MSc thesis Report

Mobility injustice: focusing on individuals' everyday mobility experiences and capabilities (case study for a vulnerable neighbourhood in the Hague Southwest)

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February 2023 - July 2023

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Mobility injustice: focusing on individuals' capabilities and everyday mobility experiences (case study for a vulnerable neighbourhood in the Hague Southwest)

A thesis submitted to the Delft University of Technology in partial fulfillment of the requirements for the degree of Master of Science in Transport, Infrastructure & Logistics

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Preface

This work marks the end of my master's degree in Transport, Infrastructure & Logistics. With confidence I can say that this project has been my most enjoyed project in my study career. It made me see the world of mobility through a different lens. The completion of this thesis was made possible through collaboration with Rebel Living & Mobility B.V. Rebel gave me the opportunity to learn from the skilled people on the team, and gave me access to valuable resources and connections.

First, my gratitude goes out to all the people in the neighbourhood I had the pleasure of talking to. Without you this research would not have been possible. Thank you for taking the time and trusting me with your information. Moreover, it was heart warming to meet all the kind people at the community centers. You went to great lengths to make me feel welcome; to find me a translator, and even ask me to stay for 'de aanschuiftafel'.

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Executive Summary

'To plan for accessibility (...) is to focus on the ends rather than the means and to focus on the traveller rather than the system: do people have access to the activities that they need or want to participate in?' (Handy, 2002, p. 4).

In many countries, evidence of transport-related social exclusion continues to grow, which is considered to have a significant effect on people's subjective well-being as it limits the act of participating in out-of-home activities. The closely related notion of transport poverty refers to the situation where 'when distances are large, those with less potential to be mobile may be constrained in participating in the economic and social life of the community due to reduced accessibility to opportunities, services and social networks'. In various studies, groups have been identified at-risk to be exposed to transport poverty, which amongst others include people living in peri-urban areas (larger travel distances) and people on lower incomes (transport costs take up a greater proportion of their incomes). Moreover, transport poverty is argued to only occur when transport disadvantage (e.g. lack of car availability) and social disadvantage (e.g. low income) overlap. Therefore, risk to be exposed to transport poverty is expected to be larger in areas for which the chances are higher for these two disadvantages to overlap, such as in vulnerable neighbourhoods. For various peri-urban areas (also known as outskirts) in the Netherlands concerns have been expressed related to high travel times and costs to visit work, school or the hospital. Besides the long travel times, peri-urban areas are considered prone to transport poverty as lower densities in facilities (and possibly scarce public transport) can make people more reliant on private car usage to access key activities. One of those peri-urban areas where signals of transport poverty have been observed is The Hague Southwest. Elaborately, accessibility analyses have measured that, in some neighbourhoods, relevant jobs for high-income earners (income of > €37,700 per year) are three times more accessible than for low-income earners (income < €18,800 per year). Moreover, various public transport lines are said to be of insufficient quality, due to high travel times and the absence of lines in east-west direction. Moreover, the car is assumed to play a minor role in providing access, as for most households the car is assumed hardly affordable. These are reasons why this research chose to focus on The Hague Southwest for deeper analysis.

The observed evidence on transport-related social exclusion is argued to justify equity-focused transport policies, which focus on the fair distribution of resources, and their associated costs and benefits. Taking a broader perspective, one can refer to mobility justice, as it considers a wider range of actors and is broadly denoted as 'all issues of justice related to people's everyday mobilities'. Countering mobility injustice, however, appears to be rather complex due to various reasons. First, the evaluation method generally adopted in the transport and mobility sector, the cost benefit analysis (CBA), might seem neutral as it weighs all identified costs and benefits. However, it does not take into account the distribution effects amongst various groups in society as it takes a utilitarian perspective on distribution; providing a maximum for as many as possible. Therewith, the perception of equity rooted in assessments affects the way resources are distributed and policy decisions are made. Critique on this approach argues that addressing issues of mobility injustice requires adopting an approach which also takes into account the most vulnerable. Second, the heterogeneity in mobility needs make it impossible to find one solution which satisfies all needs at once. The fundamental contradiction in public transport emphasises this; public transport infrastructure strategies either choose to focus on regional accessibility or enhance intricacy. The first would satisfy the needs of the people crossing further distances, e.g. the commuters, whereas the latter satisfies the traveler who benefits from a bus stop at every corner, e.g. the physically disabled. Third, contextual complexities form additional challenges to find suitable solutions countering mobility injustice. Specific for The Hague Southwest, besides countering accessibility issues, newly proposed solutions will also have to focus on efficient usage of scarce public space, as a consequence of the newly build 50,000 houses in The Hague. Moreover, public transport operational companies suffer from reduced incomes and staff shortages which means solutions also have to take into account the economic feasibility for the operational side. Additionally, a mobility transition towards cleaner/active mobility is in motion to reduce transport related emissions. However, social and environmental sustainability policies can create tensions and might ask for different priorities and approaches.

It is argued that, in order to properly address transport poverty and ensure well-being for all, personal and contextual circumstances as well as desired levels of activity participation from the local community's perspective should be considered. An important point here is that the ability to convert mobility into actual movement to access valued activities depends on a whole range of other factors besides the availability of mobility as a resource. For instance, having a bus available is not helpful if you are not capable of reading timetables. This approach to injustice in transport contrasts with the commonly used measures of accessibility in the traditional rationality paradigm, as it tries to understand situations encountered by individuals instead of using assumptions in terms of what should happen to create well-being. An approach which has recently been gaining attention in transport literature as an approach to consider issues of transport justice and improved individual well-being is the Capabilities Approach. Central to this approach is that it puts the emphasis on individuals' opportunities to access valued activities (capabilities) instead of focusing on realised behaviour. It therewith perceives mobility as a means to achieve valued activities (enabled by movement), rather than an end on its own. Everyday mobility experiences can be used as an analytical tool to describe the relationship between mobilities and capabilities; it creates understanding in how mobility contributes to, or impedes, individuals' opportunities to participate in out-of-home activities, and thereby affects one's subjective well-being.

Although in various areas in the Netherlands, such as peri-urban areas, signals of transport poverty have been identified, researchers call for more in-depth research into the consequences of accessibility issues, from the perspective of at-risk groups who experience accessibility and/or mobility issues. This is suggested as the experience of accessibility issues might only be indicated as accessibility poverty (a sub-category of transport poverty) if it actually hinders to participate in society (which includes a.o. paid work, voluntary work, social participation). Moreover, an in-depth understanding of the variety in barriers which can be encountered by at-risk groups shaping accessibility issues, as well as their mechanisms occurring in the context of an area with high concentrations of at-risk groups, such as vulnerable neighbourhoods, is still lacking. Therefore, a knowledge gap was identified studying perceived accessibility and accessibility barriers from the at-risk group's perspective in vulnerable neighbourhoods in peri-urban areas, through the use of the analytical tools, capabilities and everyday mobility experiences.

Through the use of a case study of a vulnerable neighbourhood in The Hague Southwest, this research aims to enhance understanding of the mechanisms underlying the causes (accessibility barriers) and consequences (on the opportunities to access valued activities) of accessibility issues from a residents' perspective, in the context of vulnerable neighbourhoods. The focus on everyday mobility experiences and capabilities contributes to a deeper understanding of the problem's nature from the perspective of a group for which currently very little is known. Moreover, it provides insight in how mobility contributes to, or impedes, individuals' opportunities to access valued out-of-home activities. This is considered vital information for the effective design of solutions/policy instruments countering mobility injustice, relevant to accessibility. This research uses the enhanced understanding of these mechanisms to propose a general approach to the problem under study. It aims to answer the main research question: How can municipalities and private parties reduce mobility injustice through the focus on individuals' capabilities and everyday mobility experiences to identify solution pathways, in the context of vulnerable neighbourhoods?

The Capabilities Approach is operationalised in this research through the use of Microstories, a specific form of in-depth interviews which are descriptions of individuals' everyday mobility experiences. Two concepts of main importance related to everyday mobility experiences are resources and conversion factors. Resources refer to the tangible mobility resources (public and private) as well as the activity opportunities (location of an activity, opening times) available to an individual. Conversion factors refer to the extend to which an individual is able to convert available resources into actual movement to access valued opportunities. For example, a lack of resources and a lack of confidence to use public transport might shape accessibility issues, and are therefore also referred to as accessibility barriers in this research. In-depth interviews were considered a suitable approach to provide the richness of the data required to enhance insight into the causes and consequences of accessibility issues encountered by individuals. Moreover, as more traditional approaches such as online surveys are, as mentioned in literature, less effective to reach the group under study, this research chose to adopt interviews. Besides the use of a case study, this study uses a combination of literature review, expert interviews

and desk research.

