, and secondly, what are the outcomes of such problems

in terms of transport disadvantage and social exclusion. Adopting the concept of social exclusion to the analysis of transport disadvantage will allow the unveiling of peculiarities that are at the core of individuals' transport-related social exclusion, which can be both exclusive to the individual, such as physical disability, sex and gender, as well as in relation to the spatial and structural attributes of the area of study, like insufficient public transportation provision and lack of amenities in proximity (Lucas, 2012).

In order to portray a more comprehensive overview of the situation, it was deemed necessary to reserve additional attention to individuals' rationales behind the choice of a certain means of transportation. For this reason, individuals' mobility patterns are going to be analyzed with Kaufmann's concept of motility, a theoretical approach that will provide the tools to understand how people are capable of using the means of transportation they have at their disposal and what are the strategies they have adopted to overcome eventual obstacles they encounter with access to mobility, given their personal circumstances, needs and values.

The scope of this thesis is very limited, given the magnitude of the subjects that are going to be discussed, and it will provide readers only with an overview of the issue rather than a thorough insight. The findings could, however, be useful in giving an incentive to investigate this topic further. In the first section, a review of the state of the art of the core concepts of this thesis is going to be presented, while in the second an overview of the current public transportation system in New York City and Brownsville. In the third part a presentation of the results is going to be shown, and lastly, a discussion will follow.

2. Theoretical framework

2.1 Transport disadvantage

The concept of transport disadvantage is not new to the transportation literature (Lucas, 2012). Before the emergence of this topic, transport was already being accounted for in debates centering on urban social disadvantage in the United Kingdom and Australia. Since the 1970's, physical mobility had been identified as being a dominant underlying driving force of social and economic inequality in the USA, giving rise, among others, to a phenomenon hypothesized as *spatial mismatch*¹ (Wachs & Kumagai, 1973). In the UK, transport was believed to play an essential role in determining social outcomes for different communities, by acknowledging how their lives are being shaped by the lack of an adequate transportation system (Banister & Hall, 1981). In 2003, always in the UK, the research on transport disadvantage gained new momentum with the publication of a report drafted by the UK Social Exclusion Unit (2003) (more on this in the next chapter). In the USA, the research on transportation has mostly focused on the spatial structure of transportation services, rather than on its consequential processes of social exclusion (Dodson, Buchanan, Gleeson, & Sipe, 2006).

2.1.1 Towards a specific definition of transport disadvantage

Even though this concept has existed for quite a long time, a globally accepted definition of the notion of transport disadvantage is still inexistent in the academic and policy literature. This is due to a variety of reasons (Lucas, Mattioli, Verlinghieri, & Guzman, 2016). Firstly, it is a condition that characterizes people only singularly and does not necessarily exercise the same influence on a whole household, where members could experience it in different ways. Secondly, it is not clear whether transport disadvantage identifies a lack of transportation infrastructure, a minimum degree of mobility, or the quality of access to services, goods and leisure activities. In addition, these indicators are highly context-specific, so it is not possible to give a definition of transport disadvantage common for each situation. Finally, in the academic literature, many different expressions are being used to discuss the same topic, such as “transportation disadvantage”, “transportation poverty” and “mobility poverty”. Due to these reasons, transport researchers Lucas and Markovitch (2011) stress that “*there is a need to establish a lexicon of definitions to ensure a greater degree of clarity and consistency within and between the academic and policy literature*” (p.233).

¹ **Spatial mismatch:** a hypothesis that argues that minorities living in urban centers have limited employment opportunities as jobs tend to be decentralized to the suburbs, which are mostly inhabited by whites, and as a result, must endure longer commuting times, and it is difficult for them to move closer to job areas due to racial residential segregation and costs of living (Mouw, 2007).

Out of the many definitions identified in the literature, I have found Stanley and Stanley's (2004) to suit the scope of this thesis better. According to these authors, transport disadvantage is

“a situation where people experience a shortage of transport options, which restricts their mobility and hence their access to goods, services and relationships” (Stanley & Stanley, 2004, p.14).

The definition is clear and easy to grasp, but it demonstrates how a broad and all-encompassing notion is transport disadvantage, and therefore it requires some structuring. Lucas et al. (2016) have arranged the notion of transport disadvantage with the following sub-concepts, exclusively analyzed in urban contexts in developed countries.

2.1.1.1 Mobility and accessibility poverty

Mobility and accessibility poverty indicate a general lack of infrastructure allowing individuals to be mobile. This is an issue which concerns the urban poor mainly, as they are a segment of the population that tend to live in geographically marginalized areas, which generally offer insufficient transportation options, services and jobs. Due to the lack of infrastructure and the locational disadvantage, the poor must endure proportionally higher transportation costs and longer commutes than their counterparts living closer to central urban areas (Pendakur, 1986).

In the literature, it is widely believed that spatial mobility is a major contributor to economic development. As poor individuals' inability to access jobs and service is a crucial driver of urban poverty in cities both in the Global North and in the Global South, policies aimed at the reduction of poverty should incorporate measures that allow individuals gain access to daily essential activities within walking distance or with proper public transportation, within a reasonable time, affordably and effortlessly (World Bank, 2002). Research suggests that people residing in deprived urban neighborhoods tend to pay higher prices for essential goods such as food, and are more prone to be exposed to health issues (Christodoulou, Lucas, & Tyler, 2009). Furthermore, easy access to the job market provides a safety net not only in financial terms, but it also increases individual's social capital (World Bank, 2002). An adequate transportation supply allows people to adjust time and space to their own necessities when looking to access services and jobs, so a transportation system characterized by proper service frequency, reliability and punctuality can prevent transport disadvantage (Cass, Shove, & Urry, 2003).

The mere presence of a public transportation system is no guarantee of good accessibility, because the characteristics of the urban form and residential location can undermine the advantages given by the presence of transportation options (Kenyon, Lions, & Rafferty, 2002). Many scholars agree that dense urban areas help foster transport accessibility (Stead, 2001), as they guarantee higher ridership and services, jobs and social contacts to be both in proximity and in greater variety, thus reducing the need to travel. Second, distance to urban centers is a well-grounded explanation of quality of access to public transportation, where job opportunities and services are mostly located.

Areas distant from urban centers tend to provide relatively fewer transportation options, so the population's travel capabilities are lower and must rely more frequently on individual motorized vehicles, what serves as a deterrent to travel towards the city center due to longer and more stressful journeys than average (Stead & Marshall, 2001).

2.1.1.2 *Transport affordability*

Affordability is defined as people's ability to purchase goods and services, especially essential ones. Assuming that transportation is an essential good, *transport affordability* indicates the financial burden people must bear when paying for transportation services (Litman, 2017) and generally, people's financial ability to be physically mobile through space (Fan & Huang, 2011).

There is a great variety of factors that affect transport affordability. The following list contains the most recurrent elements discussed in the transportation affordability literature.

The first element are evidently *transportation costs*. A variety of factors globally determine these, including: public transit fares, road tolls, car purchase costs, fuel prices and insurance. The functional importance of transport is reflected in what portion of total household expenditures it takes up. In 2017, in the United States transport was the second most prominent component of total household expenses behind housing expenses, at an average country-wide rate of 15.8% (Bureau of Labor Statistics, 2017).

In public transportation in most of the big cities around the world, the introduction of special fares for certain social categories is standard practice. Often, who benefits from these discounts are elderly, people with physical impairments and students. Some cities also reserve reduced fares for low-income riders.

The *built environment*, i.e., urban structure and land use also play a key role in undermining people's ability to afford transportation, as it affects mode choice, traveled distance and trip frequency (Fan & Huang, 2011). Overall, higher density in a neighborhood associated with substantial options of transportation increases transportation affordability and it often results in lower car ownership rates (Handy, 1996). Furthermore, it is also a question of facilitating physical access to the transportation system: rendering neighborhoods pedestrian and bike rider-friendly is essential to foster usage of public transportation (Litman, 2017). Neighborhoods with these characteristics also generally register lower than average car ownership rates (Tomer, 2011). The aspect of car ownership is particularly critical to this issue, as it is seen as an element that considerably reduces transport affordability. Especially in the context of cities in the developed world, transport affordability is undermined when "*a household is forced to consume more travel costs than it can reasonably afford, especially costs relating to motor car ownership and usage*" (Gleeson & Randolph, 2002, p.102). This definition entails that owning a car constitutes a substantial cost burden for low-income households, but at the same time they have no choice but to rely on them if they live far from public transportation facilities.

Finally, the *policy environment*, as far as transport subsidies for low-income people are concerned, is key to understanding transport affordability. Policy makers and planners concerned about urban poverty have long advocated for universal access to transportation, as it is believed to be a driver of economic development and social inclusion (Lucas, 2012). In light of this, some transport scholars support subsidies because they argue that policymakers should take an *accessibility approach* to transportation planning, rather than a *mobility approach*. Planning for accessibility means “*making easier to get where you need to go*” (Handy, 2005, p.134), whereas planning for mobility means “*making it easier to get around*” (p.133). In the field of accessibility planning, transportation is considered a public good and its financing should be thus maximized, not only through fares, but also through public funds and other sources of revenue (Perrotta, 2015). As accessibility planning focuses on users’ travel patterns, it automatically ends up improving connections between them and their final destinations, and in turn, it increases direct travel, cutting down travel distance and time, which ultimately renders transportation more affordable (Litman, 2017). In the opposite, mobility-based planning focuses on accommodating the demand for travel and making it faster, which in outcome favors car usage and the prioritizes improvement of roads and it reaps funding that could be used instead to financing public transportation (Handy, 2005).

In the USA, there is no official tool to measure transportation affordability, but there are several indices which combine transportation with housing costs. For example, the Location Affordability Index (LAI), developed by the U.S. Department of Housing and Urban Development and the Department of Transportation, gives an estimation of the household’s percentage of income spent on housing and transportation, which varies according to location. The advantage of accounting for housing costs is that it shows how much individuals trade off transportation expenditures with residential location: living further from city centers where jobs are mostly located forces individuals to spend more on transportation, but it also allows to dedicate fewer resources to housing, and vice-versa (Rérat, 2010).

The take-home message of this final part is that transport affordability is not an absolute measure of how expensive is transportation, as it is calculated relative to other elements, notably housing costs and disposable income.

2.1.1.3 Exposure to transport externalities

Despite the presence of decent and affordable transit options and easy access to urban services, individuals can nonetheless be transport - disadvantaged due to negative externalities generated by the physical presence of transportation infrastructure. One of the main externalities is transport-induced air pollution. Stroke, lung cancer, chronic obstructive pulmonary and respiratory problems are only a few of the vast number of health effects individuals suffer from being exposed to fine air-borne particles (World Health Organization [WHO], 2005). This issue touches particularly low-income people living in socially-deprived areas. In most cities, high-

income people tend to live near green belts and possess the greater land, so they are more likely to be less exposed to traffic-induced air pollution, whereby the poor mostly reside closer to traffic belts, as in these locations property values are depressed by the higher exposure to air and noise pollution.

A second major issue is the rate of car crashes and traffic-related pedestrian and bike casualties, as with the absence of walking and bike lanes and lack of traffic supervision, roads can become a real death trap. Pedestrian-friendly road design that generates safer walking conditions increases travel capabilities and thus increase access to urban services (Zeeger, Sandt, & Scully, 2008).

An overlooked cause of transport disadvantage is traffic congestion. In this situation, travel by bus becomes more time consuming and less pleasant, when there is no lane reserved for public transportation. Besides increasing travel time, it creates unpleasant walking conditions for pedestrians, when there is no proper pedestrian lane. Crowding of pedestrian zones can be intimidating to some, and crossing roads becomes a challenge when there is heavy traffic.

Finally, the construction of transport facilities can lead to the forced eviction of communities from their dwellings and to the dislocation of activities. This issue is particularly real for cities in developing countries, where this often takes place without the consent of those evicted and without a scheme of proper financial compensations in place and the provision of alternative housing (United Nations Office of the High Commission of Human Rights [OHCHR], 2014).

Hence the explications presented above, it turns out that the definition provided by Stanley and Stanley (2004) is incomplete and needs further clarification, as it does not take into consideration how people get by with a lifestyle lacking a certain degree of mobility. It is widely agreed among transport scholars that poor mobility can be partially compensated by the presence of good accessibility options to opportunities; for instance, jobs, services and shop available within walking reach (Preston & Rajé, 2007). Therefore, this implies that the exposure to transport disadvantage varies according to access to transport, i.e., personal mobility and presence of public transportation facilities and, equally important, to access to opportunities, how the places we need to go to are easy to reach (Kamruzzaman, Yigitcanlar, Yang, & Mohamed, 2016). In light of this, Hurni (2006) proposes a definition of transport disadvantage that englobes these new argumentations, which he describes as “*a situation where disadvantaged groups of people live in transport disadvantaged areas*” (p.1). Disadvantaged group of people includes those facing any sort of mobility constraint, and transport disadvantaged areas are designated as having poor public transportation options and inadequate access to services and opportunities.

2.1.2 Explaining transport disadvantage through the lens of motility

Transportation in the developed world has had an ever-increasing presence and defines the underpinnings of the structure of society (Baumann, 2000), and it has become an imperative for

individuals to have the ability to gain access to it in order to fulfill needs and accomplish plans (Kesselring, 2006). Furthermore, an individual's mobility is substantially dictated by its willingness to be flexible with the means of movement available, given the available options and its capabilities (Kesselring & Vogl, 2004). Time-space compression and increasing options for people to be mobile have taken its toll on territory and society, and mobility has become a critical factor in determining individual's economic and social inclusion (Kaufmann, 2014a).

The function that mobility covers in today's society has a definite impact on individuals' well-being and sense of self-realization, and a lack of possibilities to be mobile decreases possibilities to realize projects and to become autonomous (Givoni & Shliselberg, 2018). The theoretical tools to analyze mobility as a life improver and as a means leading to a higher number of possibilities are given through the investigation of the still reasonably unexplored concept of **motility**.

Vincent Kaufmann, a Swiss sociologist at the Swiss Federal Institute of Technology in Lausanne and who has carried through research on mobility practices and their impact on society (2014b) argues that spatial and social mobility do not necessarily go hand in hand, as physical travel is not automatically an indicator of mobility. Inversely, individuals can be socially mobile without necessarily traveling physically. This hypothesis finds its origins in the Chicago School, where it is assumed that movement through physical space is considered as being mobility when this also leads to social change (Grafmeyer & Joseph, 1979). Kaufmann considers mobility as a socio-spatial phenomenon englobing both social change and time-space compression. He argues that mobility is a function of three main dimensions: the field of possibilities (known as the *hosting potential*), aptitude for movement (*motility*) and movement (the compression of space through traveling).

Hence these conceptualizations, in order to gain a broader perspective on how mobility fosters social change and to measure individuals' transport disadvantage, Kaufmann underscores the need not only to observe actual mobility, but also *potential mobility*, that is, "*the intention and realization of an act of movement in physical space that involves social change*" (Kaufmann, 2014b, p.7). Integrating the potential of mobility in the analysis of global mobility allows accounting for previously overlooked possibilities and constraints individuals face as regards mobility, and to understand more in depth the influence of spatial and social mobility on society (Kaufmann, 2004b). According to this approach, everyone is inclined to move in physical, economic, and social space, regardless of actual movement. These arguments lead to the notion of *motility*.

Motility, a word that stems from biology, is a concept that indicates a cell's or an animal's ability to move actively while consuming energy. Kaufmann has readapted this notion to be employed in transportation sociology, where he defines as the "*aptitude for movement in physical, economic*

and social space” (Kaufmann, 2014b, p.8). More precisely, motility, also known as mobility capital, refers to

“all of the characteristics of a given actor that allow him/her/it to be mobile (i.e. physical skills, income, aspirations to move or be sedentary), the social conditions of access to existing transportation and telecommunications systems, and acquired skills (job training, a driver’s license, international English for travel, etc.)” (Kaufmann, 2014b, p.7)

An individual’s motility is made up of the following dimensions (Kaufmann, Bergman, & Joye, 2004; Kjærulff, 2011):

- **Access:** it refers to the “range of possible mobilities according to place, time and other contextual constraints” (Kaufmann et al., 2004, p.750) in a given social and territorial context. More specifically, access is in function of *options* and *conditions* available to an individual. When the concept of motility was first introduced, Kaufmann argued that the component of access is made up these two elements. Options are made up by the services and the equipment of transportation, as well as the means of transportation and communication available to an individual, and it is in relation with the spatial distribution of people and infrastructure. Conditions describe an individual’s degree of accessibility and social conditions of access to options of mobility, given its socioeconomic position, logistic and other constraints. More recently, the component of access has been reviewed and it is now portrayed by the concept of “hosting potential” of a territory (Kaufmann, 2012), described later in this chapter.
- **Competence:** it outlines the skills and abilities necessary for an individual to make use of the different forms of movement one can realize in a specific location. Competence depends on an individual’s *physical ability* to move around and to make use of transportation options; on *acquired skills*, i.e. the obedience to the law and knowledge of common sense and the possession of the documentation necessary to move around like a driver’s license, as well as the ability to read a map and a timetable; and on *organizational skills*, which are the abilities to plan and arrange own activities, as well as being able to find the appropriate path to destination, according to an individual’s capabilities and range of options for movement.
- **Appropriation:** it indicates an individual’s attitude towards mobility; that is, how an individual actually makes use of the different forms of movement available to him, given the degree of access and its competences. The way individuals act upon access and skills is conditioned by needs, aspirations and plans, which are in function of personal values, strategies and habits. Appropriation is considered a reflexive process, focusing on what

is deemed as appropriate mobility behavior and on access to movement and skills, given an individual's circumstances.

More broadly, motility gives an overview of individuals' relationship to being mobile (Kjærulff, 2011). It is something that reaches many aspects of life, yet determining the conditions of mobile actions is an intricate task, as attitude and behavior towards mobility are easy to grasp, but vary over time and are dependent on both the individual and its life circumstances. In other words, an individual's attitude towards mobility is fully understood if the relationship between the dimensions of access, competence and appropriation is clearly defined. Furthermore, when considering the dimensions of access, competence and appropriation, motility can be viewed as a form of spatial capital for the following reasons (Rérat & Lees, 2010): individuals have different endowments of spatial capital, what makes a factor of social differentiator; it can be accumulated, transformed, linked with other forms of capital, and it is not entirely defined in function of other forms of capital, as the dimensions of access, competence and appropriation depend on other elements such as purchasing power, place of residence, and ecological awareness.

Individual's motility is dependent on the amenities located in a defined territory and its spatial configuration, which constitute a territory's *hosting potential*, according to which each territory offers a certain range of possibilities that allow individuals to realize personal projects, ambitions and to satisfy needs (Kaufmann, 2012). Such potential is dependent on all the facilities, social relationships and models of success deemed necessary by society to lead a satisfying and balanced life (Kauffmann, Pattaroni, & Rabinovich, 2009), such as: transportation options, telecommunications equipment, an ideal territorial configuration with functional centralities and good governance, employment and education possibilities, provision of fundamental services and a friendly policy environment. Physical artifacts (objects) play a significant role in shaping a territory's hosting potential, as the decision for the location of a project is highly dependent on what is located there. Accordingly, the potential of access provided by transportation defines the hosting potential of transportation infrastructure and mobility options. These conditions, however, lead to unequal potentialities among territories, as not all of them are fit to accommodate projects due, among many, to morphological constraints and an unfavorable policy environment. The transportation system plays a key role in giving rise to these different potentialities, as they shape the degree of accessibility of a territory.

Motility, as it indicates an individual's capacity to be mobile, implies that it serves as a source of capital that can be exploited for personal projects and to fulfill commitments, which in turn lead to self-realization and happiness. In addition, motility serves as a theoretical framework to explain individuals' capacity to make use of external opportunities, for instance, through how different modes of transportation are being appropriated and the skills required to make use of them. The concept of motility draws attention to the plans, aspirations and cognitive understandings needed to appropriate themselves of transportation options and to be able to overcome any obstacles that

impede proper mobility (Schwanen, Lucas, Akyelken, Cisternas-Solsona, Carrasco, & Neutens, 2010). As motility indicates the capacity of an individual to be mobile and the appropriation and use of such capacities, unequal motility conditions can be a source of social inequalities and different speeds of social mobility. Hence these argumentations, motility can serve as an indicator of transport disadvantage and social exclusion experienced by individuals. It is the combination of social, cultural (terms coined by Bourdieu) (Siisiainen, 2003) and economic capital that individuals have at disposal to be able to be mobile, and puts forward the cultural and social context that work as moderating variables for travel opportunities, thus giving a clear perspective on factors that render individuals mobility-disadvantaged. In addition, the broadening range of mobility options develops creativity and new ways of doing things, while the degree of adaption and flexibility necessary to use them affect individuals' practices, thus increasing the role of mobility in society and reinforcing its impact on social exclusion (Kaufmann, 2014a).

2.2 Social exclusion

The way society is stratified, how it accounts for sense of belonging and togetherness, and how the processes that exclude and include individuals are depicted, all give an overview of the role of social integration within society. As for this, the concepts of *social exclusion* and *social inclusion* have been diversely employed in a wide range of topics related to social sciences and humanities – to describe social stratification among human beings, as a core indicator of an individual’s social rank, and how processes of segregation and societal fragmentation take place (Allman, 2013).

Social exclusion is a polysemic and contested concept, as it has different philosophical origins. Although there is no universally agreed definition of social exclusion, they all agree on the fact that it implies a certain lack of participation in society, and the definitions all have in common a dynamic, multidimensional, and multilayered view of the notion *deprivation* (Lucas, 2012). In addition, there is an apparent tendency to mention the following dimensions in the definition of social exclusion (Mathieson, Popay, Enoch, Escorel, Hernandez, Johnston, & Rispel, 2008). First off, social exclusion is the result of the combination of various life circumstances related to factors such as socioeconomic status, age, religion, sexual orientation, ethnicity and place of residence, just to cite a few (United Nations Department of Economic and Social Affairs [UN DESA], 2016). In addition, social exclusion is dependent on what individuals are excluded from, for example, housing, the employment market, participation in democratic processes, education and governmental protection (Silver, 1994). Thirdly, social exclusion is visible through the problems that it causes, such as poverty, segregation, deprivation of capabilities², loss of purpose, psychosocial problems and, more generally, disempowerment of individuals (Peace, 2001). Social exclusion emerges from a specific set of processes, as it must be understood as an “*accumulation of confluent processes with successive ruptures arising from the heart of the economy, politics and society*” (Estivill, 2003, p.19), which, as a result, marginalize individuals living in deprived conditions.