The results observed a wide variety of individual and contextual conversion factors. Most of the conversion factors showed to be personal, or sub-group and sometimes age group specific (e.g. reduced confidence using public transport due to language or physical difficulties). Other accessibility barriers or enablers intersected the different age groups. Some of these factors were (mobility) resource related; high fares related to income as main barrier for public transport usage, the importance of the car to enable accessibility and the importance of the availability of a social network (in possession of a motorised vehicle). Moreover, individuals' feelings and perceptions showed to affect one's choice in transport mode, which sometimes reduced the set of transport options. This included one's: confidence levels (language barriers), familiarity with the use of a transport mode and individual perceptions of safety. For example, some did not take the bicycle into consideration as a travel option for longer distances, as they were unfamiliar with its usage over longer travel distances and were used to the car for longer distances. Some barriers appeared in other sectors than the infrastructure and mobility sector. For example, mental issues related to socio-economic problems for some affected the ease of moving and the activity opportunities considered. Moreover, accessibility issues were often shaped by an accumulation of barriers. The distinction of possible consequences on resident's capabilities however appeared more difficult. The first remark made by all participants was that they perceived the accessibility inside of the neighbourhood as good, primarily due to easy access of daily activities on foot, which was considered a pleasant mode of transport as it is both healthy and free. It often became clear that accessing places outside of the neighbourhood for most participants was considered more difficult; reasons mentioned mostly concerned high tram fares. However, only for part of the respondents did these barriers also affect their level of perceived accessibility, contrary to what was expected based upon the objectively low accessibility levels measured in previous conducted analyses. Some specifically mentioned they did not visit places outside the neighbourhood often or at all, but also did not feel the need to. On the other hand, there were respondents who mentioned they would like to visit certain places outside of the neighbourhood more often, if it were cheaper or easier to move by public transport i.e.; enhanced confidence (with the Dutch language or someone to travel with), more affordable, less transfers or more time at hand. For adolescents, the main consequences on their capabilities related to the little sports facilities available in proximity. It showed especially difficult to research the consequences of accessibility issues, due to the possibility that different mechanisms might occur. Moreover, residents often found a way to reach their valued activities, even if it showed to require a lot of effort (long travel times, physical capacity, or else). These efforts were often not expressed, possibly as they are unnoticed, or are shaped by a mechanism such as adaptive preference (where one adapts to an adverse situation).

Primarily in light of the equity criterion, promising solution pathways in the neighbourhood under study (and presumably in other vulnerable neighbourhoods with similar accessibility issues) are focused to create proximity, as they take away the need for continuous travel expenses. Other solutions expected to be of most value in light of equity are the policy interventions which intervene on a micro-level. These are expected to fit into the mobility practises of residents more than to focus on large scale public transport projects, which a large group of residents presumably would not be able to reap the benefits from, if fares would not be reduced simultaneous. Relevant to social activities this would point at the improved walking environment and focus on public transport pricing policies. Related to the accessibility of service jobs in the city center, public transport pricing policies are also assumed relevant, however, they should be combined with a measure which offers services at earlier hours in order to be effective. Jobs in the Westland (for which there currently are no feasible connections), the introduction of a new service would provide a more feasible option. Besides the criterion of equity, another criterion which appeared to be of great importance to assess solution pathways in context of the area under study (and most likely also in other vulnerable neighbourhoods which consist of a wide variety in cultural backgrounds) are residents' 'customs and habits'. This is considered an important criterion to take into account during the design of a new service, as it will presumably determine whether the new service will be supported by the community and thus whether it will be effective in reaching its goal (enhancing accessibility) or not. When setting up a pilot programme for a new design of a service it is therefore highly recommended to include the group designed for (or representative groups). From an equity perspective a demand driven bus/van service is promising as it also takes into account the people who do not own a driver's

license or a car. Moreover, to reduce accessibility barriers for some activities/sub-groups it is also interesting to focus on the 'help offering side'. One feasible solution includes to offer training to public transport operators, touching upon topics such as: the added value to broadcast transfer information in the bus and the importance to wait until all passengers have taken their seat before driving. Finally, providing access for all requires to involve other relevant sectors, complementary to the solutions in the mobility/infrastructure sector. The development of programmes which support residents to lift mental barriers that impede movement, and thus access to valued activities, are considered particularly important in the context of this neighbourhood and presumably other vulnerable neighbourhoods. This is due to the fact that often the mental barriers impeding movement were related to socio-economic problems (such as debts and little exposure to activities out of their comfort zone). Examples include to set up empowerment programmes for adolescents and support programmes for future employees.

This study concludes that in order to reduce mobility injustice it is crucial to focus on the circumstances encountered by individuals. Factors enhancing or limiting individuals' ability to move, which affect one's opportunities to access valued activities, are sub-group or age group- as well as context- specific. Moreover, the activities considered relevant to an individual, and the way they are valued, also depend upon one's sub-group and possibly depend upon cultural factors. This suggests to adopt a new approach to assess accessibility, which allows to vary the types of activities taken into consideration, as well as their weighing, dependent upon the group under study. Moreover, desired levels of accessibility can be different per community, affecting one's perceptions and expectations of accessibility. If from a community's perspective accessibility 'issues' are not experienced a problem, there might be no interest in the use of a solution which tries to solve this 'problem'. On the other hand, this research recognises that the observation of the consequences of accessibility issues are more difficult to identify in a subjective way (using a bottom-up approach), as individuals might not oversee the consequences or identify them as an issue. Often, people find a way to reach their valued destination, even if it showed to require a lot of effort. Nevertheless, these efforts reduce one's transport options which have adverse effects on the choice in activities (thus on one's capabilities) and makes one more vulnerable for change. Therefore, these additional efforts cannot be ignored, which is why a standard level of accessibility should be guaranteed through the use of a top-down approach. This however requires to develop concrete accessibility standards.
The case study results have shown that in the context of a vulnerable neighbourhood, if an activity allows to create proximity, it is considered most effective to reduce unjust accessibility, as it enables accessibility on foot and thereby takes away the prominent barrier of continuous transport expenses. Moreover, for the activities where creating proximity might not be feasible, suitable interventions should focus on a micro-level rather than on large, costly public transport projects, as many residents presumably would not be able to reap the benefits of such projects if the fares are not reduced simultaneously. Promising micro-level policies include to offer a free public transport ticket once a month to low-income households, or improve the walking environment; introducing green areas and straightening the pavement. The strategy to address unjust accessibility however highly depends on the travel purpose and type of activity. When enhancing access to an activity requires to introduce a new service, it seems essential to include the group designed for in order to develop a solution supported by the community; to fit their 'customs and habits' and account for the diversity in needs. Valuable stakeholders to include are user's associations/cooperative as well as 'community experts' (community centers or voluntary organisations). In light of the observed customs and habits, facilitating an informal ride sharing system is more appropriate, and also observed in a non organised manner, than to offer a commercial system. Furthermore, it appears crucial to adopt an interdisciplinary approach to address issues of mobility injustice, as often accessibility issues are shaped by a combination of barriers manifesting throughout different sectors. Programmes focusing on the empowerment of adolescents and job seekers therefore shows promising to counteract mental barriers, additional to solutions in the mobility/infrastructure sector. Collaborations with parties trusted by residents, such as workers at community centers and teachers, is considered crucial for their effectiveness. Moreover, adopting an interdisciplinary approach allows to design out of the box solutions to solve the problem. For example, a lack of schools available in the surroundings can also be solved through the adjustment of policies for the number of children allowed in a school. Finally, further research relevant to the needs of specific at-risk groups, and the added value of mobility solutions in vulnerable neighbourhoods in practice through pilots, are expected to be of significant value in reducing mobility injustice.