Social exclusion is seen as a potential outcome of a set of risk factors, or *accentuating factors*, however, without mentioning what exactly what this outcome could be. Due to this, many definitions of this concept are implicit: it is attributed “indirect” definitions, which do not make any reference to social exclusion itself, but indicate the potential accentuating factors that are at the heart of it (Jehoel-Gijsbers & Vrooman, 2007). Although social exclusion is something that could theoretically concern everybody, some individual characteristics are known to exert a negative influence on the degree of participation in society, which Peace (1999) has divided into

² **Capability:** a set of skills that indicate an individual’s power or the ability to do something. The capability approach, introduced by Amartya Sen, is a normative framework that evaluates well-being and shapes policy design in the field of development by focusing on what individuals are effectively capable to do.

the following groups. *Lack of access* indicates limited accessibility to elements such as vital social systems, affordable housing, public services, education opportunities and social mobility prospects. *Lack of fair recognition* generally refers to “*groups of people who acknowledge their common membership, have shared beliefs and values and act in collective ways*” (Kabeer, 2006, pag.2). Example of this is social discrimination and segregation, stigmatism, cultural inequalities, and a generally negative perception of individuals based on religion, race and social class. *Personal intensifiers*, rather than common characteristics, are based on universal values and life circumstances, such as undocumented migrants, challenging family situations, low levels of educational achievement, analphabetism and poor health. *Spatial intensifiers* include geographical and social isolation, lack of proper access to essential services and, more generally, individuals that are driven out from their communities and families.

Given the magnitude of the concept, for the purpose of this thesis, social exclusion is going to be defined in the following way:

“Social exclusion is a complex and multi-dimensional process. It involves the lack or denial of resources, rights, goods and services, and the inability to participate in the normal relationships and activities, available to the majority of people in a society, whether in economic, social, cultural or political arenas. It affects both the quality of life of individuals and the equity and cohesion of society as a whole” (Levitas, Pantazis, Fahmy, Gordon, Lloyd, & Patsios, 2007, p.9).

The notion of social exclusion is opposite to that of social inclusion, which indicates the “*full and fair access to collective resources and activities; the maintenance of social relationships with the family, friends and acquaintances, and the developing of the sense of group belongingness*” (Cobigo, Ouellette-Kuntz, Lysaght, & Martin, 2012, pag.76). Just like for social exclusion, the concept of social inclusion also lacks consensus of what it really means.

The term was first coined in 1974 by René Lenoir, the former French secretary of State for Social Action, who defined it as a condition touching specific groups of people like single parents, marginal and asocial persons and the physically disabled (Lenoir, 1989). Since then, it has become a core element to tackle in the European Union policy agenda, where it is also used as a replacement of the term “poverty”, a believed to carry a certain amount of stigma (Peace, 2001). The United Nations have made of social exclusion a major issue to address in the 2030 Agenda for Sustainable Development. In the United States, social exclusion entered in the political agenda in 1994, though under the name of “environmental justice”, when the former president Bill Clinton signed an Executive Order which had the purpose to prevent discrimination in federal programs that concern public health and the environment and to favor public participation and access to services for low-income individuals and minorities (United States Environmental Protection Agency, 2016)

Another point of agreement among social exclusion scholars is that it is a condition distinct from poverty. Poverty is the outcome of a combination of factors, while social exclusion is both an outcome and a process, and these two concepts do not necessarily depend on each other, as not every socially excluded individual is financially poor, as individuals can be cast out from their peers due to, among many, their sexual orientation, age, religion, political beliefs and physical traits (UN DESA, 2016). Jehoel-Gijsbers and Vrooman (2007) go further in depth with the explanation of the difference between social exclusion and poverty. First, they argue that poverty is a static condition that is tied to an income at a specific time, whereas social exclusion is a dynamic condition and is related to the process through which individuals become excluded. Another important distinction is that poverty can be defined in absolute terms (income, poverty line, ...), while social exclusion can be defined only relative to other people's conditions in a specific socio-historical context. Lastly, poverty is a unidimensional concept, as it often relates exclusively to the shortage of financial resources, unlike social exclusion, which encompasses multiple dimensions in which individuals lack something, such as income, housing, education, access to public transportation, to public services and legal assistance.

Putman (2000) argues that an individual's social exclusion and inclusion are dependent on complex and numerous forms of social capital, defined here as "*the manner in which networks and their emergent properties can constitute a resource for their members*" (Crossley, 2008, p.478). When in a society there are strong social relations, high levels of trusts and mutual obligations, it is a sign that it benefits from a high social capital. In a society that is every day more mobile and individuals are on the move more than ever before, Urry (2002), in light of this fact, believes that social capital is also dependent on the possibilities and modes of mobility society can benefit from, thus leaving socially excluded those who do not have options to be mobile. This argument justifies that socio-spatial access is a critical component of society's cohesion and that, ultimately, policymakers must also take into account transportation and mobility when addressing issues centering on social exclusion.

Quantifying social exclusion presents numerous challenges, as there is no validated way to do so. The main obstacle to measuring social exclusion stems from its multidimensional and context-dependent nature, as individuals are excluded from spatial, economic, social and political domains (UN DESA, 2016). Another issue is that it is not possible to measure precisely the processes that lead to social exclusion, even though they are critical to the understanding of its emergence, unlike the states of exclusion, that are easier to quantify (Mathieson et al., 2008). In addition, measures of social exclusion run the risk of being based on indicators that usually apply to western societies, such as a paid employment, access to welfare and a fixed residency, so these measures have a very limited transferability (Mathieson et al., 2008). Social exclusion is not only dependent on these objective measures, but it is also something subjective, that is perceived by individuals, as it is a personal experience (UN DESA, 2016).

Studies about social exclusion, especially those focusing on its spatial dimensions in relation to individual's residence and degree of access to services, have caught the attention on the importance of transportation as a means that shapes the urban form and exclusionary processes. The link between transportation and social exclusion is going to be addressed in the following chapter.

2.3 Linking transport disadvantage with social exclusion

From the previous chapters, one critical aspect that emerges is that the world of transportation and mobility carries a high component of ethical issues, which are englobed in a practice known as equity planning. In the field of urban planning, equity planning is a “*framework in which urban planners working within government use their research, analytical, and organizing skills to influence opinion, mobilize underrepresented constituencies, and advance and perhaps implement policies and programs that redistribute public and private resources to the poor and working class*” (Metzger, 1996, p.1).

In the domain of transportation, one of the ways to carry out equity planning is by focusing on accessibility. Accessibility is a popular topic within the academic world, but has very diverse meanings, given the way it is measured and the policy objectives, and the diversity of its meaning is reflected in all those projects that take different approaches to operationalize accessibility (Venter, 2016). One of transportation planner’s ways to realize accessibility is by rendering transportation a driver of social inclusion and therefore by making it an effective means to counter societal exclusionary processes.

In the literature on social exclusion, often come up discussions about social justice as a means allowing people to satisfy their personal needs and increase global well-being. A way to create a more just society is through increasing people’s chances to be mobile through space, as spatial mobility plays a crucial role in allowing people to meet these needs and to be well integrated into society (Stanley & Stanley, 2017). Starting from this assumption, studies of social exclusion in relation to transport disadvantage has been gaining increasing interest among policymakers and in the academic world, and it has been mostly accounted for in the UK and Australia. Despite an increasing body of research on this issue, scholars have failed to identify a globally accepted definition of transport-related social exclusion and how this can be accurately measured.

Transport and mobility scholars have had growing interest in how social exclusion and mobility interact since the Government of the UK published the UK White Paper on Transportation, where the provision of transportation services must go hand in hand with the delivery of better public services and employment opportunities, thus warranting that transportation becomes a means to create a more equitable and inclusive society (Church, Frost, & Sullivan, 2000). However, studies on links between transport and social exclusion gained new momentum with the publication of a report titled *Making the Connections: Final Report on Transport and Social Exclusion*, published in 2003 by the UK’s Social Exclusion Unit, which used to be a governmental agency that carried out research on social exclusion in the country and provided policy advice (Social Exclusion Unit [SEU], 2003). Considered by scholars a flagship study in the field and as having a significant influence on the policy stance, the report contains a broad number of empirical studies on people’s transportation habits, and it concludes that lack of access to transportation is one of the many

elements that drive people into poverty and that amplifies social exclusion processes. The second major conclusion of this study is the proposal of an “accessibility planning” model, in which the attention of transportation agencies should turn to socially and economically deprived regions and implement measures to improve accessibility and mobility in these regions. As research in the field progressed, the focus shifted to how exactly does transport-related social exclusion manifest and which are the most impacted demographic segments of society. Among the definitions of transport-related social exclusion that have subsequently emerged, the following has been highlighted for the purposes of this thesis, which states that it is

“the process by which people are prevented from participating in the economic, political and social life of the community because of reduced access to opportunities, services and social networks, due in whole or part to insufficient mobility in a society and environment built around the assumption of high mobility” (Kenyon et al., 2002, p.210).

This definition is deemed appropriate to this thesis, because it underlines different aspects that give a well-rounded overview of this topic (Schwanen et al., 2015). First, it brings up the notion of accessibility to places, fundamental to fostering social interaction and increasing the degree of participation in society. Second, it empathizes how transport-related social exclusion does not exist in absolute terms, but it is relative to the general degree of mobility of an individual’s social context. As such, those who cannot keep pace with society’s level of mobility inevitably end up lagging behind. This is especially true in developed countries, whose society enjoys a higher degree of mobility than their counterparts in the developing world.

Even though transport disadvantage and transport-related social exclusion share many features in common, these concepts are not always synonyms with each other. There are of course cases where individuals are socially excluded even though they enjoy excellent access to transportation, or have a high degree of participation in society but not having the chance to be mobile (Currie & Delbosc, 2010). In reality, transport disadvantage and transport-related social exclusion interact with each other to cause transport poverty, which, as a result, leads to no or limited access to essential services and goods and to not being able to have a voice in local politics and decision-making (Lucas, 2012). Figure 1 shows how these features interact with each other.

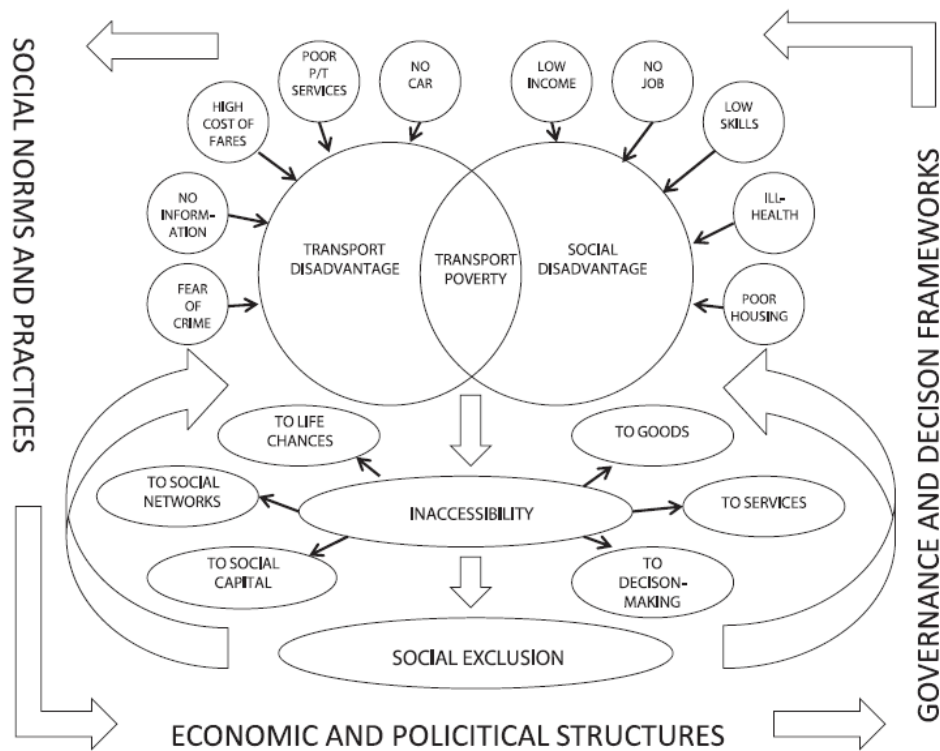


Figure 1: Interactions between transport disadvantage and social exclusion (Lucas, 2012)

The transport disadvantage literature suggests that there are social groups that are more likely than others to be exposed to transport disadvantage and transport-related social exclusion. Dodson et al. (2006) have identified the following: low-income people, unemployed and beneficiaries of jobless benefits, children, single women, elderly, physically and mentally disabled, people residing in peripheral neighborhoods and ethnic minorities.

Church et al. (2000) formulated a theoretical framework in which they identified seven dimensions that mainly pertain to urban areas in the developed world, which render individuals excluded from society due to the design and the organization of a transport system.

Physical exclusion: this occurs when physical barriers within the nature of the transportation system and its structure make it harder for the population to gain physical access to it, especially for elderly or frail, parents with children, physically handicapped, those carrying heavy loads, children, and those who cannot understand how to use the transportation system due to language barriers. This also includes psychological barriers, so impediments due to having uncomfortable feelings when using public transportation.

Geographical exclusion: this arises when people live in areas characterized by inadequate and infrequent transportation provision, which hinder peoples from reaching a wide range of places effortlessly and within an acceptable travel time. This is mostly true for rural rather than urban settings, where transport provision is minor and there is turn higher car dependency (Stanley & Stanley, 2017). As far as the USA's metropolitan areas are concerned, a study conducted by the Brookings Institution in 2011 focusing on the populations' capability to access jobs through

transportation in the country's 100 largest metropolitan areas revealed that geographical exclusion is a reasonably limited phenomenon, as 70% of the population of these metropolitan areas enjoy sufficient access to public transportation (the New York City metropolitan areas ranks 7th, with a coverage of 89.6%) (Tomer, Kneebone, Puentes, & Berube, 2011).

Exclusion from facilitates: indicates the distance from essential services, such as health facilities, schools and grocery stores. In urban areas, there is the tendency to have greater transportation options where there is a higher concentration of services, so individuals not living in such areas cannot count on efficient public transportation and must rely heavily on cars. What amplifies this problem is that, where housing costs are lower, mostly in peri-urban zones, there is in return lower provision of services, so public transportation is crucial for them to reach services that would be otherwise unreachable to them (Stanly & Stanley, 2017).

Economic exclusion: the price to pay for mobility, whether it is purchasing a ticket for riding on public transportation or owning a car, could constitute a significant financial burden and, as reported previously, in the USA it is second largest expenditure after housing. The National Household Travel Survey conducted in 2009 concludes that low-income individuals spend higher proportions of their income on transportation, even though they tend to ride more often on public transportation than individuals with higher incomes, and that ethnic minorities are disproportionately concerned by this issue (U.S. Department of Health & Human Services [HHS], 2015). Inability to afford to go around also limits access to the labor market and the extent of job search.

Time-based exclusion: refers to situations where individuals are unable to conduct a decent life and respecting commitments due to excessive time spent traveling. A study about upward mobility conducted by Harvard University in 2017 demonstrated that an individual's average income is strongly correlated to commuting time to work, where low-income individuals were more likely to have greater travel times to work compared to their upper-income counterparts (Chetty & Hendren, 2017). Always according to the Brookings Institution's 2011 study on job accessibility in American metropolitan areas, 30% of jobs are reachable via public transportation within a 90-minute commute (New York City's metro area ranks 25th, with 36.6% of jobs reachable within 90 minutes) (Tomer et al., 2011).

Fear-based exclusion: is how people fear frequenting public transportation and public spaces, and this varies significantly according to social characteristics and gender above all. This issue mostly concerns women taking public transportation in cities in developing countries, where they often experience sexual and verbal harassment, and report having bad experiences at night hours, thus reducing women's freedom of movement (Bruce-Lockhart, 2016). Public transportation is also a fertile ground for bullying activities. Concerning children and teens in the USA, bullying on the school bus is a sad reality and a growing concern among educators and parents, as nearly 10% of

students have experienced this and it sometimes stops them from going to school (U.S. Department of Education [ED], 2012). Recently, among illegal immigrants in the USA, there are growing concerns to ride on public transportation due to a rising number of episodes where law enforcement personnel enquire about riders' citizenship status, despite being illegal to do so (O'Connor, 2017).

Space exclusion: this occurs when contemporary space and security management strategies discourage individuals from riding on public transportation and frequenting its facilities. This concerns especially socially marginalized people and racial minorities. In the USA, an analysis of Illinois Department of Transportation's 2014 data by the American Civil Liberties Union found that African-American and Hispanic drivers were almost twice as likely as white drivers to be asked during a routine traffic stop to have their car inspected (American Civil Liberties Union of Illinois, 2014).

In light of scholars' desires to render the research on transport disadvantage and social exclusion useful to policymakers, the concepts of social capital and spatial capital have been introduced in the planning literature. One of the most recurrent definitions of social capital is Bourdieu's, who argues that it is a resource that is tied with group membership and social networks, and that it depends upon mutual cognition and recognition (Siisiainen, 2003). A fairly debated topic in the transportation literature is about how social capital could serve as a mediating concept between transport disadvantage and social exclusion. Schwanen et al. (2015) believe that social capital would add great value to the research on transport-related social exclusion. It is a means for social change and can further widen existing social inequalities, it allows to analyze travel behavior from multiple perspectives due to being discussed in numerous disciplines, and because it would bring to the table discussions encompassing political, economic and social topics. Spatial capital has not gained as much attention in the literature, and does not have a unique definition. For instance, mobility and motility can be considered as spatial capital, as unequal endowments of it lead to socio-economic inequalities, it can be exchanged for travel or other types of capital, and it is dependent on motility's three components (Rérat & Lees, 2010).

Research on transport-related social exclusion has been carried out with a variety of methodological approaches, which range from quantitative methods such as mathematical modeling, GIS analysis, statistical comparisons, and qualitative methods like interviews, focus groups and surveys (Dodson et al., 2004). The way data is organized in such research also varies considerably from a paper to another. As an example, Kamruzzaman et al. (2016) take into consideration the availability of mobility options, accessibility to opportunities (urban and potential accessibility) and travel behavior. Hernandez and Titheridge (2015) group their findings into the categories identified by Church et al. (2002) in the evaluation transport-related social exclusion. A flagship study in the field using qualitative methods is Hine and Mitchell's (2004) research on transport-related social exclusion in urban Scotland, where they evaluate

transportation needs according to its affordability, availability, accessibility and acceptability. Overall, there has been a remarkable progress in the development of methods aimed to measure this phenomenon. They were able to identify, for example, that this phenomenon reaches various setting throughout the world and that it is strongly correlated with the urban form and the structure of the local economy (Lucas, 2012). Kamruzzaman et al. (2016) highlight the necessity to combine quantitative with qualitative methods to gain a complete picture of this phenomenon and globally in urban transportation research, by citing Røe's explanation (2002): "*these [quantitative] types of studies, while giving important information about statistical correlations between individual background data and social events, do not capture the nature of social systems and structures, and do not necessarily enhance the understanding of causal mechanisms.*" (pag.102).

Chapter 2 was dedicated to the presentation of the theoretical framework and the theoretical approach that are at the heart of this thesis. The following chapter is going to describe the geographical context of the research, and it is going to present the research questions and the methodology applied to the collection of data.

3. Empirical section

3.1 Brownsville

3.1.1 *New York City's public transportation crisis*

“The delays are maddening New Yorkers [...] They are infuriated by a lack of communication, unreliability and now accidents. Just three days ago, we literally had a train come off the tracks. It's the perfect metaphor for the dysfunction of the entire system.”

Governor of New York State Andrew Cuomo, commenting about a subway car's derailment in Harlem occurred on June 27th, 2017 that injured 39 people

The subway and the bus network serve as the backbone and circulatory system of the City, carrying daily thousands of riders to work, school and leisure activities. With a 665-mile-long network, 27 interconnected routes and 472 stations, New York City's subway system is one of the longest in the world (Metropolitan Transportation Authority [MTA], 2018a) (figure 2). In 2017, the subway carried 1,727 million people, a 1.7 % drop from 2016 and less than the all-time record of 1'762 million set in 2015, and it was the 7th biggest worldwide in terms of annual ridership, and the biggest in the United States. The system also comprises a network of over 326 public bus lines with 16,350 stops that carried 602.6 million riders in 2017, a 5.6% drop from 2016.



Figure 2: New York City's schematic subway map, with Brownsville circled in red (MTA, 2018)

Despite an ever-increasing number of people moving to the city and growing job opportunities (New York City Department of City Planning [NYC Planning], 2016), public transportation's ridership dropped between 2015 and 2017. While city authorities attribute this trend to the growing popularity of ride-hailing services like Uber and bike sharing systems like Citi Bike, transit advocacy groups argue that ridership has declined due to the frequent disruptions and delays that roil the system. The Governor's public admission that the system is in a state of emergency brought into the spotlight the numerous problems that plague the system, and led him to sign an executive order where he declared that the public transit system is in a state of emergency and so requested \$1 billion to make improvements and giving riders the hope that his

call for action can turn around the system's perceived downward spiral. Following the Governor's declarations, in May 2018 the MTA unveiled the "Fast Forward" plan, a comprehensive report that highlights what needs to be done in the next decade to modernize the system improve capacity and accessibility, and the projected cost to implement these measures would be \$19 billion (MTA, 2018b).

The leading problem that is currently plaguing the system is frequent delays, which most riders attribute to overcrowding (Fitzsimmons, Fessenden, & Lai, 2017). New York City's Bureau of Policy and Research conducted a study published in 2017 that documents subway delays and confirmed riders' worries about trains being too frequently delayed, and that platforms are overcrowded at peak times and most of the infrastructure has surpassed its operational age (Stringer, 2017a). In 2016, 823,582 trains experienced delays, compared to 356,607 in 2012, a 52% increase, and in 2017 they are expected to reach 900,000. In accordance to riders' assumptions, this report concludes that delays are mostly due to overcrowding, as slows down boarding and deboarding processes, so trains must stop for longer at train stations, and growing ridership during less busy times make maintenance works harder to complete. Accordingly, on-time performance has diminished, as in 2016 67% of trains reached stations within five minutes behind schedule, down from 84% in 2012. Among the subway lines that serve Brownsville, in 2016 the 3 line had an on-time performance of 58%, the A line of 62%, the B line of 69%, the L train of 91% and the J-Z line of 65%, which also experienced the second sharpest drop from 2012 in the city. Always according to this report, low-income areas were 10% more likely to experience delays than higher income ones, and these people were always more likely to experience problems at work due to late arrivals than their higher-income counterparts. Finally, among several other findings, the report concluded that three quarters arrived late to work due to delays, 13% lost salary and 2% were fired.

However, transit advocacy groups and riders have widely rejected the conclusions drawn from this report. They argue that at the heart of the subway's disrepair there is lack of political will to adjust the system (Bliss, 2017). They believe that the crisis was years in the making and it is the result of numerous unpopular decisions taken by former and current politicians, and that the way in which the MTA is being managed will not help to resolve this crisis, as the roles of the State of New York and of New York City's government are not clearly defined. As a result, it is relatively easy for politicians to reject any accountability and instead to put the blame on others, and funding is wrongly directed and the MTA's budget for maintenance has remained the same for 25 years (Fitzsimmons, Laforgia, & Rosenthal, 2017).

Another considerable source of complaints among riders are regular MetroCard fare hikes, with the latest having taken effect on March 19th, 2017, after recent hikes in 2015 and 2013, and in July 2018, the MTA confirmed it is planning fare hikes of 4% each in March 2019 and 2021 (Guse, 2018). The current price for a single ride is \$2.75 and there is a reduced fare of \$1.35

exclusively reserved for customers who are at least 65 years old or who have a qualifying physical disability. The root of the problem is that, unlike other cities in the United States, the MTA does not offer a reduced fare for low-income New Yorkers, in a context where for the past decades rents have been growing, wages have stagnated, and car ownership rates among low-income individuals is minimal (Rankin & Stolper, 2016). The Community Service Society, an anti-poverty advocacy group, released a report in 2016 that investigates in depth this issue and has been leading the fight against fare spikes with the campaign “Transit4All”, in cooperation with the transit advocacy group Riders Alliance, who are pursuing the campaign “Fight for #Fairfares” (Rankin & Stolper, 2016). The report found that over one in four low-income New Yorkers cannot afford to buy a MetroCard and that, for over 300,000 low-income individuals, transit expenses often exceed 10% of total household expenses, and as a result they are being cut off from jobs, schools, and are forced to forego other goods in order to afford to pay for a MetroCard. Therefore, many resort to evading the fare by jumping the turnstile or by waiting for other riders to swipe them in, or they give up taking trips or shift modes (Perrota, 2015). In 2016, about 10,000 got arrested for fare beating (“turnstile jumping”), making it the most common charge in Manhattan Criminal Court (Vance, 2017). Considering this, the Community Service Society proposes the introduction of reduced fares and half-priced unlimited rides MetroCards to individuals having an income below the poverty line. Politicians showed their interest in this issue, and in June 2018, Mayor Bill de Blasio and other city’s leaders agreed on initializing a program, also named “FairFares”, set to be introduced in January 2019 and that would provide funding for subsidized MetroCards for those who have an income below the federal poverty line, a household \$25,000 for a family of four (Neuman & Goodman, 2018).

A map that visualizes the city’s neighborhoods underserved by public transit created in 2015 by Chris Wong, an urban planner (Wong, 2016), brought up the issue of so-called “transit deserts” to city officials (Cohen, 2017). The map shows how vast patches of southeast Brooklyn, eastern Queens and of southern Bronx are not situated within walking distance (10 minutes) from a subway station, and these tend to be predominantly low-income neighborhoods, where individuals are highly reliant on public transportation. As a result, people living there must endure long commuting times, long walks and depend on cars and unreliable bus services, strengthening economic inequality. The Regional Plan Association, an advocacy and urban research organization that conducts research in the New York - New Jersey - Connecticut metropolitan region, discuss this topic in their comprehensive Fourth Regional Plan, published in November 2017 (Regional Plan Association [RPA], 2017). It identified areas that are not within a third of a mile distance (543 m) from the nearest subway station, visible on figure 3, and added information about density and average income of such areas, and it revealed there are high density and low-income areas like areas in central Brownsville (circled in red on figure 3) that are not well served by the subway. The RPA advocates for the urgent need to add subway service to such high density and low-income localities, are they are those that suffer the most from such lack of service. With

the upcoming closure of the L train, areas located on this line are projected to become transit deserts, to the worry of many New Yorkers (Fitzsimmons, 2016).

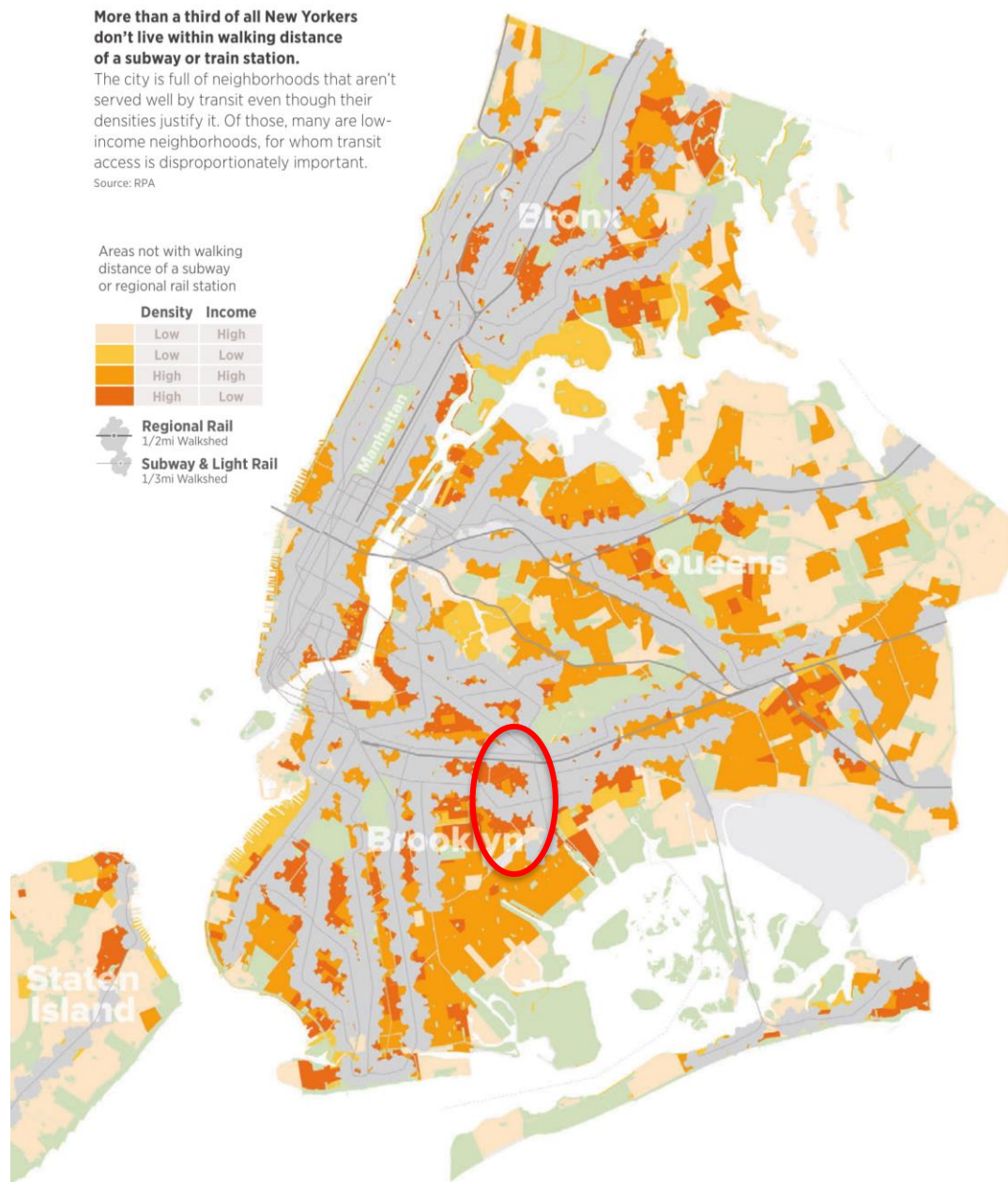


Figure 3: High-density areas unserved by the subway (RPA, 2017)

Accessibility to subway stations for mobility-impaired riders is an aspect which significantly underscores the overall quality of the system. Only 82 out of 472 stations are accessible (or partially accessible) and comply with the guidelines issued by the Americans with Disabilities Act³ (ADA), the lowest share among the country's metropolitan subway networks (RPA, 2017). As figure 4 shows, among the city's 122 neighborhood with subway service, 62 do not have an

³ **Americans with Disabilities Act (ADA)**: is a civil rights law signed in 1990 that bans discrimination against people with disabilities in the public sphere, such as transportation facilities, schools and workplaces, with the intent to give these people the same rights as anyone else (ADA National Network, 2018).

accessible station (51% of the neighborhoods), with the highest share being in Brooklyn (26 neighborhoods served by the subway out of 44 not having an accessible station, including Brownsville), and this issue concerns a total of 640,000 New Yorkers (Stringer, 2018). Inaccessible subway stations bring about several inconveniences, as it reduces employment opportunities and being partially responsible for 23% city-wide unemployment rate among physically impaired people, choice of residence and cost of living (Stringer, 2018).



Figure 4: Neighborhoods without an accessible subway station (Stringer, 2018)

Not only the subway, but also the bus, the other backbone of the city's transit, is no stranger to problems, as proven by a report also published in November 2017 by the city's Bureau of Policy and Research (Stringer, 2017b). They are too slow and unreliable, congested, their route plan is difficult to understand, and it has received much less attention than larger transport infrastructures like the subway. As a result, ridership dropped by over 200,000 between 2006 and 2017, from 860 million to 602 million passengers, especially in Manhattan and Brooklyn. These facts are surprising, considering how they are a vital element of transportation that allow reaching jobs, schools and services located distant from subway stations and in remote areas of the city, and they can easily adapt their services according to urban growth patterns and job growth areas. Buses are a lifeline especially for low income New Yorkers, who mostly live in areas where subway

service is absent and have low car ownership and have more irregular work schedules than higher income individuals, so their lifestyle requires having a reliable bus service at every hour of the day (NYC Bus Coalition, 2016). In April 2018, the MTA unveiled the “NYC Transit Bus Plan”, a comprehensive program set to be launched in 2020 which seeks to tackle the challenges the system is currently facing, for example by implementing a major redesign of the routes, upgrading technical features and adding more bus lanes (MTA, 2018).

New York City has a public bike sharing system, named Citi Bike, introduced in 2013 and owned by Citigroup. In 2017, it had a membership of 136,702 annual riders (Citi Bike, 2018). The majority of the docking stations are located in Manhattan, western Brooklyn, and Jersey City (NJ). Besides having gone through financial woes in the first years since its inception, a major critic to the system is its absence in lower-income areas and that it is failing to attract a diversity of riders, especially low-income individuals, and racial minorities (Fitzsimmons, 2016). Following complaints about its offer and affordability, the system introduced a monthly rate of \$5 for NYCHA residents in lieu of \$14.95 and, with the introduction of the service in Harlem and Astoria in 2017, it is showing its commitment to expand the service to less wealthy areas (Warecar, 2017). At the end of July 2018, a new, dockless bike sharing system run by Citi Bike and other three companies has been gradually introduced, with the Rockaways in Queens being the first neighborhood to profit from this service and, in August 2018, the North Shore of Staten Island and the area around Fordham University in the Bronx (Plitt, 2018).

3.1.2 *Brownsville*

Brownsville is a neighborhood situated in the eastern half of the borough of Kings County (commonly known as Brooklyn), in New York City (figure 5). The New York City Department of City Planning does not designate the names and the boundaries the city's neighborhoods

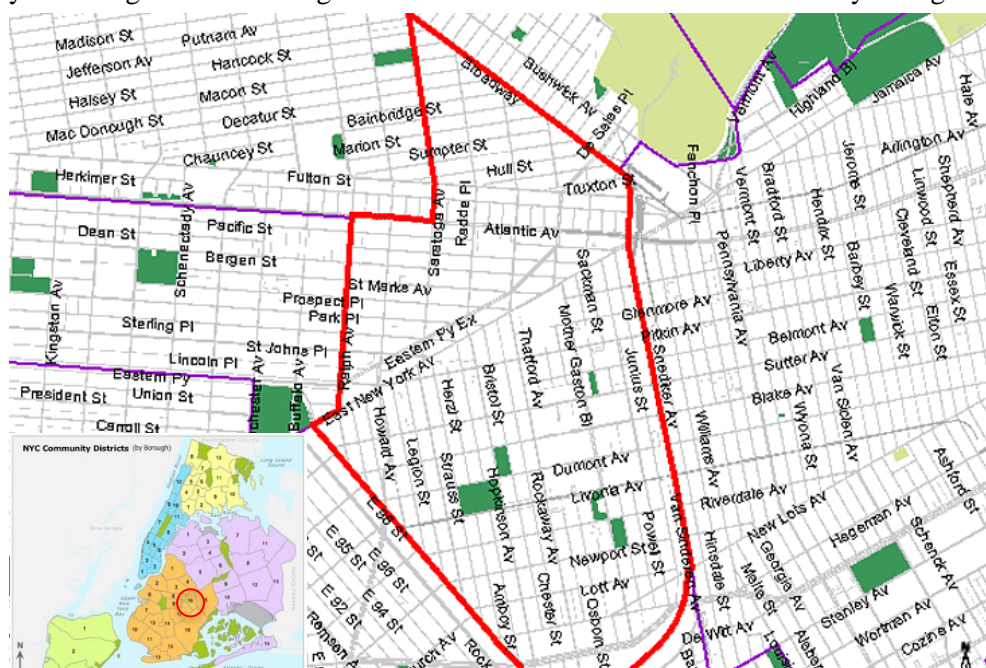


Figure 5: Map of Brownsville (NYC GOV, 2018)

officially, but it unofficially treats Brownsville as covering the entire surface of the Community District 16, so it also englobes the neighborhood of Ocean Hill to the north, which has a total surface of 1.9 square miles (NYC Planning, 2018). It borders with Ocean Hill to the north, Canarsie to the south, East New York to the East and East Flatbush, Crown Heights, and Bedford Stuyvesant to the west.

According to the 2012-2016 5-year estimates of the American Community Survey⁴, Brownsville has a population of 94,149⁵ (NYC Planning, 2018), with a density of 74.5 inhabitants per acre. The



Figure 6: Rockaway Ave, the main retail corridor (personal picture)

racial composition is 74.7% African-American, 20.3% Hispanic, 2.2% white, 1.7% Asian and 0.2% of another race. 28.4% of the population was born abroad and 9.2% of the residents five years and older have limited English proficiency.

The neighborhood is currently facing numerous critical economic and social challenges, where many residents are disadvantaged from an early age and traditional measures of well-being rank constantly below the city's average. A report published in 2017 by New York's City's Committee for Children aimed to evaluate the overall quality of life across the city's 59 community boards concluded that Brownsville ranked 6th among the top worst performers (City's Committee for Children, 2017). The three major issues identified by the Community Board in 2017 were affordable housing, crime, and healthcare services (NYC Planning, 2018).

Economic conditions in the neighborhood are challenging compared to the other city's community boards. 31.2% of the residents have an income below the Federal Poverty Level (a gross annual income of \$12,140 per individual in 2018), making it the most impoverished neighborhood in Brooklyn and the 7th poorest in New York City. Among people with working age (16-64 years old), fewer than half (46.9%) are employed and 54.1% are in the labor force. The unemployment rate stands at 13.3%, the 7th highest among the 59 community boards. The yearly median household income is \$28,163, significantly lower than the city-wide \$55,191. 50.6% of households are rent burdened (a household is considered rent burdened when 35% of

⁴ **American Community Survey 5-year estimates:** for certain geographical areas, the United States Census Bureau provides statistical data collected over a 5-year timeframe, with latest data available being collected between 2012 and 2016. Unless it is otherwise stated, all the statistics concerning Brownsville are taken from NYC Planning's statistical tool, which contains this data set.

⁵ As New York City's government considers Brownsville as covering the entire surface of Community District 16, the following data has been obtained by merging the neighborhoods of Brownsville and Ocean Hill, as the two are shown separately.

income is spent on rent), compared to New York City's 44.6%, and this is expected to become a growing problem, as the population's incomes are among the lowest in the City and there are growing fears about the neighborhood being touched by gentrification, as many other neighborhoods across the city already have (Maslin Nir, 2017). Transportation costs amount to roughly 10% of total household



Figure 7: Aerial view of Brownsville (Skyline Scenes, 2018)

income, and the H+T index is about 30% (Center for Neighborhood Technology, 2017). Brownsville has the highest concentration of public housing in the United States, with over 50% of the population living in such structures (Caulfield et al., 2012). In 2016, 1,583 major felonies (12.6 per 1,000 residents) were reported in the neighborhood (11.8 in New York City), and there was a rate of 180 injury assaults per 100,000 residents (64 in New York City), the highest in the City (Barbot et al., 2015), but since reaching its peak in the 1990's it has gradually decreased; however, this crime rate stifles efforts to create a favorable business environment and individuals that have committed a crime have difficulties entering the workforce and prevents proper community development (Caulfield et al., 2012). The population has one of the lowest attendance rates and the third lowest educational attainment in the City, with 10.2% of residents aged 25 and over having earned an undergraduate's degree or higher (21.3% in New York City), and 16.5% of the population has not completed high school (Barbot et al., 2015). There are 35 primary and secondary schools, but there is no higher education facility such as a college or a technical institute (Public School Review, 2018). Health conditions are critical compared to other Community Districts, with 14.4% of the population having no health insurance coverage (15.1% in New York City)⁶, and 3 out of 10 not having a regular doctor (Pratt Center for Community Development, 2015). This is due to the resident's inability to eat regularly healthy food as there is a severe lack of healthy food shops, what leads to obesity, heart diseases and diabetes. In addition, HIV and AIDS infections are prevalent in the neighborhood.

3.1.3 Analysis of transportation system and mobility in the neighborhood

Brownsville is characterized by the presence of many physical and psychological boundaries. It is surrounded by an imposing transportation infrastructure that functions as a barrier with other neighborhoods and there are large housing units, vacant spaces and wide streets that split the neighborhood into numerous parcels (visible in figure 7), and this makes the neighborhood feel

⁶ This number is due to the implementation of former President Barack Obama's Affordable Care Act, which is potentially going to be repealed by current president Donald Trump (Barbot et al., 2015).

unsafe and not pedestrian-friendly enough (Sandler & Tiarachristie, 2017). These barriers make it more difficult for Brownsville residents to gain access to nearby jobs, education facilities and services (New York City Department of Housing Preservation & Development [NYC HPD], 2016).

As a whole, Brownsville is served reasonably well by public transportation (figure 8), and in recent years there have been ongoing improvements to the aging infrastructure and to the safety conditions (Pratt Center for Community Development, 2015).

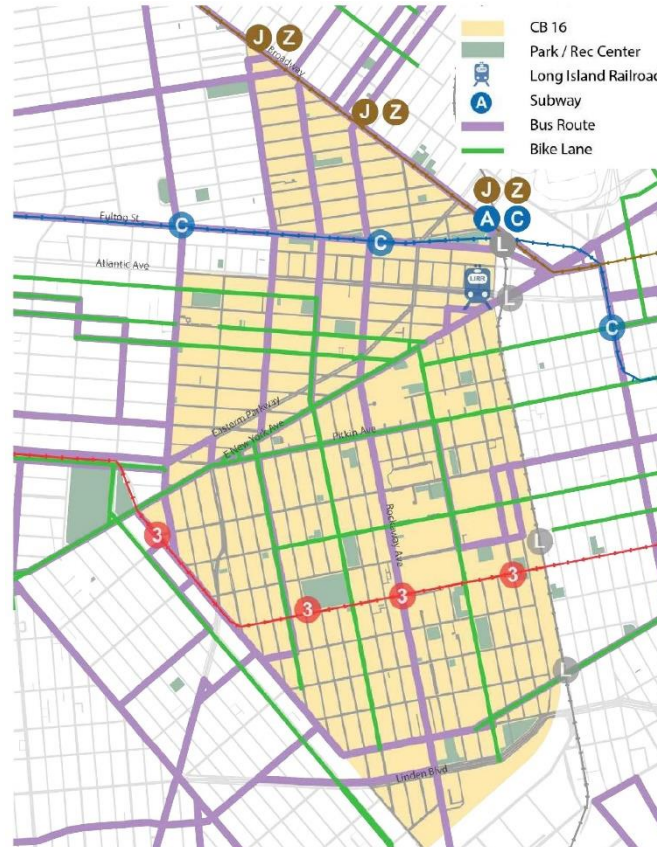


Figure 8: Brownsville's transportation options (Hunter College, 2016)

Brownsville is served by 15 train stations spread along four subway lines: the J-Z, A-C and the elevated 3 line, which cross the neighborhood from east to west, and the elevated L train, which runs from north to south, along with the eastern edge of the neighborhood. The 3 line crosses the neighborhood along Livonia Av (figure 9) and it serves as the most important connector to Manhattan and it is also a significant physical barrier between the north and the south of the neighborhood. The A-C line borders the neighborhood to the north, along Fulton St. The L train, A-C and J-Z lines intersect together with the Long Island Railroad at Broadway Junction, in the northeast of Brownsville and it serves as a major transportation hub for Brooklyn. A frequent and reliable public transportation system is crucial in this neighborhood, as it has among the lowest car ownership rates in the city (New York City Economic Development Corporation [NYCEDC], 2012), 70.7% of the population commute to work by public transportation, compared to 16.9% by car and 5.7% on foot.

Table 1 lists all the subway stations in Brownsville with their on-time performance and annual ridership for 2017 (MTA, 2018c). The column display ridership change between 2016 and 2017 was added to show how the majority of subway lines either experienced a modest growth or a decline.