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Introduction

1.1 Problem definition

In many countries, evidence of transport-related social exclusion continues to grow, which is considered to have a significant effect on people's subjective well-being as it limits the act of participating in out-of-home activities (Lucas, 2012). The closely related notion of transport poverty refers to the situation where 'when distances are large, those with less potential to be mobile may be constrained in participating in the economic and social life of the community due to reduced accessibility to opportunities, services and social networks' (Pot et al., 2020, p. 30) (Currie et al., 2010). In various studies, groups have been identified at risk to be exposed to transport poverty, which amongst others include people living in peri-urban areas (larger travel distances) and people on lower incomes (transport costs take up a greater proportion of their incomes) (Martiskainen et al., 2021). Moreover, according to Lucas (2012), transport poverty only occurs when transport disadvantage (e.g. lack of car availability) and social disadvantage (e.g. low income) overlap. Therefore, risk to be exposed to transport poverty is expected to be larger in areas where chances are higher for these two disadvantages to overlap, such as vulnerable neighbourhoods. These neighbourhoods are generally referred to as neighbourhoods with a high number of unemployed residents, low-income residents or residents with an allowance (Kullberg et al., 2021).
For various peri-urban areas (also known as outskirts) in the Netherlands, concerns have been expressed related to high travel times and costs to visit work, school or the hospital (Raad voor leefomgeving en infrastructuur, 2020). Besides the long travel times, peri-urban areas are considered prone to transport poverty as lower densities in facilities (and possibly scarce public transport) can make people more reliant on private car usage to access key activities (Pot et al., 2020). One of those peri-urban areas where signals of transport poverty have been observed is The Hague Southwest, where high-income earners (income of > €37,700 per year) have greater access to suitable jobs than low-income earners (income < €18,800 per year). From various national studies it appears that absence of reachable employment options is considered a problem for two thirds of low-income job seekers and that, as a consequence, one third refrains from searching (Studio Bereikbaar et al., 2022)[1].

Lucas (2012) argues that the growing body of evidence on transport-related social exclusion justifies equity-focused transport policies. These policies revolve around the notion of mobility equity, which aims to distribute resources, and their associated costs and benefits, fairly (Litman, 2018; Snellen et al., 2021). Taking an even broader perspective one can also refer to mobility justice, which considers a wider range of actors and concerns and is broadly denoted as 'all issues of justice related to people's everyday mobilities' (Verlinghieri & Schwanen, 2020, p. 3). However, one might wonder what is considered a fair distribution, which depends upon the perception of fairness rooted in the evaluation method adopted. This perception affects the choices made in the deployment of resources, measures or investments (Snellen et al., 2021). Generally, in policy decisions regarding transport and traffic a widely adopted evaluation method is the cost benefit analysis (Geurs, 2018). Although this evaluation method might seem neutral as it weighs all identified costs and benefits, it does not take into account the distribution effects amongst various groups in society. Therefore, critique on traditional approaches argues that addressing issues of mobility injustice requires adopting an approach which also takes into account the most vulnerable (Verlinghieri & Schwanen, 2020). However, researching the needs for this group has appeared challenging as the traditional sampling methods are often ineffective in recruiting participants due to these groups' 'social or physical location, vulnerability or otherwise hidden nature' (Ellard-Gray et al., 2015, p. 1). This is why policy makers also refer to these vulnerable groups as the

[1] Studio Bereikbaar, Een nieuwe Kijk, & Movin' (2022).*Pre-preverkenning Zuidwestlandcorridor*[Unpublished tech. report].

'hard-to-reach' (Ellard-Gray et al., 2015; Maia et al., 2016).

Finding suitable solution pathways to counter issues of mobility injustice appears to be rather complex due to various reasons. Firstly, mobility-related practices are often highly personal and can be influenced by contextual circumstances. Therefore, a solution that suits the mobility needs for one group under particular contextual circumstances might not suit the needs of another group. The fundamental contradiction in public transport emphasises this; public transport infrastructure strategies either choose to focus on regional accessibility or enhance intricacy. The first would satisfy the needs of the people crossing further distances, e.g. the commuters, whereas the latter satisfies the traveler who benefits from a bus stop at every corner, e.g. the physically disabled. Moreover, mobility concepts such as micro mobility, ride-hailing and demand responsive transit are perceived to have potential to address equity issues, but again serve particular niche groups (Palm et al., 2021; Yan & Howe, 2019). Furthermore, a strong body of social-scientific evidence shows that mobility preferences can change over time. Therefore, mobility solutions which fit the needs of a particular individual prior to a so called 'key life event' might not be as suitable later on (Rau & Manton, 2016; Scheiner, 2014; Schoenduwe et al., 2015; Van der Waerden et al., 2003; Vecchio & Martens, 2021). Secondly, failure to consider equity during the implementation phase can enlarge inequities as a result of additional barriers created to participate in these systems (Shaheen et al., 2017). For example, people with no internet access, smart phones and/or credit cards are unable to access services which require (paid) applications.
Third, additional contextual complexities often narrow the possible solution sphere as proposed solutions also have to comply with other policy goals such as the efficient usage of scarce public space or a transition towards cleaner mobility. These different policy goals can also be at odds with each other which brings up other ethical debates concerning the prioritization of these goals (Mattioli, 2016; Sagaris et al., 2020).

1.2 Related studies

Generally, research concerning transport poverty relies on large scale accessibility studies and the identification of mobility patterns through simulations using transport data (Lucas et al., 2018; Pot et al., 2020) (Studio Bereikbaar et al., 2022)[1]. However, it is argued that, in order to properly address transport-related social exclusion and create well-being for all, personal and contextual circumstances as well as desired levels of activity participation from the local community's perspective should be taken into account (Kenyon et al., 2002; Sen, 2009). An important point here is that the ability to convert mobility into actual movement to access valued activities depends on a whole range of other factors besides the availability of mobility as a resource. For instance, having a bus or a bicycle available is not helpful if you do not know how to read bus timetables or are lack confidence and/or skills to cycle (Verlinghieri & Schwanen, 2020). According to Banister (2019) this approach to injustice in transport contrasts with the commonly used measures of accessibility in the traditional rationality paradigm, as it tries to understand situations encountered by individuals instead of using assumptions in terms of what should happen to create well-being.

1.3 Knowledge gap

A possible solution pathway to involve these personal and contextual circumstances more in transport planning according to Karner et al. (2020) and Verlinghieri and Schwanen (2020) is by shifting from state-centric approaches to more society-centric approaches. Whereas the former concentrates on planning and policy as well as questions of injustice by state actors, the latter expands the idea of what planning is outside the traditional institutions and considers e.g. community organisations (Nixon & Schwanen, 2019). One of these society-centric approaches is the Capabilities Approach, which has recently been gaining attention in transport literature as an approach to consider issues of transport justice and improved individual well-being as it considers 'transport systems in the light of the accessibility they can provide' (Martens, 2016, p. 14). Central to this approach is that it puts the emphasis on individuals' opportunities to access valued activities (capabilities) instead of focusing on realised behaviour. It perceives mobility as a means to achieve valued activities (enabled by movement), rather than as an end on its own. Everyday mobility experiences can be used as an analytical tool to describe the relationship between mobilities and capabilities; it creates understanding in how mobility contributes to, or impedes, individuals' opportunities to participate in out of home activities, and thereby affects

one's subjective well-being (Vecchio, 2020). However, as previously discussed, these society-centric approaches, such as the Capabilities Approach, are in contrast with the commonly used measures of accessibility and have not been widely adopted in the mobility sector yet.
Although in various peri-urban areas in The Netherlands signals of transport poverty have been identified, various researchers call for more in-depth research into the consequences of accessibility issues, from the perspective of at-risk groups who experience accessibility and/or mobility issues (Pot et al., 2020; Van Der Bijl, 2020). This is suggested as the experience of accessibility issues might only be indicated as accessibility poverty (a sub-category of transport poverty) if it actually hinders to participate in society(Krabbenborg & Uitbeijerse, 2023). Society participation according to Schmeets (2018) includes paid work, voluntary work, participation in associations, social participation (amongst others contact with family and friends) and providing help to other households. 'The SCP thereby adds sports and cultural activities' (Krabbenborg & Uitbeijerse, 2023, p. 9). Moreover, an in-depth understanding of the barriers encountered by at-risk groups which shape accessibility issues, as well as their mechanisms occurring in the context of an area with high concentrations of at-risk groups, such as vulnerable neighbourhoods in peri-urban areas, is still lacking. Therefore, a knowledge gap was identified studying perceived accessibility and accessibility barriers from the at-risk group's perspective in vulnerable neighbourhoods in peri-urban areas, through the use of the analytical tools capabilities and everyday mobility experiences.

1.4 Research objective

This research aims to enhance understanding of the mechanisms underlying the causes (accessibility barriers) and consequences (on the opportunities to access valued activities) of accessibility issues from a residents' perspective, in the context of vulnerable neighbourhoods. The focus on everyday mobility experiences and capabilities contributes to a deeper understanding of the nature of the problem from the perspective of a group for which currently very little is known. Moreover, it provides insight in how mobility contributes to, or impedes, individuals' opportunities to access valued out-of-home activities. This is considered vital information for the effective design of solutions/policy instruments countering mobility injustice, relevant to accessibility. This research uses the enhanced understanding of these mechanisms to propose a general approach to the problem under study.