Subway line	Terminal on-time performance⁷ (%)	Stations⁸	Annual ridership	Ridership change 2012-2017 (%)	Ridership change 2016-2017 (%)
3 line	49.2%	Junius St	298,119	-54.8	-56.3
		Rockaway Av	1,685,468	0.2	9.8
		Sutter Av-Rutland Rd	1,049,559	54.1	-48.4
C line	58.7%	Broadway Junction	2,911,532	1.7	-5.6
		Ralph Av	1,894,817	16.6	1.7
		Rockaway Av	1,794,365	13.9	0.4
J-Z line	84.1%	Broadway Junction	2,911,532	1.7	-5.6
		Chauncey St	1,095,638	13.6	0.3
		Gates Av	2,262,915	19	6.9
		Halsey St	2,131,177	13.4	1.4
L train	94%	Atlantic Av	557,103	25.2	27.7
		Broadway Junction	2,911,532	1.7	-5.6
		Livonia Av	1,019,591	12.9	-2.5
		New Lots Av	1,638,839	18.8	-0.4
		Sutter Av	1,394,283	0.7	-2.8
New York City	63.8		1,727,366,607	4.4	-1.7

Table 1: Subway lines that cross Brownsville and their stations

One of the main drawbacks of the subway stations is that none of them are handicap-accessible (MTA, 2018d), thus potentially leaving behind a large chunk of the population that suffers from

⁷ **Terminal On-Time Performance (TOTP):** the MTA measures on-time performance by considering how many trains arrive at their final station within 5 minutes of the scheduled time of arrival.

⁸ The MTA collects the subway's ridership data per train station, not per line, unlike for the bus network.

some sort of physical disability. The only projected improvement is the construction of an elevator at the Junius St Station, but plans have been postponed indeterminately (Junius Street (IRT New Lots Line), 2017).

One of the weakest aspects of the subway in the neighborhood and also at a city-wide level is that there is no free out-of-station transfer from the 3 line to the L train where they intersect, between the Junius St and the Livonia Av stations. Besides the two stations being only one block apart, customers wishing to transfer lines must get out of the subway station and reenter in the other one, which means paying for a new ride. Residents and local politicians have advocated for many years for such a transfer, citing increasing developments in the area which would boost ridership and that paying for two rides constitutes a significant inconvenience in the neighborhoods crossed by these lines, as they are characterized by relatively high poverty rates (Wong, 2017). The MTA plans to modernize the two stations and stated that it is going to provide free transfers by 2019. Another major city-wide issue strongly affecting Brownsville is the upcoming 15 month-long shutdown of the L train, among the city's busiest routes, from April 2019, to repair severe damages in the Canarsie Tunnel under the East River caused by floods during Hurricane Sandy in 2012. This is a major cause for concern for commuters living in Brownsville and in other neighborhoods in Eastern Brooklyn who work in Manhattan, which are areas that endure among the most extended commuting times to Manhattan, as this is the fastest way to the city and they will now bear the brunt of longer commuting times on other overcrowded lines and of making more transfers (Surico, 2017).

Despite the wealth of options of public transportation, the main retail corridors, which are Pitkin Ave and Rockaway Ave (figure 6), are not well connected to them, due to distance, busy roads and superblocks of public housings and industrial zones pedestrians must pass through to reach them. Due to the isolation of such area, customers that would come from outside the neighborhood to shop here and spend money are potentially discouraged to come (RPA, 2015).

Seven bus lines run through the neighborhood: the B12, B14, B15, B25, B35, B60 and B83 lines, that run about every five to ten minutes at peak times. However, weekday ridership has been gradually declining since 2007 (Caulfield et al., 2012), there only offer limited links between the subway stations and the main retail corridors, and there is no direct line from Broadway Junction to Pitkin Av, a major retail corridor. Table 2 displays a few facts for 2017 (concerning not just Brownsville but the line in its entirety) (MTA, 2018). The majority of the bus lines registered declines in ridership from 2012 to 2017, and the data showing the evolution between 2016 and 2017 was added to show that this decline has got even more evident, as all the lines show a negative passenger growth.

	Annual ridership	Ridership change 2012-2017 (%)	Ridership change 2016-2017 (%)	Terminal on- time performance (%)	Average speed (mph)
B12	4,310,508	-21.5	-11.9	50	4.7
B14	2,066,703	-10.2	-9.6	58	5.4
B15	6,494,369	-9.8	-11	51	6.5
B25	2,850,871	-16	-11	49	5.4
B35	9,894,228	-15.7	-6.2	53	5.1
B60	2,953,622	+18.5	-5.5	58	5.8
B83	2,481,148	-4.6	-6.1	60	7.1
New York City	602,620,356	-9.8	-5.6	61	7.1

Table 2: Characteristics of the bus lines in Brownsville

Brownsville’s streetscape is in dire conditions, what makes the retail corridor not easily accessible and uninviting, and sidewalks are poorly maintained, thus diminishing walking conditions for physically disabled people and pedestrians with strollers (Caulfield et al., 2012). Biking is still a limited activity among the population due to the street conditions and urban design of the neighborhood, but local authorities have started a process of renewing existing bike lanes and introducing new ones. However, Citi Bike is absent and at the moment there are no plans to introduce the system here. The physical design and public infrastructure of a neighborhood can play a role in crime rates (Torres & Tiarachristie, 2017). In Brownsville, there are numerous New York City Housing Authority buildings built one next to the other, which create a patch of isolated lots with their own services and with no adjoining pathways to move among them. There are also many vacant and poorly lit surfaces, which are linked to higher crime rates, as abandoned land provides a breeding ground for criminal activity (Botti et al., 2016). These vacant spaces are also unpleasant to the eye, segregate specific areas in the neighborhood and give the perception of the neighborhood as being unsafe and, as a result, this prevents people from gathering in the streets and walking or riding a bike. At last, the street network presents several navigational



Figure 9: Elevated subway tracks on Livonia Ave (personal picture)

challenges, in which Brownsville's regular street grid is crossed by several diagonal roads such as East New York Av and East 98th St form multi-leg intersections that are unpleasant to ride through for drivers, pedestrians and bikers (Botti et al., 2016).

3.2 Research question

The scope of this thesis is understanding the phenomenon of transport disadvantage and its subsequent exclusionary social processes in Brownsville, by operationalizing the concept of motility, so finding out if transport disadvantage is a matter of access to mobility options, of the competences that are needed to be mobile or of how individuals appropriate themselves with the options available to them. For this, the research question for this thesis is divided into two parts. The first task is going to be finding out what are the main problems the residents of this neighborhood must face in order to gain access to mobility. Secondly, this issue is finding out what are the implications for everyday life, and ultimately observe how such condition shapes individuals' mobility behavior. The research question is as follows:

What are the characteristics of transport disadvantage and of transport-related social exclusion in Brownsville, NY? Which strategies have they adopted to overcome barriers impeding them to be mobile?

The answer to the two research questions is going to be unveiled through the following sub-questions, constructed in a way that together would reveal motility's three components:

- 1) What is the "hosting potential" of this neighborhood?
- 2) How necessary is it for people to leave the neighborhood to run errands and to receive essential services?
- 3) How mobile are these people?
- 4) Which means do the mostly use to be mobile? Why not others?
- 5) How accessible is mobility to people (physically, availability, quality, security, financially, skills)? How do they experience mobility?
- 6) How acceptable are mobility conditions for them? How are they coping with such conditions?
- 7) How much of a burden is mobility in people's lives, by not allowing them to carry out a healthy and satisfying life?
- 8) How well have people adapted to mobility constraints?
- 9) What do individuals take into consideration when choosing a specific mobility option, in order to organize daily life and taking into account their lifestyle? What is the process underlying the cognitive appropriation of mobility options?

Before advancing with the analysis of the results, two hypotheses are going to be formulated, one for each part of the research question, whose validity is going to be discussed at the end of the analysis of the results.

Hypothesis 1: The situation of transport disadvantage in Brownsville is mostly due to the dimension of accessibility, more than competence and appropriation. Given the unsatisfactory subway facilities in the neighborhood, individuals must rely strongly on riding on the bus and on their own car to be mobile, which are means of transportation highly exposed to road traffic. This reduces considerably individuals' potential mobility, which in turn shapes decisions about work and leisure location.

The subway's poor service is a problem that touches all of Brownville's residents, regardless of their revenue, physical conditions and other factors. Due to this, individuals' mobility is highly dependent on bus service, car ownership and walking possibilities. For them, mobility is an unenjoyable experience, because they can't have access to efficient and rapid means of transportation that can facilitate access to work and education facilities, so expand their spatial and social capital.

Hypothesis 2: The situation of transport disadvantage in Brownsville has considerable influence on individuals' social exclusion, so on their own spatial and social capital. However, in a society that imposes a high degree of mobility, most of the individuals have been able to develop strategies that help them overcome problems related to transport disadvantage, so they have adopted particular mobility practices, so they master the dimensions of competence and appropriation. This explains why the dimensions of competence and appropriation are not the main features of transport disadvantage in Brownsville.

How identified in the literature review, mobility allows individuals to expand their own spatial and social capital. In addition, regardless of their place of residence, being mobile is a crucial component of society. Transport disadvantage is actually a driver of social exclusion, because our society has become *hypermobile*, as such it excludes those who have a weak degree of mobility, especially in cities in the global north (Lucas, 2012). In our society, where mobility has become crucial due to the dispersion of people and activities, possessing the capacity to be mobile is crucial to well-being (Terrier, 2010). Aware of the fact that individuals cannot give up on mobility, they are forced to invent strategies that could help them overcome barriers they encounter regarding access to mobility. As a result, the majority of those who are *transport poor* are successfully lead a lifestyle that requires being mobile, thanks to strategies such as: fare

evasion, financial support from charities, walk long distances. In order to answer this question. The dimension of appropriation is going to be employed to analyze the degree of social exclusion and the dimension of competence to discuss mobility practices.

3.3 Methodology

The nature of this research is qualitative, which, contrary to quantitative methods, it is a “*research strategy that usually emphasizes words rather than quantification in the collection and analysis of data*” (Bryman, 2012, p.380). Qualitative methods in transportation behavior research are a powerful tool to reveal the complex domain of travel behavior and are a great complement to quantitative methods in which they allow to uncover information that would otherwise be overlooked (Clifton & Handy, 2003). An example of advantages of qualitative methods is that they allow to gain a perspective of the research topic through the individuals’ own words, as the language used to portray reality can often be very enlightening to the understanding of a situation and it can also reveal the emotions a user experiences while conducting a particular action (Grosvenor, 2000). However, qualitative methods in transport disadvantage often require a significant time investment as they generally necessitate a large sample and mixed methodology and are unfit to generalize results beyond the field of study (Dodson et al., 2004). The use of qualitative data in transportation research to examine transport disadvantage and transport-related social exclusion is a standard methodology, especially in studies undertaken in Europe (Hernandez & Titheridge, 2016).

With this research, I aim to uncover personal information and detailed accounts of travel behavior, journey patterns and individual’s participation in society. This is why I believe that face to face in-depth discussions are the most adequate method for the scope of this research, as such type of information runs the risk of going unnoticed with other qualitative methods that involve group discussions and participants’ observation, therefore the methodology of choice for this thesis is semi-structured interviews. With this method, the interviewer lists its questions on an interview guide, in which there are questions about topics the interviewer wishes to cover, but he also has the freedom to ask other questions about different topics that might come to mind during the discussion, which lean towards specific arguments raised by the interviewee (Bryman, 2015). The drawback with this method, however, is that, during the drafting of the interview guide, the interviewer might run the risk of omitting topics relevant to the research and the order in which the questions are posed can lead to very different answers from diverse perspectives, what could later complicate the comparison of the interviews (Patton, 1990). For some interviews, I found myself in the situation described by Patton. My initial intention was posing questions in a pre-defined order, but during these interviews, it turned out to be quite challenging, as, for example, some answers included elements that could be the answer to other questions. Furthermore, a few times my conversations with the interviewees often ended up going off topic, as the subject of this thesis is closely linked to a myriad of other social issues the population of the neighborhood must endure, and I had great interest in hearing about these additional topics, but I also had to try to direct the conversation back towards what was relevant for this research.

I spent a total of five weeks in New York City, between January and February of 2018, and during my stay, I took frequent trips into Brownsville. As before my departure I did not know anyone living in the study area, recruiting people for interviews has proven to be a very challenging task, more difficult than expected. From Switzerland, in order to have interviews already set up before departure, I wrote numerous emails to community centers, knowing that such places are highly frequented by people satisfying my sample requirements and that they may provide a space for me to hold interviews, but I did not receive any reply. The only person who answered back was a member of the local Community Board responsible for everything related to transportation and mobility in the neighborhood, but eventually we had to speak over the phone later during my stay due to their inability to show up for the interview, and due to technical reasons, I was not able to record it. Without knowing anyone from the neighborhood, I initially adopted the strategy to stop people on the roads trying to get them to participate to the interviews, but it was only effective to carry out one walking interview. Finally, I settled with walking directly into community centers and introducing myself and my research to the concierges. This strategy proved to be successful, as the head of a local community center had been willing to help me out and provided me with an intimate space where I could speak comfortably to people, and he invited the crowds walking in to take part to my interviews. In the end, I spent three afternoons at the community center and was able to hold 13 interviews with local people, of whom the first was done with a group of 4 young people and another one was carried out as a walking interview. In addition, I was able to get in touch with two public informants: the local pastor and the Community Board member mentioned above. The reason for interviewing public informants was to solicit their broad knowledge of the neighborhood, its issues and the main characteristics of local transportation planning. I ultimately collected a total of 15 interviews. Due to logistical and time constraints, it has been agreed before departure that the size of the study would not need to be considerably large. This, however, did not turn out being a significant factor limiting the scope of my research, as I was able to get in touch with people from different backgrounds and, only after a few interviews, I could trace high commonality among the responses and noticed I was already reaching the point of “*theoretical saturation*”, the step of the empirical part where every new action of data collection and analysis do not reveal any new facts relevant to the research (Morse, 2004). The 12 interviews have been recorded with the interviewees’ consent, and they expressed the wish that information concerning their personas would not be disclosed. As the interview with the Community Board member and the walking interviews have not been recorded, only a summary of the main points is going to be presented.

The head of this community center strongly recommended rewarding the interviewees to encourage them to talk to me, and we agreed with giving out free roundtrip MetroCards, worth \$5.50, which is a gift the people would greatly appreciate, and I happily obliged to do so. Despite the small monetary value of the reward, this still raises the issue of the ethics of paying respondents for information, a practice that in the journalism world is commonly branded as

“checkbook journalism” (Rogers, 2017), which is a quite contested topic in the academic world. Some organizations, as the Society of Professional Journalists (SPJ), take a hard stance against paying sources for information, as this might threaten the credibility of the information and might as well undermine the researcher’s impartiality (Society of Professional Journalists [SPJ], 2014). Others believe that it is a handy way to increase the participation rate, it does not omit people who would otherwise not participate in the interview, it is representative of an ethically just research and, more broadly, it narrows that gap of power relations between the interviewee and the interviewer (Head, 2009).

Besides the interviews, during my stay in New York I tried to gather as much information as possible about how the population makes use and behaves on public transportation, so I spent a considerable amount time riding on the subway and on the buses, a task was facilitated due to having a monthly pass that allows customers to use the city’s entire network. This helped to immerse myself in the reality of a New Yorker’s commuter life and thus contextualize more precisely the answers I would get from the interviews. Wishing to find out more about Brownsville, I assisted to the monthly Community Board meeting at the town hall, where the local population gets the chance to express its concerns about their issues the neighborhood and to know about the latest ongoing projects. I once had the chance to participate to one of the monthly meetings of the Permanent Citizens Advisory Committee to the MTA (PCAC), a transit advocacy group representing every commuter in New York City, which was held at the MTA headquarters in Downtown Manhattan, wishing to find out more about user’s concerns about public transportation and to get to speak to officials from the board.

The requirements set in advance were that the people taking part to this study would live permanently in Brownsville, be active on the job market and be at least 18 years old. The sample consists of individuals with quite diverse backgrounds, ranging from employed to unemployed people. All information concerning the participants’ whereabouts are not going to be disclosed, as they expressed the wish to keep their anonymity.

Ultimately, the main characteristics of the people I interviewed are summarized in table 3. The group interview is marked as “GI” (Group Interview) with the letters A, B, C and D indicating the person, the 11 interviews with the local population and the walking interview are going to be marked with an “I” (Individual), and the two interviews with the public informants are going to be marked as “PI” (Public Informant).

	Sex	Location of employment	Has a weekly or monthly pass	Owns a car	Owns a bike	Has a physical disability
GI(A,B,C,D)	1W/3M	1x Queens, 3x Brownsville		1X		
I1	W	Brownsville		X		
I2	W	Manhattan	X		X	
I3	M	Unemployed	X		X	X
I4	W	Queens				
I5	M	Brownsville				
I6	W	Unemployed		X		
I7	W	Brooklyn				X
I8	W	Brooklyn				
I9	W	Brooklyn				
I10	M	Unemployed				
111	M	Different areas of NYC				
I12	W	Brooklyn				X
I13	M	Unemployed				
PI1	W	Brownsville		X		
PI2	M	Brownsville		X		

Table 3: Characteristics of the respondents

This empirical section had the aim to present the main challenges that New York City’s public transportation is currently facing, as well as the situation in Brownsville. The next chapter is going to group the data into pre-defined categories and a thorough discussion of each one will follow.

4. Results

The scope of this research is to investigate the factors that limit individuals' mobility and how these have repercussions on their degree of participation in society. As described in Chapter 2.3, numerous qualitative studies concerning transport-related social exclusion have already been carried out, all with different ways to organize the results. The information relevant to this thesis is going to be put in evidence through a deductive approach, in which the core topics the researcher wishes to discuss have already been pre-determined before kicking off with the analysis process, so only data corresponding to the pre-defined categories is coded. In this paper, the characteristics of transport disadvantage and transport-related social exclusion are going to be grouped under the seven dimensions which are part of Church et al. (2002) conceptual framework of transport-related social exclusion in developed countries, which, as a reminder, are: geographical, economic, from facilities, physical, fear-based, spatial and time-based exclusion. In addition, each dimension has been split into sub-categories, which better portray the topics that stand out from the interviews. These categories are not rigid, as there could be topics that are not unique to one category. To illustrate the seven dimensions in a more organized fashion, these have been split into two main groups:

- **Territorial factors:** geographical, facilities and time-based exclusion. This category englobes issues concerning the territorial characteristics from an economic and social point of view, as well as its connectivity to other territories.
- **Individual factors:** economic, physical and fear-based exclusion. This category considers qualities that are exclusive to the individual, regardless of the territory where he lives, but which shape how one copes with living in such territory.

A significant advantage of using this conceptual framework is that, besides describing elements of transport-related social exclusion, most of its components already give a hint about motility's dimensions of access and competence, and it adds important details about Brownsville's hosting potential on top of those mentioned in chapter 3.1.2 (which are going to be further discussed in chapter 5.1). For instance, the geographical and economic-based exclusion are inherent to the dimension of access, whereas the physical and time-based exclusion are inherent to the dimension of competence. In addition, the territorial factors of this conceptual framework bring forward elements about Brownsville's territorial hosting potential.

Ultimately, the following graph in figure 10 represents the final structure of the results, with the division of the main categories into sub-categories. The sub-categories have been formed in a way that they would bring forward elements that have been presented in the theoretical section and that would highlight the three dimensions of motility.

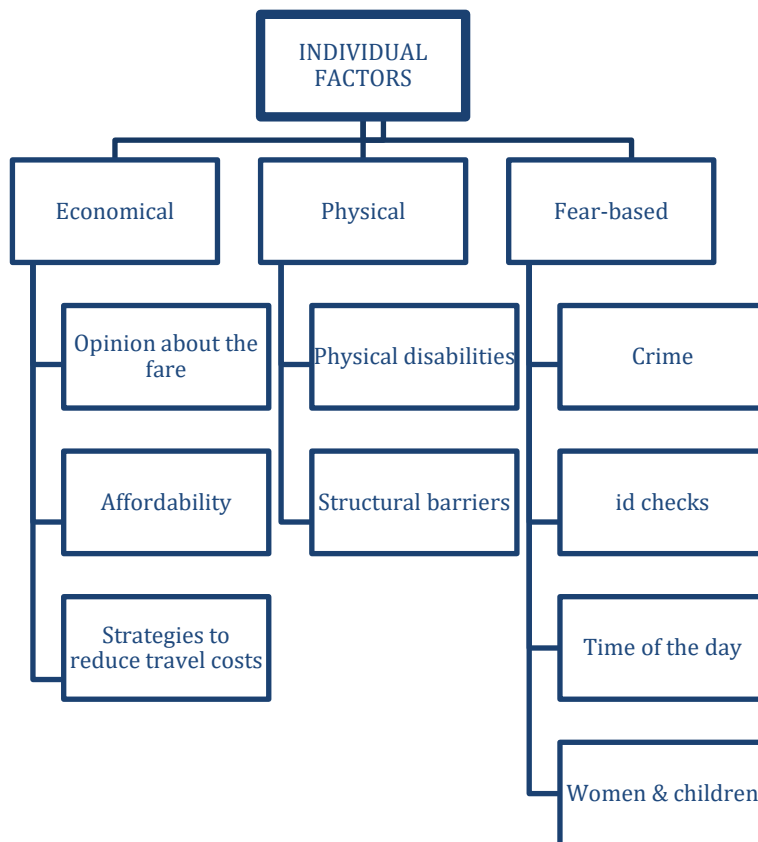
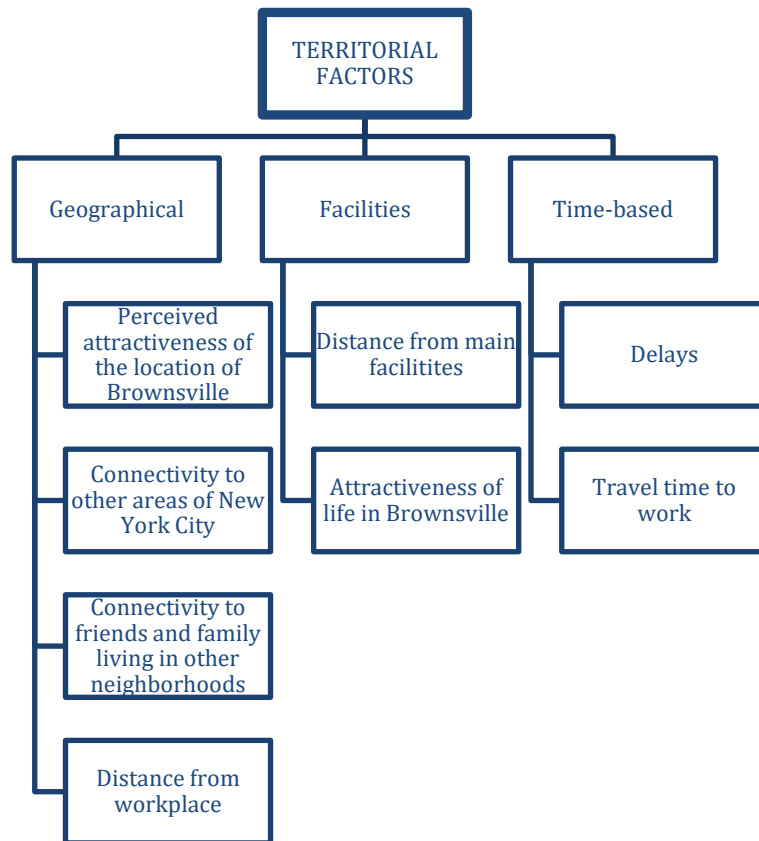


Figure 10: Hierarchy of the topics that are going to be discussed (personal creation)

Not all the dimensions cited initially are going to be employed for the analysis, as the one of spatial exclusion has been left out, since it is not a recurrent topic in the interviews.