1.5 Research contribution

This research makes use of the Capabilities Approach to integrate the aspect of well-being into the mobility sector. In doing so, it addresses issues of mobility injustice, relevant to accessibility, and contributes to this growing field of research. In making visible perceived accessibility as well as accessibility barriers experienced by residents in vulnerable neighbourhoods, this research also has a distinct societal relevance. It adds to the lacking knowledge about this group and provides valuable insights into the resources best employed by municipalities and private parties to improve this group's well-being.

1.6 Research questions

This research strives to answer the following questions:

How can municipalities and private parties reduce mobility injustice through the focus on individuals' capabilities and everyday mobility experiences to identify solution pathways, in the context of vulnerable neighbourhoods?

1. How is mobility (in) justice related to capabilities and everyday mobility experiences?
2. What issues of mobility injustice, relevant to accessibility, are observed in the context of The Hague Southwest?
3. What capabilities and everyday mobility experiences can be observed for residents of a vulnerable neighbourhood in The Hague Southwest?
4. When recognising individuals' capabilities and everyday mobility experiences, what solution pathways can be identified for a vulnerable neighbourhood in The Hague Southwest?

5. What are the advantages and disadvantages of the identified solution pathways?
6. When recognising individuals' capabilities, everyday mobility experiences and evaluated solution pathways, how can municipalities and private parties reduce mobility injustice, relevant to accessibility, in vulnerable neighbourhoods?

1.7 Method

This research makes use of a mixed method approach, consisting of the methods: literature review, expert interviews and desk research in different research phases. It bases its primary discussion on a case study for a vulnerable neighbourhood in The Hague Southwest. A case study 'chooses to focus on the individual unit of study and the setting of its boundaries and are known to comprise more detail, richness, completeness and depth for the unit of study' (Denzin & Lincoln, 2011, p. 301). A case study was considered suitable for this research due to the level of detail required to understand accessibility issues and the mechanism arising.
Insights into perceived accessibility and accessibility barriers are gathered adopting the Capabilities Approach, operationalised through the use of Microstories, which are 'short accounts of personal everyday mobility experiences which help to account for the features that facilitate or impede individual mobility.' (Vecchio, 2018, p. 1). These Microstories are collected through semi-structured in-depth interviews, considered suitable due to two primary reasons. First, it allows to explore issues in-depth and investigate unresearched mechanisms. This is considered valuable to add to the understanding of the causes and consequences of accessibility issues in the context of vulnerable neighbourhoods in peri-urban areas. More traditional approaches, such as online surveys, are considered less effective in similar areas as the one under study. This is based upon identified barriers to participate in research such as language barriers and a lack of internet access (Ellard-Gray et al., 2015).

1.8 Scope

The area under study: The Hague Southwest is a peri-urban area on the outer skirts of The Hague and includes the neighbourhoods Bouwlust & Vrederust, Moerwijk and Morgenstond. This part of the city, with 70,000 inhabitants, distinguishes itself from other areas in The Hague due to its green areas; the Uithof and the Zuiderpark and spacious urban planning. It also knows various socio-economic problems, such as inhabitants living with debts, health issues, long-term unemployment and youth growing up in a socially vulnerable environment. With a total of 32-62% of low-income households (< €18,800 per year), this area has one of the highest concentration of low-income households in the Netherlands (Gemeente Den Haag, 2023)(Studio Bereikbaar et al., 2022)[1].
The Hague Southwest's physical location has been identified as a factor that strengthens the vulnerable position of this area, as historically the area is seen as an endpoint of the city, which gives the impression that people do not travel towards this area without a specific reason. Public transport access to The Hague Southwest, and most specifically towards its furthest 'edge' Bouwlust & Vrederust is perceived as scarce, due to long travel times and a lack of connections in east west direction (Studio Bereikbaar et al., 2022)[1].
Drawing on this analysis, the neighbourhood Bouwlust & Vrederust was chosen for deeper research. In this neighbourhood, the largest difference in job availability was identified comparing high-income earners to low-income earners. This is assumed to be an issue in this neighbourhood as 40% of households are in the category low-income households (CBS, 2022). The neighbourhood was also chosen due to the fact that the Municipality of The Hague has asked Rebel Living & Mobility B.V. to help develop sustainable mobility concepts for The Hague Southwest.
Jobs assumed suitable for a substantial amount of Bouwlust & Vrederust's residents are primarily focused on either the service sector or manual labour (such as agriculture, manufacturing, construction, mining, or maintenance sectors) (Parietti, 2023). Relevant jobs in the service sector are mainly concentrated in and around the city center of The Hague, The Hague HS and in Scheveningen and the area Southwest itself also offers some relevant jobs. Manual labour jobs in sectors such as industry and horticulture are primarily located in the Westland (Naaldwijk), Zoetermeer, Rijswijk and the port industrial complex (Europoort and Maasvlakte I and II). The difference in job availability related to manual labour/service jobs in comparison to office jobs is higher for Bouwlust & Vrederust than in the other neighbourhoods in The Hague Southwest. This could be due to various reasons. Firstly, the costs to

purchase a car are presumably high for a considerable amount of residents, although various relevant jobs, for example at the ports of Rotterdam or the horticulture sector, are primarily accessible by car (services are at times when the public transport does not run yet). Studio Bereikbaar et al. (2022)[1] argue that the car plays a minor role as an accessibility enabler for relevant jobs for low-income residents. Moreover, car ownership is argued to be the biggest source of transport inequality in The Hague, especially at the outer skirts; the car provides a good level of accessibility for the households that can afford one, while low-income residents, for whom the car is hardly affordable, cannot reap the benefits. Furthermore, public transport is not assumed to be a worthy replacement due to the high costs as well as high travel times. The public transport lines from The Hague Southwest towards the city center and The Hague HS, as well as towards the Westland are found to be of insufficient quality (Studio Bereikbaar et al., 2022)[1]. The bicycle is however said to form an important accessibility enabler for relevant jobs and reduce transport inequality as relevant jobs are reachable in cycle distance (<7.5 km).

The complex solution sphere in The Hague Southwest is shaped by various challenges. The Hague, as well as other cities in the Netherlands, is faced with a great challenge, where 50,000 new houses will be build until the year 2040. Therefore, besides countering issues of inequitable accessibility, newly implied solutions will also have to focus on the efficient usage of scarce public space. Furthermore, as a consequence of the Covid pandemic, public transport in the Netherlands suffers from reduced incomes and consequently staff shortages (De Volkskrant, 2021; Metropoolregio Rotterdam Den Haag, n.d.). Solutions must therefore also be economically feasible from an operational perspective. Additionally, a mobility transition towards cleaner/active mobility is in motion to reduce transport related emissions. However, in various contexts, social and environmental sustainability have shown to create tensions, such as in car-dependent peri-urban and rural areas (Mattioli, 2016; Sagaris et al., 2020). Solutions that aim to address both social and environmental sustainability should therefore offer a worthy alternative in comparison to the car. All together, these aspects narrow down the solutions which might be considered feasible.

1.9 Thesis outline

This thesis first elaborates on all the methodologies adopted during this research. Chapter 3 provides insight the definitions as well as the theoretical frameworks used to support this research. Chapter 4 provides an enhanced understanding of the case study and creates an idea of how mobility injustice, relevant to accessibility, manifests itself in the neighbourhood under study. In chapter 5 the results form the resident interviews and second-hand interviews with ‘community experts’ are presented which provide insight into residents’ capabilities and mobility experiences. Subsequently, chapter 6 provides various potential solution pathways to counter issues of mobility injustice, related to accessibility, in the context of the vulnerable neighbourhood under study which can be deployed by the municipality of The Hague or private parties. Their benefits and limitation are presented in chapter 7. The case study results provide relevant elements for a more general approach to address mobility injustice, relevant to accessibility, in vulnerable neighbourhoods, presented in chapter 8. Chapter 9 discusses the research interpretations, implications, limitations and generalisability. Moreover it provides a reflection on the use of the Capabilities Approach operationalised through Microstories, draws a final conclusion and provides recommendations for future research and practise.

2

Methodology

Through the use of a case study of a vulnerable neighbourhood in The Hague Southwest, this research aimed to enhance understanding of the mechanisms underlying the causes (accessibility barriers) and consequences (on the opportunities to access valued activities) of accessibility issues from a residents' perspective, in the context of vulnerable neighbourhoods. This research used this enhanced understanding, gathered in the case study area, and combined it with literature review, desk research and expert interviews to propose promising solutions and a general approach to address mobility injustice, relevant to accessibility.
Figure 1 shows the different methods adopted for each specific research question. In the sub sections beneath, each of the different research methods adopted throughout the research stages are explained.

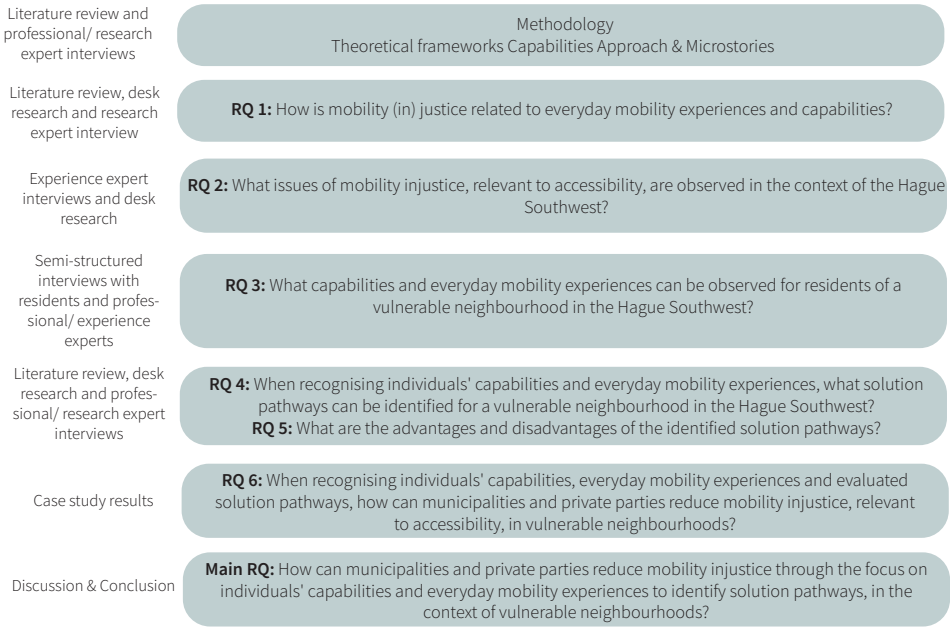

Figure 1: Methodological framework

2.1 Literature Review

Literature review was used in various stages of the research. First, literature review aimed to study the state of the art on mobility equity and mobility justice in order to discover interesting knowledge gaps in literature which provided scope for further research. Thereafter, literature was extensively researched to find theoretical frameworks relevant to transport poverty/social exclusion and well-being in mobility sector. This resulted in the main framework adopted: the Capabilities Approach, as it was considered to suit the research aim well due to its ability to focus on individual well-being as it considers 'transport systems in the light of the accessibility they can provide' (Martens, 2016, p. 14). Another search iteration primarily used literature to research the Capabilities Approach, how it is adopted in the mobility sector, how it relates to: Lucas (2012) framework of transport poverty / social exclusion and the notion of well-being in the mobility sector. This search iteration aimed to discover a suitable approach to operationalise the Capabilities Approach in the mobility sector, in the context of a vulnerable neigh-

bourhood. This also included to search for data gathering methods and interview techniques which appeared suitable to focus on 'the-hard-to-reach'. This finally lead to the use of Microstories, considered suitable due to the in-depth insights that can be created into the contextual circumstances shaping the mobility situations individuals encounter daily, through the focus on everyday mobility experiences. The focus on everyday mobility experiences was considered suitable as it can be used to describe 'the plural relationship between mobilities and capabilities' (Vecchio, 2020, p. 1). Finally, literature review was adopted in the methodology section to create insight into the possible ways to analyse data on capabilities and everyday mobility experiences.
In order to answer the fourth and fifth research question, literature review was used to research potential solution pathways which could enhance accessibility for residents in vulnerable neighbourhoods, using research conducted in areas with similar socio-economic characteristics.

Papers were selected according to certain criteria. In the first search iteration to create the theoretical framework, articles published in academic papers were solely taken into account. Search iterations after also preferably took into account articles which were not published in academic papers, as well as various books. However, when articles were not published in academic papers, citation numbers were considered more carefully.

Table 1: Conceptual framework Literature review

Concepts
Mobility equity; Transport equity; Mobility Justice; Transport Justice; Evaluation methods for transportation equity; Evaluation methods for mobility equity; Methodologies for transport and mobility justice research; Transport Poverty; Social-exclusion; Perceived accessibility; Well-being; Society-Centric approaches; Capabilities Approach; Vulnerable neighbourhoods; Hard-to-reach; Microstories; Everyday mobility experiences; Informal car sharing; Informal mobility systems; Co-design; Co-production
Search terms
(Mobility) AND (Equity)
(Transport) AND (Equity)
(Mobility) AND (Justice)
(Transport) AND (Justice)
(Transport) AND (Poverty)
(Transport) AND (Poverty) AND (At-risk) AND (Groups)
(Social) AND (Exclusion)
(Perceived) AND (Accessibility)
(Equity) AND (Mobility) AND (Evaluation methods)
(Society) AND (Centric) AND (Approaches)
(Participatory) AND (Approaches)
(Capabilities) AND (Approach)
(Capabilities) AND (Approach) AND (Mobility)
(Capabilities) AND (Approach) AND (Benefits) AND (Limitations)
(Qualitative) AND (Research) AND (Methods)
(Interview) AND (Techniques)
(Research) AND (Involving) AND (Vulnerable) AND (Groups)
(Reaching) AND (Hard-to-reach) AND (Populations)
(Informal) AND (Car) AND (Sharing) AND (Systems)
(Informal) AND (Mobility) AND (Systems)
(Co-design)
(Co-production)

Different techniques were applied to find relevant papers. To start, different search terms were used in Google Scholar. Firstly, the concept: 'Equity in mobility' was researched. The strategy of backward snowballing was used in relevant articles to find an interesting scope for further investigation. Topics found in these papers of interest were: 'Methods evaluating equity in mobility' and 'Mobility justice'. Secondly, this led to a new search iteration with the following search term: 'Mobility justice'. Again,

backward snowballing was applied, resulting in the exposure of the following concepts: ‘Methodologies for transport and mobility justice research’, ‘Society-centric approaches’ and ‘The Capabilities Approach’. Backward snowballing was adopted to research how various society-centric approaches were adopted in areas with similar socio-economic characteristics to research issues of mobility injustice, relevant to accessibility. This lead to the choice for the Capabilities Approach. A separate search iteration took place researching how to operationalise the Capabilities Approach in the mobility sector, which searched specifically for the term ‘Capabilities Approach’. Another separate search iteration researched relevant qualitative approaches as well sampling methods specifically aimed at reaching ‘hard-to-reach’ participants. Moreover, backward snowballing was used in the papers researching accessibility issues in similar socio-economic areas and/or adopting the Capabilities Approach. This lead to the choice of ‘Microstories’.
Relevant to possible solution pathways, backwards snowballing was applied in the previously discovered papers, studying accessibility issues for areas with similar socio-economic characteristics. Furthermore, separate search iterations took place to search for possible (mobility) solutions and their benefits/limitations.
Finally, different articles and books were suggested throughout the research by professional and research experts. These papers were searched for through the search term of the researcher or the article name in separate search iterations. These papers were primarily relevant to form the theoretical backbone of this research. Moreover, they provided inspiration on the operationalisation of the Capabilities Approach in the mobility sector, as well as to study accessibility issues in similar socio-economic contexts.

2.2 Desk research

Desk research was primarily deployed to gather information in various stages to study the Dutch (policy) context specifically, searching for information which could not be found in literature. Relevant to grey literature and websites, only those of recognised institutions and companies were taken into consideration. First, in order to create insight into the use of the Capabilities Approach and well-being in Dutch context; policy documents, reports and internet sites were used. Thereafter, desk research was used to create enhanced insight into the problem of transport poverty in Dutch context which was used to make a choice for the scope of the case study. In order to create more in-depth insight into transport poverty in the Netherlands and to search for at-risk groups for which transport poverty had been signalled in the Netherlands, various previously conducted analyses were used. These analyses were mostly conducted by consultancy and research companies in the transport and mobility sector. This lead to the choice for The Hague as case study. Desk research in this stage was used to deepen the understanding of the case study context, searching for closely related challenges such as the scarce use of public space and Dutch public transport issues. Moreover, to enlarge understanding of current mobility practices, preferences and life styles of residents in The Hague Southwest, desk research entailed to look at previously conducted analyses by consultancy and research companies on mobility preferences and lifestyle analyses of people in The Hague.
In order to answer the fourth and fifth research question, to look into possible solution pathways as well as their benefits and limitations, again reports from companies (e.g. architecture companies), websites from recognised newspapers or governmental institutions and policy documents from municipality The Hague as well as the Dutch government were used.