4.1 Transport-related factors leading to social exclusion

4.1.1 *Geographical exclusion*

Brownsville is situated in the eastern half of Brooklyn, an area of New York City where there are overall less public transportation options than in other more affluent and more centrally located neighborhoods. In terms of geographical exclusion, it is going to be recounted how individuals perceive distances, judge accessibility to other areas of the City and how this shapes their lifestyle as well as their social relations.

Based on the location of Brownsville relative to Manhattan and its public transportation links, this neighborhood appears to be a quite unappealing place to live in and quite isolated. According to interviewee's accounts, this is partially true, especially for commuters. As far as transportation provision is concerned, individuals express somewhat positive reviews, praising the number of options they have at their disposal to access Manhattan, the primary job hub. However, despite the number of connections, P11 and the greatest majority of the respondents agree that the system lags in reliability and frequency, especially at weekends. GIB is critical about frequency, as he believes that "there are fewer trains out here than in other areas" and that "there could be something said about increasing accessibility for us". I2, who is employed in Manhattan, commutes by subway on the 3 train, and describes her commute as being "a bit of an adventure. Sometimes I get detoured [...] sometimes it is better taking a street route". I3, who is currently unemployed but used to work in Manhattan, spends between 45 minutes and one hour commuting and noted that "there are more breakdowns compared to years ago, trains run later". I10, who is "not so unhappy" with public transportation provision in the neighborhood, is critical about traveling into Manhattan at weekends, when "there is so much construction and things that happen on the weekends, it makes it so difficult to travel". I11, by contrast, believes that "it is never an inconvenience getting onto Manhattan". He later brings up a pressing issue related to Brownsville's location: "the problem here is that when you want to try to get to Queens, Staten Island, those is where the problem lies, there is where they wouldn't make new lines, those is where ideas could be put together to further expand the infrastructure". New York City's subway system is radially shaped, in which all the lines point towards Manhattan. This renders travel in-between other boroughs like from Brownsville to Queens more complex and time-consuming due to lack of non-stop subway connections and such structure falls short of commuters' needs to work in neighborhoods outside of Manhattan. Such a subway network potentially places people of Brownsville out of reach of numerous jobs and main facilities and forces them to depend on the notably unreliable bus service. Connectivity between boroughs, especially between Brooklyn and Queens, is becoming increasingly important, as New York City's population and the employment opportunities are growing faster in neighborhoods other than Manhattan and the volume of travelers between boroughs exceeded that between the boroughs and Manhattan (RPA, 2015). I4, who works near LaGuardia airport in northern Queens, is particularly touched by such

lack of connectivity, as she has no choice but to “go all the way to western Brooklyn and back, because all the other options would be going into Manhattan and going back into Queens, and that makes no sense”. Part of her commute involves riding on the G line, which is the only one running between boroughs other than Manhattan, connecting the western areas of Brooklyn and Queens, and ranks low compared to other subway lines in terms of frequency at peak times, according to a report drafted by the MTA itself (MTA, 2013). Due to the reasons stated above, GIA believes that Brownsville has been neglected by transportation planners and city authorities, as “certain neighborhoods have certain demands that are met first such as the extension of the 2nd Av Subway⁹. Instead of having extended the 2nd Av Subway, they should use this capital to putting back into the core infrastructure”. GIA feels that the reasons for being left behind by authorities is the demographic composition of Brownsville, in which “in New York and in America generally, neighborhoods with black population are forgotten by authorities”, an opinion shared by PI2, who argues that, compared to wealthier neighborhoods, “we, as a predominantly African-American neighborhood with a high percentage of immigrants, feel like second-class sometimes”.

Despite these barriers to accessibility to other areas of the City, the greatest majority of the respondents often leave nevertheless the neighborhood for reasons related to work and private life, for example, to visit friends and relatives, as it is often the case that family members reside in a different neighborhood. For example, I1 is “always outside of the neighborhood. I have friends here, but it is very rare for me to stay in the neighborhood”. I10 has family living in Manhattan who goes visiting every couple of weeks, but claims that, if it were not for the frequent service disruptions, she would visit “more often. The reason why I go every two weeks is that there is so much construction”. She expresses the wish to move to a neighborhood with better accessibility, but “we just can’t afford to do that”. I11 has family in the Bronx, but does not visit them often, “due to them being that far”, and admits that, if there were more comfortable transportation options, he would visit them more often, as “when you have to go to the Bronx and that might take 2h and I might have to transfer for the train or bus once I get there”. In order not to deal with the hurdles of riding on public transportation, I4 sometimes gives up on taking trips, “even if I had to visit family and friends”. The other option for traveling outside of the neighborhood, the bus, is not always a valid alternative, as those that run through Brownsville are often delayed, an issue that is going to be discussed more in detail in Chapter 4.1.3. GIA, however, argues that “buses are actually much better than what people think, but [...] there is this myth about the bus being inefficient [...] it is also seen as if you are more of lower class if you take the bus, the train doesn’t necessarily have that same type of reputation”. None of the respondents claimed to avoid riding on the bus due to being stigmatized as something aimed at the lower

⁹ Phase 1 of the **2nd Avenue Subway** runs under the Upper East Side in Manhattan and it is the last subway line to have opened, in January 2017, costing \$4,5 billion. The MTA is currently advancing the design of Phase 2 of this line, which will extend it to the north into East Harlem, but its extension to the south to lower Manhattan has been postponed indefinitely due to financial constraints (English, 2018).

classes, but in the whole City, people believe that due to such reputation, buses have been deprived of much-needed investment in their infrastructure.

4.1.2 Exclusion from facilities

Closely related to issues of geographical exclusion are those of exclusion from facilities. The respondents claim that life in Brownsville is, all in all, an attractive place to live due to the variety of facilities situated there, in spite of the somewhat limited connectivity to other neighborhoods as discussed in Chapter 4.1.1. As in the words of P12: “The majority of Brownsville may be centered, so they try to receive all of their services here. They also have jobs, but where they work is highly dependent on transportation provision”. Always according to him, as far as educational facilities are concerned, “School are usually very close by, for elementary and middle school, but for high school they usually go out of the neighborhood”. Healthy food options, however, are not always readily available. I3, who is diabetic and thus has special dietary needs, claims that “I do travel too further distances to buy fresh food [...] You can find it here but it’s not readily available, they don’t have many foods here in Brownsville”. Even without suffering from a health conditions, individuals express their wish for having more opportunities to buy healthy foods, such as I10, who has a family: “We can use some whole foods, but other than that, I’m comfortable with all you can find around here” and I9: “Sometimes you need to leave to get a better quality of whatever you’re looking for, especially for healthy food”, and declares that she does not mind going to other neighborhoods to do so. Regarding health facilities, I1 claims that “The hospital doesn’t have the better care, so in my mind, if I want good quality care, I’ll go outside the neighborhood”. In addition, I6 affirms that “Mostly we have lots of stores here” and, more generally, I4 believes that nothing is missing for her: “I would say I have almost everything in my neighborhood”.

According to these accounts, residents of Brownsville enjoy having a wide range of facilities in their neighborhood and are not necessarily forced to head to other areas to be provided with services. The most significant missing element cited by the respondents are healthy food shops. This is in line with the conclusions of numerous reports that investigate the issue of “food deserts¹⁰” at nation-wide and city-wide scale, which highlight the fact that low-income neighborhoods are much more likely to be deprived of healthy food options than higher-income ones, and that poor residents are likely to travel much longer distances than their better-off counterparts to reach grocery stores (Bellafante, 2016). Healthy people have found ways to bypass this obstacle, by taking trips to other neighborhoods, whereas people who are physically

¹⁰ **Food desert:** an informal nickname used to designate areas in which there are no grocery shops selling healthy food, and are usually located in impoverished areas (Ver Ploeg, 2010).

handicapped and who have particular dietary needs might find it difficult going grocery shopping in other neighborhoods and this could have a negative impact on their health.

4.1.3 Time-based exclusion

As seen in Chapter 3.1.1, one of the most significant issues plaguing New York City's public transportation system are frequent service delays, due to insufficient maintenance of the system, overcrowding and mismanagement from the management board, and furthermore, outer and lower-income neighborhoods like Brownsville are those at a higher risk of being wedged by these problems. The majority of the interviewed individuals confirmed these facts, as they must often deal with the subways and the buses running well behind schedule. Given Brownsville residents' high dependence on public transportation and that the biggest chunk of the jobs is located in Manhattan, the delays are something that these individuals have had to deal with for a great part of their lives as commuters. I4 sums up the issue related to travel time: "there are days where things run smoothly, but the majority of times it is not, you either have something wrong with the lines, nothing's working, the trains are being delayed, there is a sick passenger so more delays, or trains are so backed up that you have to wait over half an hour". Statistical evidence and interviewees' accounts attest that buses, more than subways, are particularly susceptible to running late, and interviewees expressed their frustration, such as: "it's the worst! The 40 and the 60, the ones that we have most access to, are the worst service" (I1), "I don't like the buses running here, they take forever. This is New York, I wouldn't expect the buses to take no more than 4-5 minutes, but sometimes I stand there waiting 20 minutes" (I10), and "not that happy [with bus service]. There are very few buses in Brooklyn that run on a regular basis and on time." (I3). In spite of individuals' accounts and statistical evidence, not everyone expresses a very negative judgment of bus service and it is generally seen as a reliable means that gets people to their destination smoothly. I2, for instance, believes that "the bus service is fine, it usually runs on schedule". I6 complains that "once in a while they are delayed a little, but it's ok, it depends on the time you go out", and I8 attests that "I'm happy [with the bus]. I can leave at a decent time. Not many issues with safety and overcrowding and delays are infrequent". Those who express a negative opinion about buses tend to be employed and working out of Brownsville, which means they must ride on public transportation at peak times, whereas others who have a more favorable opinion ride on buses not as often and mostly at off-peak hours. Besides checking in late a work, the delays have an impact on other aspects of daily life, such as for I10: "we constantly have to reschedule appointments, or tell my family that I'll see them on another day, because the trains have been so delayed that I end up coming late, so I just say forget it, another time". In order to avoid lengthy travels by bus, GID uses the car as a "convenience factor" or Uber.

When asked about how the delays have impacted their daily lives, a significant majority of the respondents mentioned that, as a result, they often get late at work: "At least once a week I was guaranteed a delay at work" (I1), "I had a recent experience where it took me 2 hours only to get

by 5 stops on my way to work. So I had to call out from work [...] This should have never happened” (I4). As a consequence of arriving behind schedule at their workplace, some individuals had their superiors giving warnings that raise anxiety as far as job security is concerned: “If this happens often, your boss will tell you to try to avoid that, it’s quite disheartening when he tells you such a thing, you’re afraid to lose your job” (I2), “He tells me I should have left earlier [...] But I fear that if I get in late I will get fired” (I12). However, as I4 points out, public transportation delays have become such a recurrent event in the average New Yorker’s commute that people at work sometimes close an eye on it: “They understand [...] that the MTA can mess up”, while, nevertheless, adding that it is still an inconvenience: “But it should not become a recurrent excuse the subway delays”. Brownsville is among New York City’s neighborhoods with the highest unemployment rate, this is why job security is a big issue among the population, and any event that reduces their productivity and reliability at work might easily disqualify individuals from their positions.

As individuals who are significantly exposed to public transportation unreliability, people from Brownville have had to adopt coping strategies in order to reach their destination in a timely fashion. The majority of them involves leaving earlier to increase chances to get to work on time, such as: “I tend to get up earlier, because I know that the two trains I take are frequently delayed” (GIC), “You would have to leave extra early so you don’t [get late at work]” (I2), and “When I go to work, and don’t leave by 7, I know I’ll be delayed. I calculate 1 hour, even if there aren’t any delays, I’m 5 minutes late”. But leaving early has its drawbacks, in which individuals must make a trade-off between commuting and reserving time to family matters, as mentioned by GID: “If we have to leave 3h early... Can you imagine if you have family you have to provide for, a kid you have to give to daycare...”.

The MTA provides detailed information about expected service delays and planned construction that could lead to delays and trains being rerouted on its website and, recently, at subway stations across New York City, screens that show current delays are being installed. However, the delays are overly frequent and the public transportation system is complex, so for riders it takes a great set of skills and experience with the system to avoid such hindrances to travel and to make their best to be on time, given the system’s operational situation and service availability at a specific time. As they assume that there is a high chance that subway and buses are going to run late, they resort to leaving earlier for work, thus reserving less time to leisurely activities and family tasks. The other option could be moving to neighborhoods closer to job centers, but due to financial constraints, this is not always a viable option for individuals living in low-income neighborhoods.

4.1.4 Economic exclusion

The findings strongly point towards issues of financial affordability. The majority of the respondents and the two public informants overwhelmingly agree that the price of a single ride

on public transportation (\$2.75) is inadequately high relative to the quality of service provided and the average income of the residents of Brownsville.

When questioned about their opinion on the MetroCard single ride fare, most of the interviewees answered with strong statements such as "it's extremely high, way too high" (I1), "so how do you ask for all this money, and you give people garbage service?" (I9), and "I don't like it, I feel like you pay too much and we get too little for it" (I10)". They also expressed concerns about the constant increase of the single ride price, which does not go hand in hand with an improvement of services: "They have us paying \$2.75 for one swipe and I think they already ended the process to take it up to \$3, which is ridiculous, they shouldn't be bringing up the prices and not doing much better with the subways" (I4). (In reality, in 2017 the MTA did plan to increase the price to \$3, but it ultimately opted for keeping the fare at the current price and, instead, increase the weekly and monthly passes fares. It is the single ride with the one-time purchase that costs \$3). Other individuals do not express the same degree of disappointment with the MetroCard fare, but they wish for a greater number of travel options with one fare. "It's sucking that you get no free transfer" (GIC), and "It all depends on what one expects [...] I would like to see the same capabilities as the unlimited MetroCard, which means that if I pay \$2.75 to go there, I should be able to transfer on at least a train, a bus [...], because there is no unlimited transfer" (I11). What the respondents say about transfers is mostly correct, but there is the need for additional clarification. With pay-per-ride MetroCards, free transfers between subway lines are always possible as long as riders never leave the subway station, and subway to local bus, local bus to subway and local bus to local bus transfers are allowed within two hours since paying the fare. With the unlimited ride MetroCard, transfers are always free of charge. Given individuals' inability to afford an unlimited ride MetroCard and the constant delays of the transportation system, the two-hour window constitutes an important barrier to people's ability to move on long distances, but the riders as well generally lack knowledge of the functioning of modal shifts, despite being clearly explained on the MTA website. There is also the issue of how many places one can access with paying for one single ride: "We all pay the same amount for access to the MTA system, but in certain communities you have less accessibility [...] I think there is something about democratizing the access to mass transport" (GIB). With the system only providing reduced-fare travel passes to individuals above 65 years old or having a qualifying disability, the issue of transit affordability is potentially impacting a high number of riders, students and those active in the job market. Ride-hailing services are also reported to be financially out-of-reach, as these services are costly. I4, for instance, cites that "for cost reasons, I try to limit their use as much as possible, only when it is really necessary", and adds that "if I could I'd ride on Uber all the time to avoid taking the subway and the bus".

Issues of fare affordability lead to unwanted situations and force individuals to adopt strategies to afford paying for riding on public transportation. It is often the case where they must make

tradeoffs for purchasing a MetroCard. As seen in Chapter 3.1.2, travel expenditures make up a significant chunk of total household expenditures, and the lack of a reduced-fare MetroCard available to those having low incomes leads to critical situations. Furthermore, In New York City, riders residing in predominantly low-income neighborhoods are highly transit-dependent, so they must adopt an inelastic behavior¹¹ as regards the price of a ticket, according to which they are willing to pay the fare no matter how much it costs, as there are not always valid alternatives to the subway and bus, just as I2 explains: “it’s difficult because you have many expenses but for transportation you have to put aside money, because you must be able to get to work, to school, whatever you have to do so that’s something that is a necessity, you can’t cut corners with that, you have to find the money to travel”. Due to this inability to avoid paying for a MetroCard, individuals are, instead, forced to adopt compensating behaviors that make up for the money spent for taking public transportation. “I feel like our community has gotten past the moment where it is really challenging, where people don’t eat in order to be able to get to work that day” (GID), “\$2.75 for someone to get on the train, especially in a community like this? People can’t get \$2.75 even to get a meal” (I1), “Sometimes I give up on food” (I6). Individuals expressed that this situation is particularly concerning when someone has difficulties with paying for their commute or when one is unemployed and is actively looking for a job in places where it is required to ride on public transportation to reach them: “[The price of a single ride] might discourage me from seeking out opportunities that are in other places” (GIA) and “do I spend that \$1.21 or do I not look for a job, just sit?” (GID). However, some of them noted that, if one has to travel to seek for job opportunities, then it is money well spent: “sometimes I give up on food, but if you have to go somewhere to look for a job than it is worth paying for the MetroCard” (I6) and “I know a lot of people that came to me and saying that they don’t have the money because they have to buy food and I need to get to this interview because I need a job” (I1). In order to save on travel expenses, one respondent who recently moved back to New York City after living for a few years somewhere else has decided to move closer to its workplace in order to be able to reach it by bike: “if I had the possibility to have a bike and ride it from there, I would have saved money over buying a MetroCard” (GID), as he “got fed up relying on the subway system”.

4.1.5 Physical exclusion

As described in Chapter 3.1.2, all of the subway stations in Brownsville are elevated rather than underground like in the majority of cases in New York City, and none of the subway stations in the neighborhood are paratransit-friendly. These characteristics may refrain potential users from riding on public transportation, especially those who suffer from a physical and mental constraint, so must rely on less convenient transportation options. P11 also expresses concerns about subway

¹¹ **Inelastic behavior:** an expression found in economics which refers to a situation where the change in price of a good does not modify the demand for such good, as opposed to elastic behavior, where prices strongly determine consumers’ behavior (Mankiw, 2018).

stations accessibility and has listed the construction of more elevators as her number one priority, and PI2 named accessibility by wheelchair as one of the main improvements they wishes the MTA would address.

Among the interviewed people, three confirmed to suffer from a physical disability (I3, I7 and I12), which somewhat negatively impact their ability to access the subway stations and getting on the buses. I3, who is diabetic and suffers from poor blood circulation, encounters difficulties with walking down the stairs, which in his own words is “terrible” (I3), especially in the winter season, where the low temperatures “got my knees aching” (I3). I7 has partial sight impairment, to the point where she could barely see me while we were talking face to face. She is generally happy with the condition of subway stations, but the one problem she faces is that “I can’t see the machine when I get the MetroCard, because I am visually impaired” (I7). When asked in addition if she is able to read a timetable and a network map, she answered that “I can’t see anything, ok?” (I7). A way for visually impaired individuals to limit the use of a vending machine could be by purchasing a weekly or a monthly pass. It is also possible to completely avoid using the vending machine by applying for an “EasyPay MetroCard”, where each ride is automatically charged on the credit card. Having the money at disposal to buy a weekly or a monthly pass and having a credit card, however, is not always an option for individuals in a tight financial situation. In order to still be able to move around, I7 makes use of “Access-A-Ride”, a paratransit service administered by the City which, for the same price as regular public transportation, provides transportation by private vehicles to people suffering from an eligible physical disability that might prevent them from accessing subway stations and buses. The drawback of using this service is that each trip must be planned well in advance and the drivers have the right to arrive up to 30 minutes late from the scheduled pick-up time, thus giving travelers less flexibility and freedom to move around. To circumnavigate these restrictions, I7 sometimes resorts to using public transportation. When having to access a subway station, she does not encounter any particular problems, besides expressing the wish to allow visually impaired people to “use the gate and not the turnstile” to enter the platform, as “there are always people helping me” and that “I’m a determined woman. If I had to travel by myself, I travel by myself, I’m not afraid. I leave everything in God’s hands” (I7). I12 is cross-eyed, what, similarly to I7, sometimes makes it difficult for her to “evaluating distances and reading stuff that is far away” (I12). To check arrivals times of the subway and buses, she uses a transit app on her smartphone, to avoid looking at a timetable at stations.

Once on public transportation, however, I7 expresses disappointment with people’s behavior and the lack of help she should be entitled to get. She claims that “people don’t respect you. If you don’t have a seat you have to stand up”. Another problem with using public transportation for short-sighted individuals is reaching the transportation facility, as in I7’s case, “I do ride it [the bus] [...], but you’ve got to walk to the bus stop and that’s problematic”. I11, who has a family

and often walks with baby strollers and must carry items, mentions comfort on public transportation, arguing that “On the train you’ve got a baby stroller, some grocery and shopping bags that you can easily carry, but on the bus, forget it. It’s small, more compact, needs space [...] I know a lot of people with kids who would rather take the train than a bus. You might miss an appointment only by taking the time to fold it, but on the train, we get right on it”. When asked about accessing a subway station while carrying items and a baby stroller, he recommends to “fold up the stroller, grab all your bags and hopefully you can get a secure grip with your kid and go up the stairs. Usually, you have some good Samaritans that help you”. Access to public transportation for people in I10’s situation is like a double-edged sword: they might be discouraged from taking the subway due to the difficulty to get into subway stations, so they have no choice but opting for the bus, what in return it could make for an uncomfortable ride depending on how crowded it is.

Among the interviewees, there are also individuals not suffering from a physical disability who complain about the physical characteristics of transportation facilities that make them unpleasant places. GIB is unhappy with how subway stations in Brownsville are run down compared to other neighborhoods: “The subway stations here are really badly maintained, while if you go to other neighborhoods where there are a lot of white people, subway stations are pristine”. I8, who does not report having a particular difficulty with walking, must nevertheless, must “take my time to walk” in order to climb up the ramp of stairs leading to subway stations.