Table 2: Conceptual framework Desk Research

Concepts
Rechtvaardige mobiliteit; Vervoersarmoede; Brede welvaart; Kwetsbare wijken; Mobiliteit beleid; Transport beleid; Sport beleid

Search terms
(Mobiliteit) AND (Rechtvaardigheid)
(Vervoersarmoede) AND (Nederland)
(Vervoersarmoede) AND (Den Haag)
(Vervoersarmoede) AND (Kwestbare) AND (Wijken)
(Brede) AND (Welvaart) AND (Mobiliteit)
(Beleid) AND (Brede) (Welvaart) AND (Mobiliteit)
(Transport) AND (Arbeidsmigranten) AND (Den Haag)
(Sport) AND (Beleid) AND (Den Haag)
(Tekorten) AND (Openbaar) AND (Vervoer)

Analyses from consultancy and research companies were primarily accessed through Rebel Living & Mobility B.V. and therewith accessed upon suggestion by one of the consultants. Furthermore, the search techniques adopted for desk research primarily rested upon separate search iterations using the search engines Google and Bing. Desk research was mostly used as a complementary research tool during the research phases a subject arose which required some deeper understanding. These were mostly focused at the Dutch context specifically and therefore, mostly Dutch search terms were used.

2.3 Expert interviews

Expert interviews provided input for various stages of this study. These interviews were semi-structured as the structure it provides was considered beneficial to focus on gathering data based on pre-defined categories, but also to allow for possible other information to come up. Different types of experts were approached, categorised according to data aimed to gather, categorised as: experience, research or professional experts. Professional and research experts were primarily approached to function as a ‘crystallization point’ of (theoretical) knowledge (Bogner et al., 2009). These experts were selected based upon the expertise they have, either professional or from research. Experience experts were approached to gather information as surrogates for a larger group of people; residents of the vulnerable neighbourhood under study (Bogner et al., 2009). The experts providing empirical knowledge were selected on subjective criteria, based upon the knowledge they showed to have regarding residents as they interacted and/or worked with them on a daily basis as well as often lived in or around the area themselves.

2.3.1 Data usage expert interviews

The interviews conducted in an early stage of the research functioned as background information. These experts are not explicitly referred to in the research but often provided new ideas and inspiration for new research pathways and suggestions for relevant research papers or previously conducted analyses. First, interviews functioned to create an initial idea of the possibilities of various sampling methods and participatory approaches to study individual mobility experiences (in a vulnerable neighbourhood). Insights were used to create an idea on a suitable way to gather mobility data and transform it to find suitable solution pathways. Second, an expert interview was used to research appropriate ways to properly set up a research using interviews and to cope with research barriers to sample the ‘hard-to-reach’ group of participants. These insights were used to create a suitable research design as well as elements to pay attention to throughout the research process. After the choice was made to focus on the Capabilities Approach, an expert interview functioned to provide information on the use of the Capabilities Approach in the mobility sector, as well as to provide inspiration for useful methods to operationalise this approach in relation to mobility, and in the context of a vulnerable neighbourhood. Insights were used to create an approach to collect data on capabilities and everyday mobility experiences in the context of a vulnerable neighbourhood.

A second group of experts functioned as background information specifically for the case study. First, experts were approached to get a better understanding of the accessibility issues in The Hague Southwest and discover if certain groups or areas were identified with more accessibility issues. Moreover, these interviews functioned to get a first idea of the target audience as well as how and where to best approach them. Finally, an expert interview was used to provide inspiration on how to transform data, for example of mobility preferences into relevant personas. This interview also provided information on one of the previously conducted analyses to create personas in the neighbourhood under study.

Table 3: Expert interviews used for background information

Expert category	**Function title**	**Argumentation**
Professional experts adopting participatory approaches in the mobility sector studying individual mobility experiences	Mobility consultant Rebel Living & Mobility B.V.; Ports and Logistics consultant Rebel Antwerp	To create insight in the various approaches that can be used to gather data on individual mobility experiences and how to transform this data meaningful in order to identify solution pathways.
Researchers experts in-depth interviews	Professor applied psychology and PhD researcher psychology for an adaptive city	How to set up a research adopting in-depth interviews, how to recruit 'hard-to-reach' participants, barriers arising during in-depth interviews.
Research expert Capabilities Approach and well-being in the mobility sector	Project manager CROW and PhD researcher well-being in the transport sector	Create insight into the opportunities and challenges adopting the capabilities approach and well-being into the mobility sector and provide ideas on how to operationalise the approach.
Professional and experience experts transport poverty related issues arising in The Hague Southwest	Strategic advisor urban mobility municipality The Hague; Resident consultant Staedion	To complement knowledge gathered through desk research, experts were asked about transport poverty occurring in The Hague Southwest and the groups exposed to accessibility issues.
Professional expert creating lifestyle/ mobility preference personas	Director Springco (urban analyst using data to predict how individuals want to live)	Provide inspiration on how to create personas in mobility, related to individual mobility experiences and preferences, as well as provide information on previously created personas for The Hague Southwest

Another group of experts were approached to create insight of capabilities and mobility experiences for various groups of residents, from 'community experts' point of view. These insights were used to enhance understanding in the magnitude of accessibility problems occurring in this vulnerable neighbourhood, as well as the accessibility barriers and their complex mechanisms. Moreover, these interviews also provided information to create a more general idea of the complexities which might also arise in neighbourhoods with similar socio-economic characteristics. These interviews were used as a source of information referred to explicitly in the research.

Table 4: Expert interviews used as second-hand data sources

Expert category	Function title	Argumentation
Experience and professional experts accessibility issues and well-being for elderly	Social worker seniors community center Venen Oorden & Raden ; Volunteers 'Begeleiden en Rijden'; Volunteers community center Venen Oorden & Raden	To create insight into the degree of accessibility, barriers and perceived well-being for elderly from the perspective of social workers and volunteers.
Experience and Professional experts accessibility and well-being for adolescents	Social worker adolescents community center Venen Oorden & Raden	To create insight into the degree of accessibility, barriers and perceived well-being for adolescents from the perspective of social workers and volunteers.
Experience experts accessibility and well-being for adults	Workers community center Venen Oorden & Raden; Volunteer community center Zijden, Steden & Zichten	To create insight into the degree of accessibility, barriers and perceived well-being for adults from the perspective of workers and volunteers.

In the final stage of the research, experts were approached to focus on suitable solution pathways to address accessibility issues as well as enhance residents' perceived well-being in this vulnerable neighbourhood in particular. These interviews also provided elements for a more general approach to address accessibility issues in vulnerable neighbourhoods. The data gathered through these interviews was used explicitly as a source in this research.

Table 5: Expert interviews used for data on relevant solution pathways

Expert category	Function title	Argumentation
Research and professional expert on potential mobility concepts to reduce inequitable accessibility	PhD researcher sustainable mobility concepts in neighbourhoods	To create insight into potential solution pathways reducing accessibility issues (for vulnerable neighbourhoods)
Professional expert on added value green infrastructure for an individual's well-being	Consultant economology Rebel Flora & Faunal	Gather information on the added value of green infrastructure on individuals' perceived health and well-being
Professional and experience expert job opportunities The Hague Southwest	Strategic account manager: Westland, construction, engineering and energy municipality The Hague	To create insight into possible solution pathways to enhance accessibility to relevant jobs in The Hague Southwest.

2.3.2 Data sampling

Experts were mainly approached via one of the consultants at Rebel Living & Mobility B.V. Moreover, snowballing was used to approach some of the community experts who recruited other workers in the community center or provided contacts for workers at other community centers. Finally, the snowballing technique was also applied to approach the strategic account manager of the municipality The Hague.