None of the individuals in the sample move around by wheelchair. Given the structural characteristics of subway stations, however, it is assumed that for them, taking the subway alone would be virtually impossible. Besides the lack of elevators, there is no automatic gate like in other stations, a system named AutoGate, that would allow automatic access to subway stations by going through the gate instead of the turnstile. Every station is equipped with gates, but if not with automatic opening, the staff must manually activate them. For these reasons, such an individual living in Brownsville has no option other than using a bus equipped with a wheelchair lift, Access-A-Ride or, if one can afford it, calling a cab.

4.1.6 Fear-based exclusion

Although Brownsville has experienced a remarkable reduction in its crime rate in the last decade and quality of life as improved slightly, it remains among the neighborhoods with the worst safety records in New York City. Security at transportation facilities and in open spaces is still a cause for concern for most of the respondents and, in exceptional cases, the activity of law enforcement is as well somewhat worrisome.

Overall, individuals feel moderately safe at transportation facilities, besides minor inconveniences, but there is a great room for improvement. I2 rates safety conditions at subway stations as “moderate”, as “there is no requirement to check for weapons and so on, so people can

come on the train and do whatever they want. Here people have been attacked on the trains”. I4 has not had any negative experience at subway stations and feels “relatively safe”, but, like I2, wishes for increased monitoring, she believes that “they could add more cameras, make it a bit more safer”. I3 feels “pretty safe”, adding that “at night is when you have to be careful though”. I10 equally “would appreciate more cameras around, especially at night”, and due to this, she claims to “feels safer riding the bus than the subway, buses have cameras in them”. I4 gives positives remarks to ride-hailing services, because they provide a “great way to get around quickly and safely at any time of the day”.

All the women resoundingly agree that they need to take extra precaution when frequenting transportation facilities, as, according to I8, “a lot of things have happened, especially to older women, they are taken advantage of”, and because there are “men filling up on you and getting close and trying to do their business” (I9), so, in I10’s words, women should “always have to look on my shoulder”, and “be more vigilant, more self-aware and be aware of your surroundings, you don’t know how people are going to react” (I4).

The most significant concern shared by almost the entirety of the respondents is for children riding alone on public transportation. Children have not been chosen to be the subject of this study, but I nevertheless felt the need to inquire about their safety, as the majority of the respondents have children and wanted to know about which strategies enact the parents to ensure their safety. I2, who has a daughter, does not allow her to take the subway at nighttime, and “has a family member who does Uber so we just let that person come and get her” or in alternative, she would call a cab for her, as she feels “uncomfortable with her traveling at that time in the subway. She’s a teenage girl and this is not the safest area, so you have to be very cautious”. I2, who has a daughter, always tries to keep track of her while she is riding on public transportation, where “she has to call me when she gets to the train station, she’s taking the bus, she still has to text me and let me know when the bus comes”. I4 is also “concerned for the children on the subway”, and “up until 8th grade I never traveled by myself, because I always had my other sisters with me” and when she sees children who are alone, she “don’t trust it, because I don’t know who’s watching, I don’t know who’s out there that may harm these kids”. I12, who does not have children, is nonetheless very anxious about them traveling alone, as “they don’t need to be killed, we are losing children already, they didn’t do anything”. I10 also mentions that, concerning its children, praises Uber for its safety, as it “provides a safe way to move around, when my children will be moving around by themselves I will tell them to take Uber, I’d feel more comfortable”.

Two respondents who were born outside of the United States expressed their fears about the possibility of being questioned by law enforcement about their immigration status while riding on public transportation. I obtained this delicate information by asking them if, after finding out that they were born abroad, if they ever had anyone asking them for proof of citizenship, but I felt it would be inappropriate asking them directly what their current immigration status is. I5, who

was born in Trinidad and Tobago and who admitted to having become a US citizen, is well aware that there have been cases where individuals who do not look from like from the United States were asked to reveal their identities while there were in the subway, and admitted that “If I were not [US citizen], then I would be very afraid to take public transportation. I pray to God that no one gets caught and deported”. I6, who was born in Nigeria and whose current citizenship status has not been disclosed, states that “it terrifies me”. But, due to her looks, she considers herself “very lucky, as I look African-American, they can’t tell I’m Nigerian, only my accent would reveal that”, and to hide her identity, “All I do is not talking”. In New York City, as it is a so-called “Sanctuary City¹²” the local police are not allowed to inquire about an individual’s immigration status as long as he has not committed an act that would warrant its arrest, and if it is somebody from the Immigration and Customs Enforcement (ICE) who is enquiring about such information, the individual has the right to remain silent and has no obligation to show evidence about its citizenship (New York Civil Rights Union, 2018). As in the United States it is not standard practice collecting data about the population’s citizenship status, it is not possible to know how many in Brownsville are not US citizens and thus knowing how much such a fear to ride on public transportation could concern the residents. According to statistics, however, that almost two-thirds of its population is foreign-born, so it can be assumed that such worry is shared among a considerable portion of the population.

As far as safety in the streets is concerned, individuals mostly feel comfortable, depending on the time of the day and the area, but as I13 says, it is always recommended paying attention. I11 claims that “I do feel safe walking here, but I know it is not totally safe”, referencing to Brownsville’s reputation, “being more rough, due to the resources and the community in here [...] It’s due to gang violence and police brutality”. GIA also shares concerns with police activity, saying that “I feel safer with folks that look like you [Caucasian] than with the cops! [...] Cops don’t like black people everywhere, we’re always a target everywhere we go, also on the subway”. Many people mentioned they pay extra attention when walking at night. I12 feels particularly uncomfortable about walking in the dark hours, especially “around the public housings, because there are things happening, like a shooting, that’s why I hurry up and rush home”. P11 also mentions the safety of walking near public housings, as “people have challenges walking to other houses and developments when they don’t live in a particular development, they try to stay in their section, they don’t cross over to other developments”. I6, who is also worried about walking at nighttime, says that “I like to go with others, I would never walk alone, I would wait for people who walk in the same direction with me”. I4 is also worrisome about standing in proximity of the projects, as “if they don’t know who you are they’re very suspicious”. I3 revealed that “I wouldn’t

¹² **Sanctuary City**: an informal expression to designate municipalities where its local law enforcement does not share information about the immigration status of its citizens with Federal authorities, as a way to protect its illegal immigrant population from the risk of being deported.

recommend you walking at night, there's lots of sketchy stuff going on at those hours". P11 lists her wish to increase lighting on the roads to make walking conditions safer at night as one of her top priorities.

A few of the respondents indicated areas of Brownsville, marked in red on the map (figure 11), in which they would try to stir away from or where they would not walk through if unaccompanied. For example, I1 admits not feeling comfortable about walking along Livonia Ave and Rockaway Ave and, at night, she avoids Pitkin Ave and Belmont Ave. I4 also stays away the business area and, generally, "underneath the train stations", as well as the affordable housing developments. I2 does not feel comfortable walking in the area around Broadway Junction, as it is "kind of rough over there". The areas that have been mentioned mostly correspond to the main business corridors (Rockaway Ave and Pitkin Ave), those around subway facilities and where the projects are concentrated, so locations that are much frequented during the day. For those who have to be out in those places a nighttime, for instance, people who work night shifts or until late in the evening, their journey to work could have an added discomfort and lower their well-being, and may push them to look for jobs with more suitable schedules.

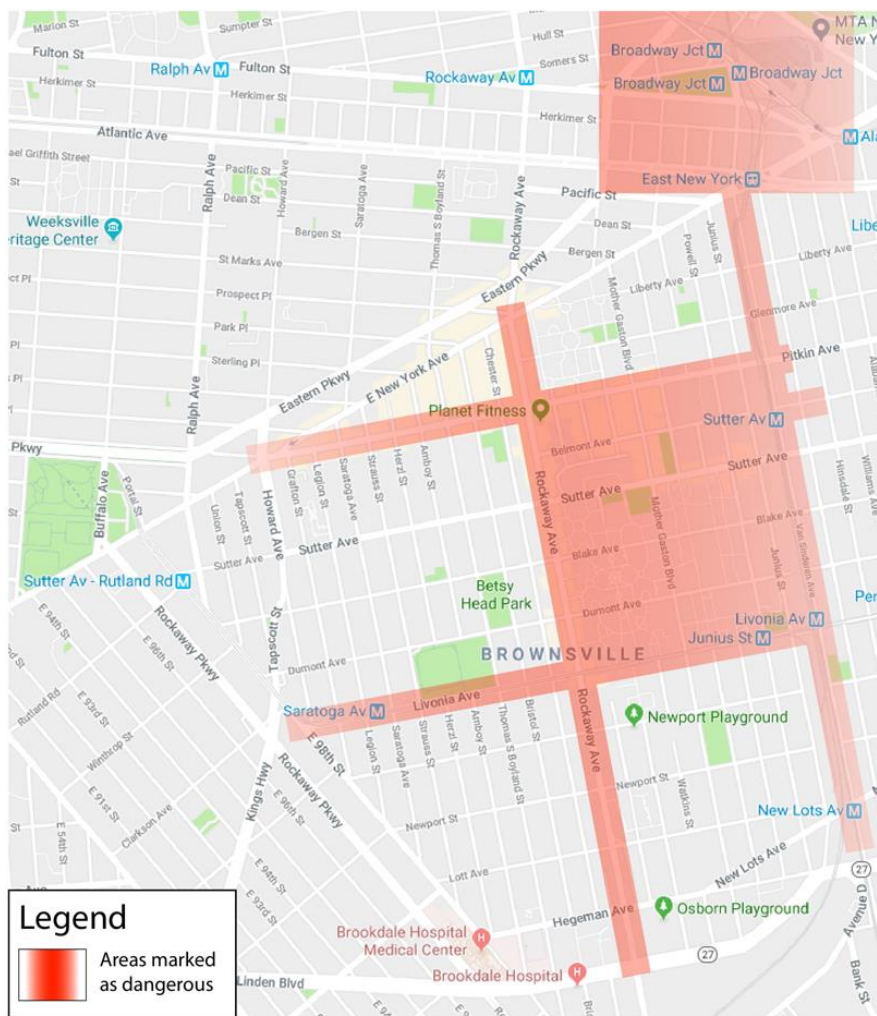


Figure 11: Areas marked as dangerous by the respondents (personal creation)

People mentioned concerns about their children going about the streets alone, such as I11, who “would not like them walking alone, not even when they will go to college!”, and I10, who is married to I11, does not feel comfortable about walking in the neighborhood, as “a lot of things happen, there is a lot of crime, I don’t feel comfortable and nor do I like my children walking alone [...], especially at night, we don’t go out at night”.

This chapter was consecrated to the discussion of the pre-established situations that could potentially lead to transport-related social exclusion. The next chapter is going to analyze what has been presented until now and compared with the literature review and the concept of motility.

5. Analysis

The previous chapter discussed factors that, according to the chosen framework of analysis, could obstruct access to the transportation system and, as a result, potentially decrease individuals' participation in society. Among them, issues involving financial affordability, time constraints and safety are seen to be most recurrent ones. The next part of the analysis is going to be consecrated to relating the previously discussed content with the concept of motility, and to finally find out how it constitutes a factor of social differentiation. This will allow giving a more well-rounded perspective of the situation of transport disadvantage and its subsequent social exclusionary processes in Brownsville.

The previous chapter already gives a reasonably detailed account of motility's dimensions of access and competence. In this chapter, the discussion of individuals' transport-related social exclusion and their individual motility is going to be completed with the presentation of Brownsville's territorial hosting potential and, finally, the individual appropriation of mobility options.

5.1 Brownsville's hosting potential

Discussing Brownsville's attractiveness as a place to live in is necessary to evaluate how the facilities situated here are able to satisfy individuals' needs, how they allow realizing their aspirations and how residents are dependent on service provision from other neighborhoods, which means relying on public transportation to reach such places. The resulting relationship between a location's receptiveness, the mobility options available and individuals' ability to be mobile uncovers aspects of individuals' spatial and social mobility, which in turn give away information about individuals' motility and how this plays a role in creating the situation of transport disadvantage in the neighborhood. As a reminder, Kaufmann (2004) lists the following elements constituting a territory's hosting potential: quality of the transportation network, territorial configuration, employment market and institutional governance.

As already noted in previous chapters, Brownsville is located in an area of New York City's urban area which is quite devoid of subway service, but this neighborhood in particular benefits from an overall satisfactory provision. However, its location at the eastern edge of New York City renders commuting to main job centers, to other boroughs and to more outer areas like Long Island lengthy and time-consuming. Besides for Manhattan, the subway network does not connect well Brownsville to other neighborhoods, due to its radial shape pointing towards Manhattan and, as a result, there is no straight connection to other boroughs and this makes for lengthy commutes. When considering the frequent delays, the somewhat lack of frequency at certain times of the day and no other less costly possibilities that would allow moving around other than purchasing a

MetroCard, Brownsville appears to be more isolated than expected. The bus is not a valid alternative, despite connecting directly the neighborhood to other areas in the city, as it is slow and suffers from a quite negative reputation, and ride-hailing services are relatively expensive.

Brownsville's urban layout considerably downgrades the quality of life and walking conditions. Previous research and interviewees' accounts show that large blocks of affordable housing instill a sense of insecurity and worsen aesthetics, elevated subway tracks downgrade urban quality and function as mental barriers and contribute to increasing feelings of insecurity. The subway stations are reported to be in quite dire conditions and none of them are handicap-friendly. For instance, I4 believes that "they could have done so much better with subway stations [...] especially underneath it, especially at night when there are no lights underneath, so it is not as safe as people want it to be". In spite of falling short of infrastructural functionality and aesthetics, Brownsville scores quite well with service provision, as residents praise this neighborhood for finding a wide range of resources. There is a vibrant business area with all different kinds of services, shops and eateries. In PI2's words: "I think Brownsvillians love Brownsville, they're very passionate". An area in which Brownsville severely lacks is with the provision of grocery stores selling healthy food, reason why life in this neighborhood could be quite uninviting for those having special dietary needs and suffering from specific health conditions.

As far as the job market is concerned, the situation is quite grim. The unemployment rate is among the highest city-wide, and several interviewees reported having to leave the neighborhood to seek employment opportunities. However, there are numerous community centers offering continuing education services and specialized skills classes that could potentially help individuals grow professionally and become more competitive in the job market. This lack of jobs is partially compensated by suitable connections to Manhattan, the city's main jobs hub, which allow residents to gain access to numerous employment opportunities. Brownsville benefits from a reasonable provision of schools, which however do not show up among Brooklyn's top-ranked schools, what might lead individuals to send gifted children to other higher-ranking school districts to seek better education opportunities and increase chances to be admitted at more prestigious higher education institutions across the country.

Brownsville still offers quite affordable living conditions relative to the rest of the city, but it has not been immune of the wave of gentrification that has invaded numerous neighborhoods in Brooklyn, as between 1990 and 2014, the average rent had its price increased by 20.5% (Furman Center, 2015). More recently, a plan drafted in 2017 by Governor Cuomo, named "Vital Brooklyn Initiative", which aims at bringing various resources to low-income areas in eastern Brooklyn, has further steered fears of gentrification coming to the neighborhood. According to PI2, residents are "very concerned because many neighborhoods are changing, so if you go to Bedford-Stuyvesant, a lot of neighborhoods have changed, due to gentrification, so people don't want that to happen here". Due to the great number of households being rent-burdened, seeking a place to

live in another borough is not a viable option for most of the residents, a reason why there is no option but to exercise compensation behaviors such as, among many, save money on transportation costs. What in part curbs living expenses is that there is a high concentration of affordable housing and there is a plan to add additional units over the upcoming years (Sandler & Tiarachristie, 2017).

5.2 Individuals' appropriation of mobility options: how they cope with what is available to them

The previous chapters discussed elements within public transportation that limit its accessibility, which included the competencies that have had to be developed in order to make use of transport options. This part is consecrated to the analysis of the third facet of motility, cognitive appropriation, which is the most complex to grasp, as it is less tangible than the components of access and competence. That is, how individuals act upon perceived accessibility and how they apply the skills that are necessary to be mobile, and it is in function of personal values and strategies. This also includes finding out what are the criteria taken into consideration when having to choose among different modes of transportation.

All the respondents cited public transportation as being the most frequent means to get out of their neighborhood, as few of them own a car or a bike, and it is seen as being the most convenient means to travel on long distances, especially to Manhattan. A few individuals reported using from time to time other alternatives, such as a cab, Dollar van and Uber, which, however, are more costly options. The bus suffers from a stigma attached to it, that it runs too slowly and too infrequently to satisfy riders' needs (these facts are backed by numerous statistics), and, in addition, it suffers from a negative reputation for being portrayed as a means of transportation mostly targeted to low-income people. Such representations might prevent riders from discovering the full potential the buses could offer to satisfy their travel needs, and they resort instead on the subway, which in some cases could be a less convenient option than the bus, especially for intra-borough journeys. In Brownsville, the representation of the bus as being mostly used by low-income population is probably not an influential factor when deciding if to ride it or not, given its socio-economic context, but it could receive less acceptance by individuals living in higher-income neighborhoods when, for example, a commuter from Brownsville checks in late at work due to bus-related delays, and this might in turn influence commuter's choice of mode.

Respondents expressed overwhelmingly negative opinions about the price of a single ride and, consequently, adopt coping strategies to lessen as much as possible the weight of transportation costs on their budget. This, however, in most cases does not translate into substituting a mode of travel with another, as, instead, they tend to adopt compensating behaviors like giving up trips

and forgoing expenses on other goods such as food, because there is often no other financially viable alternative to the subway and the bus or, more generally, to public transportation. In light of this, in spite of the reported difficulties in affording a MetroCard, individuals are not reported to significantly adjust transportation habits to their budget, as they choose instead to save money on another type of expenses.

Safety has also been reported as being a major problem among a few individuals at certain times of the day, but it is not seen to influence people's choice of means of transportation, except for their children. Due to their high reliance on public transportation, the capability to quickly assess safety conditions or the ill intentions of certain riders have had to be developed, especially for women, in order to ride safely.

The discourse on cognitive appropriation, however, appears to be considerably biased by the fact that residents of Brownsville are highly *captive riders* instead of *choice riders*, who are as such limited by financial and institutional circumstances to use exclusively one mode of transportation. More specifically to the context of New York City, individuals do have the choice to ride on more than one mode of public transportation, either on the subway or on the bus, but they are both managed by only one entity, the MTA, and, more importantly, the price of a single ride and weekly and monthly passes are fixed, regardless of the mode of transportation, neighborhood of residence and distance traveled. Such an unfriendly policy environment with this pricing structure impedes competition among modes of transportation, so it hampers riders from adopting proper cost-saving strategies that would lessen travel costs, and instead, they have had to develop an advanced set of skills to compensate for such costs, such as foregoing goods and other types of compensating behaviors that could decrease their quality of life and psychological well-being. The pricing structure, combined with lack of financially viable alternatives besides those provided by the MTA system, and Brownsville's moderate hosting potential, force riders to adopt an inelastic behavior in regard to the price. This is proven by the fact that the interviewees are still seen to adopt lifestyles that require being mobile, such as working in other neighborhoods, seeking services not provided in proximity and frequent meet-ups with friends and relatives living in other parts of the city.

Although the interviewees have specific individual representations of mobility options, the circumstances they live in give them very little room to adopt modal choices based on personal values and ideals, such as environmental and public image factors. Their cognitive appropriation of public transportation is, rather, resulting from affordability issues, transportation management practices, and constraints of the job market and real estate, which have forced individuals to develop different skills to make the best use of the quality of accessibility they are being provided with. This fact is especially evident with individuals suffering from a physical disability, who have developed advanced mobility competences to cope with the hostile structural features of public transportation facilities, and such competences have given them the chance to conduct

lifestyles similar to those who have not reported any disability. Ride-hailing services bring a partial relief to these issues, but their price relative to public transportation does not warrant their daily use.

5.3 Wrap up: motility and its consequences on transport disadvantage and social exclusion

This last chapter of analysis is consecrated to gather all of the previous findings and to present a final discussion of how the three fundamental concepts of this thesis, transport disadvantage, social exclusion and motility, are interconnected to create the situation of transport disadvantage in Brownsville.

In a context where mobility plays a crucial role in shaping society's spatial organization, in strengthening economic development and social cohesion, and where the variety of modes of mobility has experienced a drastic expansion, individuals living in developed countries are required to learn how to make an optimal modal choice and be somewhat flexible as regards mobility options in order to broaden professional and social opportunities, elements that strongly determine modal choice. With the development of such degree of mobility within society, higher are the chances that certain social groups who are not able to keep up with these advances will inevitably bear the brunt of not enjoying an optimal access to mobility and, as a result, are at a higher chance of being socially excluded and of enjoying unequal accessibility to opportunities, especially particularly fragile social categories like low-income individuals, the physically handicapped and single women with children. This why motility, or otherwise, an individual's capacity to be mobile and its ability to take possession of mobility options available to him, becomes a determining factor of transport-related social exclusion and can be a relevant indicator of transport disadvantage at an individual and at a community level.

The geographical repartition of the activities of those interviewed is the primary factor at the heart of the explanation of their mobility practices and, as a result, individuals are transport disadvantaged with regards to their needs to be mobile and access to places and mobility options. Individuals are reported to have plans, ambitions and aspirations that cannot always be fulfilled in proximity to where they live and are thus required to undertake travels outside of their neighborhood, and Brownsville's weak hosting potential for specific economic activities and necessary service provision forces people to challenge the obstacles that they face as regards transport accessibility and, in return, making sacrifices on other aspects of life in order to be able to ride on public transportation. This underlines the fact that individuals have been able to render public transportation accessible to themselves and it is a clear evidence of how highly skilled they are to make the best out of whatever transportation options are offered to them and regardless of their economic, physical status and destination of their travels, and this in return is an indication

of an elevated individual degree of motility. Furthermore, they are also seen to apply these skills in their social life, in which the majority of the respondents report cultivating family ties and friendships living in areas outside of Brownsville requiring to be reached by public transportation. Hence these argumentations, I can attest that the first hypothesis I formulated is overall correct, but needs some further clarification. It is right to claim that issues related to access are the most significant contributors to transport disadvantage in the neighborhood, but it is not in terms of the quantity and quality of service provision, but it is instead a matter of economic and physical accessibility. The greatest majority of the respondents reported having problems with affording a MetroCard, and the physically handicapped face significant difficulties with accessing subway stations due to them not being ADA-compliant. To circumvent these issues, individuals adopt strategies which include at times walking to save money and taking the bus to avoid climbing up to the subway stations, but it is incorrect to hypothesize that they are forced to rely on their personal vehicle, as car ownership among the respondents is very low and public transportation appears to be, in spite of the negative aspects that have been cited, their best option to get around. I am not in the position to precisely assess how transportation provision influences the choice of job location and where to carry out leisure activities, but given the economic context of the neighborhood, it is safe to assume that individuals are ready to commute on longer than average distances to go to work.