2.3.3 Data collecting

The design of most semi-structured interviews rested upon pre-defined sub-categories supporting the aim of the interview. The interview designs and these sub-categories can be found in the appendix A. However, the interviews which were used as second-hand data sources to research residents' capabilities and everyday mobility experiences from the perspective of so called 'community experts' rested

upon the same interview design as the inteviews with residents, which will be elaborated upon beneath, and which can be found in appendix B. Interviews with professional and research experts were primarily conducted through video-call, face-to-face or phone call. The interviews with empirical knowledge experts were conducted face-to-face. All interviews had a duration of 30-45 minutes. Either written or oral consent was asked. Interviews were conducted between 01/03/2023 - 20/02/2023 and 01/05/2023 - 05/05/2023. Most interviews were video or audio recorded. However, if recording was not possible, notes were made during the interview.

2.3.4 Data analysing

Intelligent verbatim transcript were created afterwards for all of the interviews. This choice was made as it was considered suitable as it keeps the accuracy of the participant's responses but excludes context that does not add value (Take Note, n.d.). The expert interviews were all coded using the first stage of coding, called initial coding, which fractures the data 'to compare incident to incident and to look for similarities and differences in beginning patterns in the data. In initial coding, the researcher inductively generates as many codes as possible from early data' (Chun Tie et al., 2019, p. 5). It was chosen not to use any additional coding stages (explained in more detail later), as the purpose of these interviews was not to compare the interviews with each other or generate new theory, but rather to distill as much information as possible from the separate interviews. The first stage of coding seemed appropriate for this purpose. All expert interviews were coded a priori. The categories used for the various interviews however differed. The professional and research expert interviews (mentioned in table 3 and 5) used the a priori categories as defined in the interview design in appendix A. However, as the interviews were semi-structured, new categories were also allowed to be formed which were not created a priori. The experience expert interviews (shown in table 4), used the same pre-defined categories as were used for the participant interviews, relating to the main principles of the the Capabilities Approach: conversion factors, resources and capabilities, allowing for any possible sub-categories to emerge within these primary categories.

2.4 Resident interviews

As was stated in the beginning of this section, this research primarily based its discussion on qualitative data gathered through semi-structured interviews with residents. Firstly, qualitative research was considered a suitable research to 'focus on investigation of human experiences from a holistic, in-depth perspective' (Vishnevsky & Beanlands, 2004). This was considered relevant to explore the individual nature of perceived accessibility and accessibility barriers for every person specific. Secondly, this research chose to gather its data through in-depth interviews, and not through a group approach such as focus groups, as participants could be reluctant to talk about topics they might consider sensitive or embarrassing (examples might include a lack of monetary resources or fear of riding a bicycle). Moreover, difficulties were assumed to reach this group through a more traditional approach such as an online survey (Ellard-Gray et al., 2015). This suspicion was also confirmed in earlier studies in The Hague Southwest as well as areas with similar socio-economic characteristics, which gave the impression that residents were less willing to participate in communal gatherings (Rebel Living & Mobility B.V., 2021)[2]. The choice was made to use the form of semi-structured interviews as this was considered to provide the structure helpful to focus on the important aspects of the Capabilities Approach, while also allowing to ask additional follow-up questions needed to enhance understanding in the mechanisms occurring relevant to accessibility barriers. The sections beneath elaborate upon the various research stages for these interviews.

2.4.1 Data sampling

This first stage requires careful attention in the particular context of this case study. As argued above, in literature various groups have been identified which showed challenging for researchers to reach when using traditional sampling methods due to their 'social or physical location, vulnerability or otherwise hidden nature' (Ellard-Gray et al., 2015, p. 1). Vulnerable groups such as elderly with reduced digital skills as well as people with a migration background are identified as less likely to participate in (online) research (Krabbenborg & Uitbeijerse, 2023). Additionally, in a vulnerable neighbourhood with

[2]Rebel Living & Mobility B.V. (2021). *Op Zoek naar een toekomstvast mobiliteitsconcept voor Dreven, Gaarden, Zichten*(Inputnotitie werksessie doelgroepen en mobiliteitsconcepten).[Unpublished report].

high concentrations of low-income households, barriers for research participation such as no internet access must be taken into account.

Ellard-Gray et al. (2015) discuss various sampling strategies that can be adopted to recruit hard-to-reach populations. As suggested by Meyer and Wilson (2009) a combination of these techniques was adopted in this research, exploring the technique which worked best in the context under study. First, respondents were approached at the local supermarket and on the streets. However, this showed ineffective, as people were either in a rush or were not confident enough to speak Dutch. Therefore, it seemed relevant to try a strategy using a 'gate keeper' they trust, as well as to recruit participants at a place where residents would be less in a hurry. Therefore, respondents were approached in various community centers during various group activities such as; knitting class, sewing class, Dutch language courses, adolescents' get together and a communal dinner. Occasionally one of the previous respondents helped to translate during an interview with the next respondent. In the community centers the technique of snowball sampling was occasionally adopted. A limitation of this technique is that there is a higher chance of self-selection bias, therefore it was used as little as possible.
Recognising that sampling at community centers might attract the group of people who are most likely the more socially oriented, respondents were also approached in various other public spaces. This included one building where residents could come in to ask for help regarding certain administrative issues, for example regarding their taxes or received invoices. Finally, respondents were also approached in a public library and in the general practitioner's waiting room. This last location was chosen as it was assumed to attract a wide range of residents, also including residents less keen on leaving the house for social activities, as well as the ones who might be less mobile. Different moments during the day were chosen, including times early in the morning and in the evening in order to recruit working and non working participants. All previously described measures were taken in order to limit bias in participant recruitment as much as possible.

In total, 29 respondents were recruited, which provided enough to create insight into the capabilities and everyday mobility experiences for various age groups. The number of respondents might seem low when comparing it to a more traditional approach such as quantitative surveys, however additional interviews might not provide any additional information after the saturation point ('the point at which no new information or themes are observed in the data' (Guest et al., 2006, p. 59)) was reached. This was considered reached for the age group seniors, as well as in the sub-group stay-at-home mothers with a non-western migration background. Furthermore, as this research aimed to deepen the understand possible mechanisms underlying transport poverty and its possible consequences, it did not aim to draw any quantitative conclusions. Moreover, as this research entailed a duration of 20 weeks in total it was not feasible and not aimed to provide a comprehensive list of all possible barriers for all possible sub-groups.

2.4.2 Data collecting

The interviews were conducted in the period 13/03/2023 until 27/03/2023, in the neighbourhood under study: Bouwlust & Vrederust. The duration of the interviews mostly varied between 20 to 30 minutes and were not scheduled, as this was assumed to be a barrier for research participation. Moreover, most interviews were not recorded as it was also assumed to form a barrier for the respondents to participate, and oral consent was asked. The ability to communicate in either Dutch or English, or the availability of someone to translate was an important selection criterion. Respondents were selected according to their age group as well as factors identified as enhancing risks of exposure to transport poverty, shown in the previous chapter 2.
The respondents were drawn from the total population of residents in Bouwlust & Vrederust. This neighbourhood entails three smaller neighbourhoods, but it was chosen not to take the smaller neighbourhoods into account separately as the (transport) resources offered in all three neighbourhoods are similar and the neighbourhoods have comparable size as well as resident groups. Furthermore, the choice was made to not take the age group under 12 into account, as children under this age might not be aware yet of their own capabilities and aspirations. This researched tried to focus on low-income residents, primarily as analyses showed signals of transport poverty for this group. Although objective questions regarding income were not asked due to ethical reasons, respondents were asked subjective questions about the total expenses of transport and were selected according to subjective observations.

Furthermore, questions concerning ethnic backgrounds were also not asked due to ethical reasons, but this often came up during interviews or an estimation was made through observations. After a first iteration of interviews, the sample especially showed little car owners and adolescent respondents, which were both pre-established selection criteria. Therefore, a second iteration was conducted, using a different strategy relevant to the time as well as place for participant recruitment, primarily to target these two groups. Unfortunately, a second round of recruitment only resulted into one adolescent willing to participate in the study. The second source information; interviews with volunteers and social workers was aimed to complement the lack of data regarding this group of respondents.

2.4.3 Research design: Microstories

This research made use of a specific format for in-depth interviews called Microstories, which provide an elaborate description of individual everyday mobility experiences. Microstories were considered an appropriate approach to operationalise the Capabilities Approach related to mobility, as through the focus on everyday mobility experiences it helps to describe the relationship between mobility and capabilities. It creates understanding in how mobility contributes to, or counteracts, individuals' opportunities to participate in out of home activities, and thereby affect one's subjective well-being (Vecchio, 2020). Microstories can create added value on two levels. First, Microstories recognises the individual nature of capabilities and mobility experiences; showing any consequences that a lack of accessibility and/or mobility might have on an individual's ability to participate in valued activities. Moreover, it enhances insights into the primary barriers which cause a lack of participation in valued activities. These insights draw attention to an important issue in mobility justice- the recognition and enhanced understanding of the heterogeneity of mobility (Vecchio, 2018). Second, on an operational level Microstories can show which activities are valued by residents, the role that mobility has to access these activities and how one's individual features influence accessing these activities. These insights can help to suggest operational tools as well as adapt evaluation approaches to enhance access to valued activities.