These argumentations prove that transportation does have a role in accentuating individuals' social exclusion, but not as significant as it could be assumed, when considering Brownsville's geographical location, its socio-economic context, public transportation quality and access to other mobility options. It is undisputable, however, that improved transportation options and accessibility would be particularly helpful to strengthen participation in society for specific segments of the population, especially for the severely economically deprived people, the physically handicapped and those who work in other boroughs besides Manhattan and must endure lengthy commutes. These facts demonstrate the second hypothesis I formulated to be only partially correct. Transport-related social exclusion is seen to be an only moderately existing phenomenon in Brownsville, because, as correctly formulated in the hypothesis, riders have developed an advanced set of skills that, nevertheless, allow them to gain access to public transportation and other mobility options and, in return, to enjoy a satisfactory participation in society and increase personal well-being.

All in all, it is safe to conclude that, due to the individuals' high appropriation of mobility options that they have at disposal, they have been able to critically reduce their risk of being socially excluded by transit options. They have been able to develop a developed skill set of transport usage that compensate their limits with accessibility, thus increasing their motility (figure 12), or potential of mobility, which is tightly related to the low predominance of transport-related social exclusion among the individuals.

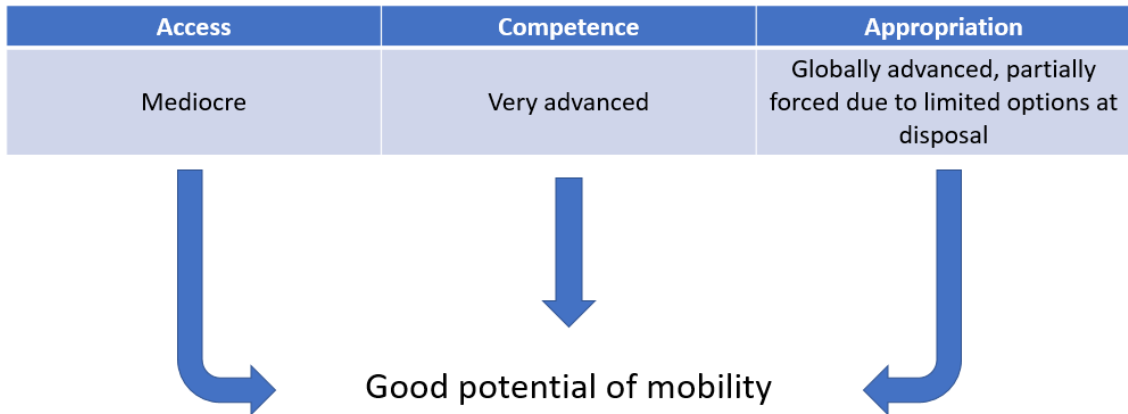


Figure 12: Global motility (personal creation)

As far as the theoretical framework of this thesis is concerned, one of the main takeaways from what has been discussed until now is that the concepts of motility and transport disadvantage do not necessarily share an inverse relationship, in which an individual's capability to be mobile is a sign of a barrierless, effortless and smooth access to transportation options. This is particularly evident in the case of Brownsville, where it was observed that individuals' generally high degree of motility does not translate into a lower degree of transport disadvantage. As described in the individuals' accounts, achieving such a high level of motility and increasing their participation in society does come with having to make painful sacrifices and different kind of hardships that could affect personal well-being and psychological status. Despite their highly skilled usage of public transportation and other modes, they still must deal with exceptional circumstances that prevent them from enjoying an optimal access to mobility and for which they are necessarily not in the position to change, such as jobs location and MetroCard prices. To sum up, it is incorrect to assess transportation disadvantage only by considering the actual number of trips taken, as it is an overarching concept that also defines how riders' lives are influenced by their inability to be mobile effortlessly, as well as the efforts, the struggles and the sacrifices involved in rendering mobility a reality.

6. Conclusion

The aim of this thesis was investigating exclusionary social processes originating from an insufficient quality of transportation provision in cities in the developed world, with the case study of the neighborhood of Brownsville, located in New York City. Individuals living in predominantly low-income neighborhoods often face numerous challenges in meeting their needs to access key destinations such as educational facilities, employment opportunities and primary services, and to nurture social relations, thus turning access to mobility options into a driver of socio-economic polarization and segregation, rather than into something beneficial to all. Those who are not in the position to satisfy such needs to reach places in an affordable, safe and timely fashion can be considered as being transport disadvantaged and at high risk of being, in one way or another, socially excluded. They do not enjoy an optimal access to jobs, educational facilities, essential services and to social networks, features that are at the heart of economic and social development and well-being in major westernized cities.

The overarching and complex nature of the three main topics that this thesis concentrated on, transport-disadvantage, social exclusion and motility, would have required adopting a more diverse set of methodologies that would have allowed gaining a more comprehensive insight into each of them, which for time and logistical constraints was not feasible. While qualitative methods are immensely useful to provide a local scale perspective on transport disadvantage, they offer results that could be unfit to generalize beyond the local context of the research. However, this paper could potentially end up opening new avenues for research in the study of this topic and invite researchers to investigate it more thoroughly with a mixed-approach methodology, notably by adopting quantitative methods.

A considerable methodological concern I came across is how to precisely discuss motility's dimension of cognitive appropriation. Firstly because of data availability and the methodological capacity of this thesis, which did not allow me to obtain a comprehensive overview of such dimension, as I should have prepared another set of questions aimed explicitly for this purpose. The second reason, more importantly, is that I believe that analyzing riders' cognitive appropriation of transportation means for captive riders is quite redundant, as their opinion and behavior with regards to public transport provision are not seen to be factors that could significantly influence an individual's mobility habits. For this reason, studies on motility must be adapted to the type of riders they are focusing on and to the economic and social context of the area of study.

This thesis also recognized the need to cautiously use self-reported evaluations of transportation problems when having to assess conditions of transport disadvantage, as a poor relation between reported transport problems and the actual degree of mobility has been observed. The greatest

majority, despite reporting numerous issues associated with transportation accessibility, regularly ride on public transportation and follow a lifestyle revolving around the necessity to be mobile. For these reasons, the definition of transport disadvantage should be extended to include the impacts on well-being caused by the strategies adopted to be able to use public transportation.

Public transportation design would immensely contribute to solving exclusionary processes, such as by enacting initiatives to increase accessibility by widening options, reducing costs and addressing security issues, and increasing cooperation among transportation providers, local authorities and services providers to address common transportation issues. However, tackling these difficulties requires changes as well not uniquely inherent to the transportation system, as actors from a variety of professional fields should be held accountable, in order to better assess the political decisions and legal frameworks necessary to combat those factors that limit an individual's degree of mobility. This includes integrating transportation planning with socially responsible programs based on housing, land use, health, education and welfare policies that would prioritize social equity. Public transportation planners in New York City are at a crossroad, where they must enact as soon as possible measures that would alleviate the system from the infrastructural and financial crisis it is currently experiencing, while paying particular attention to the communities whose population is facing the most significant challenges with accessing mobility options and who at the same time highly depend on its provision in order to lead a satisfactory life and increase participation in society. My wish is that the findings of this thesis will attract public informants' interests and that, ultimately, will benefit the community of Brownsville and other neighborhoods in the city that share similar concerns.

7. Bibliography

ADA National Network (2018). *What is the Americans with Disabilities Act (ADA)?* Retrieved from <https://adata.org/learn-about-ada> (consulted on April 25, 2018).

Allman, D. (2013). The sociology of social inclusion. *Sage Open*, 3(1), 1-16. doi: 2158244012471957

American Civil Liberties Union of Illinois (2014, August 13). Traffic stop data shows persistent patterns of racial bias, according to new report. *ACLU Illinois*. Retrieved from <https://www.aclu-il.org/en/press-releases/traffic-stop-data-shows-persistent-patterns-racial-bias-according-new-report> (consulted on January 03, 2018).

Banister, D., & Hall, P. (1981). *Transport and Public Policy Planning*. London, UK: Mansell.

Barbot, O., Bassett, M.T. Dragan, K.L., Driver, C.R., Gwynn, R.C., Harris, T.G., ... Linos, N. (2015). *Community Health Profiles 2015, Brooklyn Community District 16: Brownsville*. New York, NY: New York City Department of Health and Mental Hygiene. Retrieved from <https://www1.nyc.gov/assets/doh/downloads/pdf/data/2015chp-bk16.pdf> (consulted on January 09, 2018).

Baumann, Z. (2000). *Liquid Modernity*. Cambridge, UK: Polity Press.

Bellafante, G. (2016, September 09). Brooklyn's Food Gap. *The New York Times*. Retrieved from <https://www.nytimes.com/2016/09/11/nyregion/brooklyns-food-gap.html> (consulted on May 03, 2018).

Bliss, L. (2017, June 28). Overcrowding Is Not the New York Subway's Problem. *Citylab*. Retrieved from <https://www.citylab.com/transportation/2017/06/overcrowding-is-not-the-new-york-subways-problem/531942/> (consulted on January 11, 2018).

Botti, E., Chau, R., Cox, J., Dekay-Bemis, D., Forrester, R., Gottdiener, F., ... Townsend, D. (2016). *Healthy Brownsville: A Report for Brooklyn Community Board 16*. New York, NY: Hunter College Urban Policy and Planning. Retrieved from <http://www1.nyc.gov/assets/hpd/downloads/pdf/community/healthy-brownsville.pdf> (consulted on January 10, 2018).

Bryman, A. (2012). *Social Research Methods*. Oxford, UK: Oxford University Press.

Burce-Lockart, A. (2016, March 17). Which cities have the most dangerous transport systems for women? *World Economic Forum*. Retrieved from <https://www.weforum.org/agenda/2016/03/which-cities-have-the-most-dangerous-transport-systems-for-women/> (consulted on January 03, 2018).

Bureau of Labor Statistics. (2017). *Consumer expenditures 2016*. Retrieved from <https://www.bls.gov/news.release/cesan.nr0.htm> (consulted on January 03, 2018).

Cass, N., Shoe, E., & Urry, J. (2003). *Changing infrastructures, measuring socio-spatial inclusion / exclusion*. Lancaster, UK: Lancaster University.

Caulfield, J., Cruz, I., Dillon, C., Edwards, S., Fields, S., Hunt, R., ... Platkin, S. (2012). *Brownsville works! A strategic economic development plan*. New York, NY: Hunter College Department of Urban Affairs and Planning.

Center for Neighborhood Technology (2017). *H+T Affordability Index*. Retrieved from <https://htaindex.cnt.org/map/> (consulted on January 10, 2018).

Chendry, R., & Hendren, N. (2017). The Impacts of Neighborhoods on Intergenerational Mobility II: County-Level Estimates. *Quarterly Journal of Economics*. Retrieved from http://www.equality-of-opportunity.org/assets/documents/movers_paper2.pdf (consulted on January 03, 2018).

Christodoulou, G., Lucas, K., & Tyler, S. (2009). Assessing the “value” of new transport initiatives in deprived neighbourhoods in the UK. *Transport Policy*, 16(3), 115-122. doi: 10.1016/j.tranpol.2009.02.004

Church, A., Frost, M., & Sullivan, K. (2000). Transport and social exclusion in London. *Transport Policy*, 7(3), 195-205. doi: 10.1016/S0967-070X(00)00024-X

Citi Bike (2018). *Citi Bike December 2017 Monthly Report*. Retrieved from <https://d21xlh2maitm24.cloudfront.net/nyc/December-2017-Citi-Bike-Monthly-Report.pdf?mtime=20180216162543> (consulted on March 19, 2018).

City’s Committee for Children (2017). *Community Risk Ranking*. Retrieved from <https://www.cccnewyork.org/wp-content/uploads/2017/12/CCC-Risk-Ranking-2017.pdf> (consulted on January 8, 2018).

Clifton, K.J., & Handy, S.L. (2003). Qualitative Methods in Travel Behaviour Research. In P. Jones and Peter R. Stopher (ed.), *Transport Survey Quality and Innovation* (pp. 283 – 302).

Cobigo, V., Ouellette-Kuntz, H., Lysaght, R., & Martin, L. (2012). Shifting our Conceptualization of Social Inclusion. *Stigma Research and Action*, 2(2), 75-84. doi: 10.5463/SRA.v1i1.10

Cohen J. (2017, May 01). New York City Council Wants to Find a Cure for Transit Deserts. *Next City*. Retrieved from <https://nextcity.org/daily/entry/new-york-city-council-transit-deserts-cure> (consulted on January 12, 2018).

Crossley, N. (2008). (Net)working out of social capital in a private health club. *British Journal of Sociology*, 59(3), 475-500. doi: 10.1111/j.1468-4446.2008.00204.x

Currie, G., & Delbosc, A. (2010). Modelling the social and psychological impacts of transport disadvantage. *Transportation*, 37(6), 953-956. doi: 10.1007/s11116-010-9280-2

Dodson, J., Buchanan, N., Gleeson, B., & Sipe, N. (2006). Investigating the Social Dimensions of Transport Disadvantage—I. Towards New Concepts and Methods. *Urban Policy and Research*, 24(4), 433–453. doi: 10.1080/08111140601035317

English, J. (2018, April 16). Why New York City Stopped Building Subways. *CityLab*. Retrieved from <https://www.citylab.com/transportation/2018/04/why-new-york-city-stopped-building-subways/557567/> (consulted on May 03, 2018).

Fan, Y. & Huang, A. (2011). *How Affordable is Transportation? A context-Sensitive Framework*. University of Minnesota, Minneapolis: Center for Transportation Studies. Retrieved from <https://conservancy.umn.edu/handle/11299/109236> (consulted on November 27, 2017).

Fitzsimmons, E.G. (2016, August 15). New Yorkers in Subway Deserts Have Advice for L Train Riders: 'Suck It Up'. *The New York Times*. Retrieved from https://www.nytimes.com/2016/08/16/nyregion/new-yorkers-in-subway-deserts-have-advice-for-l-train-riders-suck-it-up.html?_r=0 (consulted on January 12, 2018).

Fitzsimmons, E.G. (2016, December 05). Citi Bike Under Pressure to Expand to Low-Income Neighborhoods. *The New York Times*. Retrieved from https://www.nytimes.com/2016/12/05/nyregion/citi-bike-may-need-public-funding-to-reach-more-new-yorkers.html?_r=0 (consulted on January 13, 2018).

Fitzsimmons, E.G., Fessenden, F., & Lai, K.K.R. (2017, June 28). Every New York City Subway Line Is Getting Worse. Here's Why. *The New York Times*. Retrieved from <https://www.nytimes.com/interactive/2017/06/28/nyregion/subway-delays-overcrowding.html> (consulted on December 18, 2017).

Fitzsimmons, E.G., Laforgia, M., & Rosenthal, B.N. (2017, November 18). How Politics and Bad Decisions Starved New York's Subways. *The New York Times*. Retrieved from <https://www.nytimes.com/2017/11/18/nyregion/new-york-subway-system-failure-delays.html> (consulted on January 11, 2018).

Furman Center (2015). *Focus on Gentrification*. Retrieved from http://furmancenter.org/files/sotc/Part_1_Gentrification_SOCin2015_9JUNE2016.pdf (consulted on May 09, 2018).

Givoni, M., & Shliselberg, R. (2018). Motility as a policy objective. *Transport Reviews*, 38(3), 279-297. doi: 10.1080/01441647.2017.1355855

Gleeson, B., & Randolph, B. (2002). Social Disadvantage and Planning in the Sydney Context. *Urban Policy and Research*, 20(1), 101-107. doi: 10.1080/08111140220131636

Grafmeyer, Y., & Joseph, I. (1979). *L'École de Chicago. Naissance d'une Écologie Urbaine*. Paris: Champs Flammarion.

Gray, D., Shaw, J., & Farrington, J. (2006). Community transport, social capital and social exclusion in rural areas. *Area*, 38(1), 89-98. doi: 10.1111/j.1475-4762.2006.00662.x

Grosvenor, T. (2000). Qualitative Research in the Transport Sector. *Transportation Research Board - Workshop on Qualitative / Quantitative Methods. Resource Paper*. Retrieved from http://onlinepubs.trb.org/onlinepubs/circulars/ec008/workshop_k.pdf (consulted on March 21, 2018).

Guse, C. (2018, 26 July). The MTA is planning two sets of fare hikes over the next three years. *Time Out*. Retrieved from <https://www.timeout.com/newyork/news/the-mta-is-planning-two-sets-of-fare-hikes-over-the-next-three-years-072618> (consulted on July 26, 2018).

Handy, S. (2005). Planning for accessibility: in theory and practice. In D.M. Levinson and K.J. Krizek (eds), *Access to Destinations* (pp. 131-147). New York, NY: Elsevier Publishers.

- Handy, S.L. (1996). Understanding the link between urban form and nonwork travel behavior. *Journal of Planning Education and Research*, 15(39), 183 – 198. doi: 10.1177/0739456X9601500303
- Handy, S.L. (1996). Understanding the Link Between Urban Form and Nonwork Travel Behavior. *Journal of Planning Education and Research*, 15(3), 183-198. doi: 10.1177/0739456X9601500303
- Head, E. (2009). The ethics and implications of paying participants in qualitative research. *International Journal of Social Research Methodology*, 12(4), 335-344. doi: 10.1080/13645570802246724
- Hernandez, D. O., & Titheridge, H. (2015). Mobilities of the periphery: informality, access and social exclusion in the urban fringe in Colombia. *Journal of transport geography*, 55, 152-164. doi: 10.1016/j.jtrangeo.2015.12.004
- Hine, J., & Mitchell, F. (2004). *Transport disadvantage and social exclusion: exclusionary mechanisms in transport in urban Scotland*. London, UK: Routledge.
- Hurni, A. (2006). *Transport and Social Disadvantage in Western Sydney: A Partnership Research Project*. Parramatta, Australia: Western Sydney Community Forum. Retrieved from http://www.wscf.org.au/uploads/Files/Transport/Transport_disadvantage_report_web.pdf (consulted on November 7, 2017).
- Jehoel-Gisbers, G., & Vrooman, C. (2007). *Explaining Social Exclusion: a theoretical model tested in the Netherlands*. The Hague, The Netherlands: The Netherlands Institute for Social Research (SCP).
- Junius Street (IRT New Lots Line) (2017, December 2). In *Wikipedia*. Retrieved from [https://en.wikipedia.org/wiki/Junius_Street_\(IRT_New_Lots_Line\)#cite_note-20](https://en.wikipedia.org/wiki/Junius_Street_(IRT_New_Lots_Line)#cite_note-20) (consulted on January 9, 2018).
- Kabeer, N. (2006). Poverty, Social Exclusion and the MDGs: The Challenge of “Durable Inequalities” in the Asian Context. *ids Bulletin*, 37(3), 64–78. doi: 10.1111/j.1759-5436.2006.tb00270.x
- Kamruzzaman, M., Yigitcanlar, T., Yang, J., & Mohamed, M. (2016). Measures of Transport-Related Social Exclusion: A Critical Review of the Literature. *Sustainability*, 8(7), 1-30. doi: 10.3390/su8070696
- Kaufmann, V. (2012, December 20). Potentiel d'accueil d'un territoire. *Forum Vies Mobiles - Préparer la transition mobilière*. Retrieved from <http://fr.forumviesmobiles.org/reperes/potentiel-daccueil-dun-territoire-554> (consulted on November 21, 2017).
- Kaufmann, V. (2014a). *Retour sur la ville: motilité et transformations urbaines*. Lausanne: PPUR Presses polytechniques et universitaires romandes.
- Kaufmann, V. (2014b). Mobility as a tool for sociology. *Sociologica*, 8(1), 1-16. doi: 10.2383/77046

- Kaufmann, V., Bergman, M. M., & Joye, D. (2004). Motility: mobility as capital. *International journal of urban and regional research*, 28(4), 745-756. doi: 10.1111/j.0309-1317.2004.00549.x
- Kenyon, S., Lyons, G., & Rafferty, J. (2002) Transport and social exclusion: Investigating the possibility of promoting social inclusion through virtual mobility. *Journal of Transport Geography*, 10(3). 207-219. doi: 10.1016/S0966-6923(02)00012-1
- Kesselring, S. (2006). Pioneering mobilities: new patterns of movement and motility in a mobile world. *Environment and Planning A*, 38(2), 269-279. doi: 10.1068/a37279
- Kesselring, S., & Vogl, G. (2008). Networks, scapes and flows—Mobility pioneers between first and second modernity. In W. Canzler (Ed), *Tracing Mobilities: Towards a Cosmopolitan Perspective* (pp. 163-180). New York, NY: Routledge.
- Kjærulff, A. A. (2011). Motility-finding a way to mobility attitude and behavior. In *Trafikdage*, 2012. Retrieved from http://www.trafikdage.dk/papers_2011/35_AslakKjaerulff.pdf (consulted on November 1, 2017).
- Lenoir, R. (1989). *Les Exclus: Un Français sur dix*. Paris: Seuil.
- Levitas, R., Pantazis, C., Fahmy, E., Gordon, D., Lloyd, E., & Patsios, D. (2007). *The multi-dimensional analysis of social exclusion*. Bristol, UK: University of Bristol, Department of Sociology and School for Social Policy Townsend Centre for the International Study of Poverty and Bristol Institute for Public Affairs. Retrieved from <http://dera.ioe.ac.uk/6853/1/multidimensional.pdf> (consulted on November 2, 2017).
- Litman, T. (2017). Transportation Affordability. *Transportation*, 250, 360-1560. Retrieved from <http://www.vtpi.org/affordability.pdf> (consulted on November 27, 2017).
- Lucas, K. (2012). Transport and social exclusion: Where are we now? *Transport Policy*, 20, 105–113. doi: 10.1016/j.tranpol.2012.01.013
- Lucas, K., & Markovich, J. (2011). International perspectives. In G. Currie (Ed), *New perspectives and methods in transport and social exclusion research* (pp. 223-239). Bingley, UK: Emerald Group Publishing Limited. doi: 10.1108/9781780522012-015
- Lucas, K., Mattioli, G., Verlinghieri, E., & Guzman, A. (2016). Transport poverty and its adverse social consequences. *Proceedings of the Institution of Civil Engineers-Transport*, 169(6), 353–365. doi: 10.1680/jtran.15.00073
- Mankiw, N.G. (2018). *Principles of Microeconomics, 8th edition*. Boston: Cengage Learning.
- Maslin Nir, S. (2017, March 14). Cuomo’s \$1.4 Billion Plan for Brooklyn Stirs Fears of Gentrification. *The New York Times*. Retrieved from <https://www.nytimes.com/2017/03/14/nyregion/cuomos-1-4-billion-plan-in-brooklyn-stirs-fears-of-gentrification.html> (consulted on January 8, 2018).
- Mathieson, J., Popay, J., Enoch, E., Escorel, S., Hernandez, M., Johnston, H., & Rispe, L. (2008). Social Exclusion: Meaning, measurement and experience and links to health inequalities. A review of literature. *WHO Social Exclusion Knowledge Network Background Paper 1*, 1-91. doi: 10.1.1.555.7537

Metropolitan Transportation Authority (2013). *Review of the G line*. Retrieved from http://web.mta.info/nyct/service/G_LineReview.htm (consulted on May 02, 2018).

Metropolitan Transportation Authority (2018a). Facts and Figures. *Metropolitan Transportation Authority*. Retrieved from <http://web.mta.info/nyct/facts/> (Consulted on November 15, 2017).

Metropolitan Transportation Authority (2018a). *Fast Forward: The Plan to Modernize New York City Transit*. Retrieved from http://www.mta.info/sites/default/files/new_york_city_transit_fast_forward_plan.pdf (consulted on June 06, 2018).

Metropolitan Transportation Authority (2018c). MTA Subway Performance Metrics Dashboard. *Metropolitan Transportation Authority*. Retrieved from <http://dashboard.mta.info/Home/Main> (consulted on June 06, 2018).

Metropolitan Transportation Authority (2018d). MTA Guide to Accessible Transit. *Metropolitan Transportation Authority*. Retrieved from <http://web.mta.info/accessibility/stations.htm#brooklyn> (consulted on January 09, 2018).

Metropolitan Transportation Authority (2018). Bus Plan, April 2018. *Metropolitan Transportation Authority*. Retrieved from http://web.mta.info/nyct/service/bus_plan/bus_plan.pdf (consulted on July 24, 2018).

Metzger, J.T. (1996). The Theory and Practice of Equity Planning: An Annotated Bibliography. *Journal of Planning Literature*, 11(1), 112-126. doi: 10.1177/088541229601100106

Morse, J.M. (2004). *The SAGE Encyclopedia of Social Science Research Methods*. Thousand Oaks, CA: SAGE Publications.

Mouw, T. (2007). Spatial Mismatch Hypothesis. *Blackwell Encyclopedia of Sociology*. Retrieved from http://www.blackwellreference.com/subscriber/uid=704/tocnode?id=g9781405124331_chunk_g978140512433125_ss1-215#citation (consulted on June 08, 2018).

Neuman, W., & Goodman, J.D. (2018, June 11). New York City's \$89 Billion Budget Includes Discount Transit Fare Plan. *The New York Times*. Retrieved from <https://www.nytimes.com/2018/06/11/nyregion/new-york-city-budget-subway-fares.html?login=email&auth=login-email> (consulted on July 21, 218).

New York City Department of Housing Preservation & Development (2016). *Brownsville Neighborhood Planning Progress Report*. Retrieved from <https://www1.nyc.gov/assets/hpd/downloads/pdf/community/brownsville-learn-phase-report.pdf> (consulted on January 10, 2018).

New York City Department of City Planning (2016). Current and Projected Populations. *NYC Planning*. Retrieved from <http://www1.nyc.gov/site/planning/data-maps/nyc-population/current-future-populations.page> (consulted on December 18, 2017).

New York City Department of City Planning (2018). NYC Population FactFinder. *NYC Planning*. Retrieved from <https://popfactfinder.planning.nyc.gov/#12.25/40.68154/-73.90452> (consulted on July 17, 2018).

- New York City Economic Development Corporation (2012). *New Yorkers and Cars*. Retrieved from <https://www.nycedc.com/blog-entry/new-yorkers-and-cars> (consulted on January 10, 2018).
- New York Civil Rights Union (2018). Palm Card: What to Do if You're Stopped by Immigration Officers. Retrieved from <https://www.nyclu.org/en/know-your-rights/palm-card-what-do-if-youre-stopped-immigration-officers-2012> (consulted on April 26, 2018).
- NYC Bus Coalition (2016). *Turnaround: Fixing New York City's Buses*. Retrieved from http://transitcenter.org/wp-content/uploads/2016/07/Turnaround_Fixing-NYCs-Buses-20July2016.pdf (consulted on January 12, 2018).
- O'Connor, L. (2017, 22 June). San Francisco's Transit Agency Promises No Immigration Raids. *The Huffington Post*. Retrieved from https://www.huffingtonpost.com/entry/bart-immigration_us_594c49b3e4b0da2c731a876a (consulted on January 3, 2018).
- Pattaroni, L., Kaufmann, V., & Rabinovich, A. (2009). *Habitat en devenir: enjeux territoriaux, politiques et sociaux du logement en Suisse*. Lausanne, Switzerland: PPUR Presses polytechniques et universitaires romandes.
- Patton, M.Q. (1990). *Qualitative Evaluation and Research Methods*. Newbury Park, CA: SAGE Publications.
- Peace, R. (1999). *Surface Tension: Place/Poverty/Policy – from “Poverty” to Social Exclusion: Implications of Discursive Shifts in European Union Poverty Policy 1975-1999* (unpublished PhD thesis). University of Waikato, Faculty of Arts and Social Sciences, Institute of Social Policy, Hamilton, New Zealand.
- Peace, R. (2001). Social exclusion: A concept in need of definition? *Social Policy Journal of New Zealand*, 16, 17–36. doi : 10.1.1.627.6786
- Pendakur, V. S. (1986). *Urban Growth, Urban Poor and Urban Transport in Asia*. University of British Columbia, Vancouver, Canada: Human Settlement Issues.
- Perrotta, A.F. (2015). *How the Poor Afford Public Transportation: The Case Study of New York City* (PhD). Columbia University, Graduate School of Arts and Sciences, Graduate School of Architecture, Planning and Preservation, New York, NY.
- Plitt, A. (2018, July 27). New York's new dockless bike share, explained. *Curbed New York*. Retrieved from <https://ny.curbed.com/2018/7/27/17617782/bike-share-new-york-dockless-facts-information> (consulted on July 28, 2018).
- Pratt Center for Community Development (2015). *Brownsville: Opportunity and Strength in the Heart of Brooklyn*. Retrieved from <https://www1.nyc.gov/assets/hpd/downloads/pdf/community/final-report-brownsville-pratt-spring-2015.pdf> (consulted on January 09, 2018).
- Preston, J., & Rajé, F. (2007). Accessibility, mobility and transport-related social exclusion. *J. Transport Geography*, 15(3), 151–160. doi: 10.1016/j.jtrangeo.2006.05.002
- Public School Review (2018). *11212 New York Public Schools*. Retrieved from <https://www.publicschoolreview.com/new-york/brooklyn/11212> (consulted on May 09, 2018).

- Putnam, R. (2000). *Bowling Alone: The Collapse and Revival of American Community*. New York, NY: Simon and Schuster.
- Rankin, N. & Stolper, H. (2016). *The Transit Affordability Crisis: How Reduced MTA Fares Can Help Low-Income New Yorkers Move Ahead*. Retrieved from <http://lghhttp.58547.nexcesscdn.net/803F44A/images/nycss/images/uploads/pubs/The%20Transit%20Affordability%20Crisis%20updates%204%2018%2016%20-%20UPDATED%204.pdf> (consulted on January 11, 2018).
- Regional Plan Association (2015). *Overlooked Boroughs*. Retrieved from <http://www.rpa.org/publication/overlooked-boroughs-technical-report> (consulted on May 02, 2018).
- Regional Plan Association (2017). *The Fourth Regional Plan*. Retrieved from <http://library.rpa.org/pdf/RPA-The-Fourth-Regional-Plan.pdf> (consulted on January 12, 2018).
- Rérat, P. (2010). *Habiter La Ville: Évolution Démographique Et Attractivité Résidentielle D'une Ville-Centre*. Neuchâtel, Switzerland: Éditions ALPHIL.
- Rérat, P., Lees, L. (2010). Spatial capital, gentrification and mobility: evidence from Swiss core cities. *Transactions of the Institute of British Geographers*, 36(1), 126-142. doi: 10.1111/j.1475-5661.2010.00404.x
- Rode, P., Floater, G., Thomopoulos, N., Docherty, J., Schwinger, P., Mahendra, A., & Fang, W. (2017). Accessibility in cities: transport and urban form. In G. Meyer and S. Shaheen (Eds), *Disrupting Mobility* (pp. 239-273). Cham, Switzerland: Springer International Publishing.
- Røe, P. G. (2000). Qualitative research on intra-urban travel: an alternative approach. *Journal of Transport Geography*, 8(2), 99-106. doi: 10.1016/S0966-6923(99)00039-3
- Rogers, T. (2017, June 14). Here's How and Why Reporters Should Avoid Checkbook Journalism. *ThoughtCo*. Retrieved from <https://www.thoughtco.com/why-reporters-should-avoid-checkbook-journalism-2073718> (consulted on March 20, 2018).
- Rytina, S. (2011, July 27). Social Mobility. *Oxford Bibliographies*. Retrieved from <http://www.oxfordbibliographies.com/view/document/obo-9780199756384/obo-9780199756384-0049.xml> (consulted on November 22, 2017).
- Sandler, M., & Tiarachristie, G. (2017). *The Brownsville Plan*. New York, NY: New York City Department of Housing Preservation & Development. Retrieved from <https://www1.nyc.gov/assets/hpd/downloads/pdf/community/the-brownsville-plan.pdf> (consulted on January 09, 2018).
- Schwanen, T., Lucas, K., Akyelken, N., Cisternas Solsona, D., Carrasco, J.-A., & Neutens, T. (2015). Rethinking the links between social exclusion and transport disadvantage through the lens of social capital. *Transportation Research Part A: Policy and Practice*, 74, 123-135. doi:10.1016/j.tra.2015.02.012
- Siisiainen, M. (2003). Two concepts of social capital: Bourdieu vs. Putnam. *International Journal of Contemporary Sociology*, 40(2), 183-204. Retrieved from https://www.researchgate.net/publication/292604014_Two_concepts_of_social_capital_Bourdieu_vs_Putnam (consulted on July 25, 2018).

Silver, H. (1994). Social exclusion and social solidarity: three paradigms. *Int'l Lab. Rev.*, 133, 531-578. Retrieved from [http://www.bristol.ac.uk/poverty/ESRCJSPS/downloads/research/uk/1%20UK-Poverty,%20Inequality%20and%20Social%20Exclusion%20\(General\)/Articles%20\(UK%20general\)/Silver-Social%20Exclusion%20and%20Social%20Solidarity.pdf](http://www.bristol.ac.uk/poverty/ESRCJSPS/downloads/research/uk/1%20UK-Poverty,%20Inequality%20and%20Social%20Exclusion%20(General)/Articles%20(UK%20general)/Silver-Social%20Exclusion%20and%20Social%20Solidarity.pdf) (consulted on November 15, 2017).

Social Exclusion Unit (2003). *Making the Connections: Final Report on Transportation and Social Exclusion*. London, UK: UK Government Social Exclusion Unit. Retrieved from http://webarchive.nationalarchives.gov.uk/+/http://www.cabinetoffice.gov.uk/media/cabinetoffice/social_exclusion_task_force/assets/publications_1997_to_2006/seu_leaflet.pdf (consulted on October 30, 2017).

Society of Professional Journalists (2014). *SPJ's Code of Ethics*. Retrieved from <https://www.spj.org/pdf/spj-code-of-ethics-poster.pdf> (consulted on March 20, 2018).

Stanley, J., & Stanley, J. (2004). *Improving public transport to meet community needs: a Warrnambool case-study*. Port Melbourne, Australia: Bus Association of Victoria. Retrieved from https://www.researchgate.net/publication/37183767_Improving_public_transport_to_meet_community_needs_A_Warrnambool_case-study (consulted on November 02, 2017).

Stanley, J., & Stanley, J. (2017). The Importance of Transport for Social Inclusion. *Social Inclusion*, 5(4), 108-115. doi: 10.17645/si.v5i4.1289

Stead, D. (2001). Relationships between land use, socioeconomic factors, and travel patterns in Britain. *Environment and Planning B*, 28(4), 499-528. doi: 10.1068/b2677

Stead, D., & Marshall, S. (2001). The relationships between urban form and travel patterns. An international review and evaluation. *European Journal of Transport and Infrastructure Research*, 1(2), 113-141. Retrieved from http://www.ejtir.tudelft.nl/issues/2001_02/abstracts/2001_02_01.asp.pdf (consulted on November 2, 2017).

Stringer, S.M. (2017a). The Human Cost of Subway Delays: A Survey of New York City Riders. *New York City Bureau of Policy and Research*. Retrieved from <https://comptroller.nyc.gov/wp-content/uploads/documents/The-Human-Cost-of-Subway-Delays.pdf> (consulted on January 11, 2018).

Stringer, S.M. (2017b). The Other Transit Crisis: How to Improve the NYC Bus System. *New York City Bureau of Policy and Research*. Retrieved from <https://comptroller.nyc.gov/wp-content/uploads/documents/The-Other-Transit-Challenge.pdf> (consulted on January 12, 2017).

Stringer, S.M. (2018). New York City's Inaccessible Subway System. *New York City Bureau of Policy and Research*. Retrieved from https://comptroller.nyc.gov/wp-content/uploads/documents/Service_Denied_072018.pdf (consulted on July 20, 2018).

Surico, J. (2017, April 07). Brooklyn's Poorest Neighborhood Braces for the L Train Shutdown. *Vice*. Retrieved from https://www.vice.com/en_us/article/4xejx9/brooklyns-poorest-neighborhood-braces-for-the-l-train-shutdown (consulted on January 12, 2018).

- Terrier, E. (2010). Mobilités spatiales/inégalités sociales: le cas de la mobilité internationale pour études. *Annales de Géographie*, 6(670), 609-636. doi : 10.3917/ag.670.0609
- Tomer, A. (2011). *Transit Access and Zero-Vehicle Households*. Washington, D.C.: The Brookings Institution. Retrieved from https://www.brookings.edu/wp-content/uploads/2016/06/0818_transportation_tomer.pdf (consulted on January 03, 2018).
- Tomer, A., Kneebone, E., Puentes, R., & Berube, A. (2011). *Missed Opportunity: Transit and Jobs in Metropolitan America*. Washington, D.C.: The Brookings Institution. Retrieved from https://www.brookings.edu/wp-content/uploads/2016/06/0512_jobs_transit.pdf (consulted on January 03, 2018).
- U.S. Department of Education (2012, June 27). U.S. Department of Education Provides Guidance to Help School Bus Drivers Combat Bullying. Retrieved from <https://www.ed.gov/news/press-releases/us-department-education-provides-guidance-help-school-bus-drivers-combat-bullyin> (consulted on January 03, 2018).
- U.S. Department of Health & Human Services (2015). *Mobility Challenges for Households in Poverty*. Retrieved from <http://nhts.ornl.gov/briefs/PovertyBrief.pdf> (consulted on January 03, 2018).
- United Nations Department of Economic and Social Affairs (2016). *Leaving no one behind: the imperative of inclusive development*. Retrieved from <http://www.un.org/esa/socdev/rwss/2016/full-report.pdf> (consulted on December 18, 2017).
- United Nations Human Settlements Programme (2013). *Planning and Design for Sustainable Urban Mobility: Global Report on Human Settlements 2013*. London, UK: Taylor & Francis Limited (Routledge).
- United Nations Office of the High Commission of Human Rights (2014). *Forced Evictions*. Retrieved from <http://www.ohchr.org/Documents/Publications/FS25.Rev.1.pdf> (consulted on November 07, 2017).
- United States Environmental Protection Agency (2016). *Summary of Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Retrieved from <https://www.epa.gov/laws-regulations/summary-executive-order-12898-federal-actions-address-environmental-justice> (consulted on January 04, 2018).
- Urry, J. (2002). Mobility and proximity. *Sociology*, 36(2), 255-274. doi: 0038-0385(200205)36:2;255-274;022760
- Vance, C.R. (2017). District Attorney Vance to end criminal prosecution of approximately 20,000 low-level, non-violent misdemeanors per year. *The New York County District Attorney's office*. Retrieved from <http://manhattanda.org/press-release/district-attorney-vance-end-criminal-prosecution-approximately-20000-low-level-non-vio> (consulted on January 11, 2018).
- Venter, C. (2016). *Developing a Common Narrative on Urban Accessibility: A Transportation Perspective*. Washington, DC: The Brookings Institution. Retrieved from <https://www.brookings.edu/wp-content/uploads/2017/01/transportation-digital.pdf> (consulted on March 22, 2018).

Ver Ploeg, M. (2010, March 01). Access to Affordable, Nutritious Food Is Limited in “Food Deserts”. *United States Department of Agriculture*. Retrieved from <https://www.ers.usda.gov/amber-waves/2010/march/access-to-affordable-nutritious-food-is-limited-in-food-deserts/> (consulted on May 03, 2018).

Wachs, M., & Kumagai, G.T. (1973). Physical accessibility and a social indicator. *Socio-Economic Planning Science*, 7(5), 437-456. doi: 10.1016/0038-0121(73)90041-4

Warercar, T. (2017, September 05). Citi Bike’s Harlem expansion will kick off next week. *Curbed New York*. Retrieved from <https://ny.curbed.com/2017/9/5/16256112/citi-bike-harlem-expansion> (consulted on January 13, 2018).

Wong, C. (2016). Subway Deserts v2. *Chris Wong Carto*. Retrieved from <https://cwhong.carto.com/maps> (consulted on January 12, 2018).

Wong, S. (2017, September 21). Why Wait for Free Out-of-System Transfers Between the L and 3 Lines? Implement Them Now! *Permanent Citizens Advisory Committee to the MTA*. Retrieved from <http://www.pcac.org/blog/why-wait-for-free-out-of-system-transfers-between-the-l-and-3-lines-implement-them-now/> (consulted on January 09, 2018).

World Bank (2002). *Cities on the Move: A World Bank Urban Transport Strategy Review*. Retrieved from http://siteresources.worldbank.org/INTURBANTRANSPORT/Resources/cities_on_the_move.pdf (Consulted on December 18, 2017).

World Health Organization (2005). *Health effects of transport-related air pollution*. Retrieved from http://www.euro.who.int/__data/assets/pdf_file/0006/74715/E86650.pdf (consulted on November 07, 2017).

Zeeger, C.V., Sandt, L., & Scully, M. (2008). *How to Develop a Pedestrian Safety Action Plan*. Chapel Hill, NC: Highway Safety Research Center. Retrieved from https://safety.fhwa.dot.gov/ped_bike/ped_focus/docs/fhwasa0512.pdf (consulted on November 07, 2017).

8. Annexes

ANNEXE 1: interview guide

INTERVIEW GUIDE

Interviewee identification code:	
Gender:	Language of interview:
US citizen?	Household composition:
Employment status:	Age:
Current residence:	Receives financial assistance:
Physical or mental disabilities:	Owns a car or a bike:
Location of interview:	Time and length of interview:
Remarks:	

Introductory questions

- 1) Where do you live? Since when? In which type of settlement? How far do you live from the nearest subway station and bus stop?
- 2) Where were you born?
- 3) What do you do? Where is your workplace / school situated?

Questions about your neighborhood

- 1) Do you find all the main facilities you need in your neighborhood?
- 2) How safe do you feel in your neighborhood?
- 3) Can you easily orientate yourself and easily locate places you must go to?
- 4) Are there any reasons related to mobility that makes this neighborhood particular?
- 5) To carry out basic activities or run errands, how often do you have to leave your neighborhood?
- 6) To carry out basic activities or run errands, how much time do you spend on traveling? How acceptable do you perceive this sacrifice of time?

Mobility habits

- 1) How do you mostly move around? How do you prefer moving around? Why?
- 2) How long does it take you to reach work / school?
- 3) Describe your path to work. Do you always take the same path, or do you change? Why do you take this path? How often do you make changes to your path to work and why?
- 4) Could you reach your workplace by car? Why / not?
- 5) How often do you move around alone? On what occasions?
- 6) How does your physical disability affect your ability to move around?
- 7) How do you pay for public transportation? Do you pay for it? Do you have a MetroCard? Which type (monthly pass, single ride...)? Do you use another type of travelcard?
- 8) How often do you reach places on time?

Opinion on transportation in your neighborhood

Walking

- 1) How safe do you feel? When would you avoid walking?
- 2) How do you judge the walking conditions in your neighborhood?
- 3) Can you recall any recurrent bad experience with walking?

Public transportation (subway / bus)

- 1) How reliable do you find pt?
- 2) How satisfied are you with the pt offer in your neighborhood?
- 3) How expensive do you find it?
- 4) How safe do you find it?
- 5) How hard is it for you to interpret timetables, network maps and obtaining information in your language?
- 6) How hard do you find accessing subway stations and getting on buses?

Bicycle (if applicable)

- 1) How often do you ride it?
- 2) How safe do you feel riding it?
- 3) How bike friendly do you find your neighborhood?

Car (if applicable)

- 1) How often do you drive a car?
- 2) How car friendly is your neighborhood?
- 3) What are the advantages of taking the car compared to other means of transportation?

For the 4 options: which improvements would you propose?

Social inclusion

- 1) How often do you leave your neighborhood? Why?
- 2) How far do most of your friends and relatives live? How do you reach them?
- 3) How often do you see your relatives, friends or take part to any type of social gathering, when this requires leaving your house?
- 4) Does it ever occur to you that you renounce going to a place or to participate in activities due to issues related to mobility?
- 5) Have you ever been deprived of any opportunities/services due to your inability to reach a specific place? Why?
- 6) How often do you change your plans due to issues related to mobility?
- 7) Are you engaged in any community organization?

Any questions for me?

PUBLIC TRANSPORTATION STUDY

Participants from Brownsville Needed!

Would you like to participate in a study about public transportation in your neighborhood? I am Riccardo, a Graduate student from Switzerland, interested in learning about **your experiences**

You will receive a roundtrip MetroCard for participating in an interview that will last up to 45 minutes.

If you want to schedule an interview, please call me at
at
(US phone number) or email me at
ric.cerutti@gmail.com

Interviews can be held in **English, Spanish and French**

All interviews are anonymous and confidential