The questions asked in the interviews supported various elements of the Capabilities Approach in relation to urban mobility, and were primarily based on a validated research design as proposed by Vecchio (2020). The questions in the validated framework were complemented using input gathered during the first stage of expert interviews (aimed to gather background information). These experts expressed interesting topics which had appeared in earlier analyses or from their own observations, which were considered interesting for further investigation. For example, How do people use their car?, Why do people use their cars for particular short rides? Why is the rate of bicycle users relatively low compared to The Hague Center? (Strategic advisor urban mobility Municipality The Hague, personal communication, March 03, 2023)[3] The framework including the interview questions and an explanation on how they relate to the different parts of the Capabilities Approach can be found in appendix B. The Microstories were gathered using semi-structured interviews, entailing mostly open ended questions, with some yes/no questions to start with, followed by an open ended question (P, Cankurtaran, personal communication, February 28 2017) [4] . Open ended questions were adopted to avoid bias as much as possible. Careful consideration was given to the language used, to suit residents' vocabulary, avoid jargon and find a neutral tone. The sequence of the questions was build up in such a way that the 'risky' questions were posed at the end (such as questions concerning income and regarding people's feelings), in order ease participants into the interview and guard information loss as much as possible. Easier questions are considered the ones related to people's behaviours and were therefore answered in the beginning (P. Cankurtaran, personal communication, February 28 2017)[4].
Besides the traditional interview approach, this research adopted an approach called participatory GIS. Participatory GIS combines objective and subjective evaluations of accessibility, mapping accessibility in easy ways while also facilitating public involvement and learning about their mobility issues (Stewart, 2017). During the interview participants were asked to either draw or point on a google streetview map to activities they visited daily, weekly or monthly. This supported the interview as it visualised the valued activities geographically, as well as that it provided support to talk about everyday mobility experiences. Moreover, on a more abstract level participants were also provided with a sketch of three circles, showing an abstract image of the neighbourhood, the city and the region. This sketch approach

[3] Strategic advisor urban mobility Municipality The Hague. (2023). *Experience & professional expert mobility & accessibility issues The Hague Southwest* [Interview]. Videocall.
[4] Cankurtaran, P. (2017) *Qualitative interviewing* [Lecture slides]. Faculty of Industrial Design Engineering, TU Delft.

was proposed by Maia et al. (2016), researching accessibility issues in a similar neighbourhood. This second map was used in this research, aimed to support for residents to think of valued activities at all three geographical levels. Moreover, this approach was used to also support participants who might struggle to read a map.

2.4.4 Data analysing

In order to distill the relevant data from the interviews, a structured method was used to process and analyse the data. Minutes where made during the interview. For all interviews intelligent verbatim transcript were created. This choice was made as it was considered suitable as it keeps the accuracy of the participant's responses but excludes context that does not add value (Take Note, n.d.). Afterwards, the data generated in the different interviews was coded a priori, according to the three pre-defined categories fundamental to the Capabilities Approach: capabilities, conversion factors and resources. Within these three categories, the coding was done a posteriori allowing for any new categories or concepts to emerge. The coding process made use of different Excel files to structure the data for the three age groups separately and was conducted in three different stages as explained beneath.

In analysing the data, three different stages of coding can be distinguished, initial coding, intermediate coding and advanced coding. 'Coding is the pivotal link between collecting or generating data and developing a theory that explains the data' (Chun Tie et al., 2019, p. 4). All of these phases were performed in order to code the interviews with residents. The different phases are explained below.

1. **Initial coding** - 'the purpose is to start the process of fracturing the data to compare incident to incident and to look for similarities and differences in beginning patterns in the data. In initial coding, the researcher inductively generates as many codes as possible from early data' (Chun Tie et al., 2019, p. 5).
2. **Intermediate coding**- 'builds on the initial coding phase. Where initial coding fractures the data, intermediate coding begins to transform basic data into more abstract concepts allowing the theory to emerge from the data' (Chun Tie et al., 2019, p. 5).
3. **Advanced coding** - the final stage of coding is essential to produce a theory that is grounded in the data and has explanatory power' (Chun Tie et al., 2019, p. 6).

In the first stage of coding, relevant parts of the transcripts were added to an Excel file, categorised a priori according to the most important principles of the the Capabilities Approach: conversion factors, resources and capabilities, for the three age groups separately. In this stage, as many categories as possible were created within these three primary categories, supported by quotes from the transcripts. Relevant to the conversion factors and resources this meant that for every reason either limiting or enable residents' accessibility a new category was made, gathering the quotes from residents which portrayed these conversion factors and resources. Related to capabilities, every participant who explicitly stated that accessibility issues had obstructed participating in any valued activity, this was noted as a new sub-category for capabilities.
The next stage of coding, intermediate coding, was applied in a separate Excel file, to create more abstract categories for all the sub-categories created in the previous coding phase. The categories were based upon a priori defined categories as identified by Vecchio (2020); resources (private mobility resources, activity opportunities, publicly available resources, social network), individual conversion factors and contextual features. However, especially relevant to individual conversion factors and contextual features, sub-categories where created when patterns seemed to emerge supporting to split these categories.
Finally, the last stage of coding entailed a binary form of coding again in a separate Excel file, to note down for all of the categories of conversion factors and resources it had been an accessibility barrier or enabler for all of the participants. Furthermore, relevant to capabilities it was noted in a binary form if the participants had explicitly stated that accessibility barriers had obstructed participating in any valued activity. This final stage of coding especially functioned to see what prominent conversion factors and accessibility barriers seemed to occur in order to form a theory on the overall mechanisms arising relevant to accessibility barriers and perceived accessibility.

3

Theoretical frameworks

This chapter provides the two main frameworks used in this research; the Capabilities Approach and its operationalisation through Microstories as accounts of everyday mobility experiences. It shows how this research has combined these two frameworks as its main framework for the interviews and analysis. Finally, the last section provides a framework of how the Capabilities Approach can be used in transportation decision making, which is considered interesting from an operational perspective to show if and how the approach could be introduced into the assessment of transport and mobility plans.

The Capabilities Approach is a theory of justice rooted in liberal philosophy. This approach takes the individual as its reference point, by looking at 'the ability to freely be and do what one has reason to value' (Sen, 1993, p. 3). It is considered interesting from a decision making perspective as it has been able to not only remain a philosophical statement, but also impact social and economic policy (Hananel & Berechman, 2016).

There are five key concepts rooted in the capabilities approach, which can be explained as follows:

- **Resources** - 'are commodities and intangible goods available to a person. These depend on the person (including person's features and background) and the socio-spatial context in which the person is' (Vecchio & Martens, 2021, p. 834). Resources are considered as a 'means to achievement' (Sen, 1992, p. 33).
- **Conversion factors** - 'convey the personal, social, and environmental conditions that form the individual life experience'(Vecchio & Martens, 2021, p. 835). The conversion factors determine what possibilities the person has for 'the conversion of resources (...) into freedoms' (Sen, 1992, p. 33).
- **Capabilities** - 'are the freedoms available to a person' (Vecchio & Martens, 2021, p. 835). Where each capability is 'whatever people are able to do and be in a variety of areas of life' (Sen, 1993, p. 2). A capability conveys 'the freedom that a person actually has to do this or be that–things that he or she may value doing or being' (Sen, 2009, pp. 231–232); 'the choices that the person does in fact have'(Sen, 1992, p. 38). All the capabilities available to a person form a set, made up of 'the various combinations of functionings (beings and doings) that the person can achieve [...] reflecting the person's freedom to lead one type of life or another' (Sen, 1992, p. 40).
- **Choice** - 'refers to the person's decision in favour of a particular 'state' over another, selected from within their capability set' (Sen, 1992, pp. 31–34).
- **Functionings** - 'are what people actually achieve 'to be' or 'to do'. 'Each person puts into practice (or not) the capabilities available to her. For example, if persons have sufficient income (a resource) to be well-nourished (a capability), they can still vary substantially in the achievement of a healthy diet (a functioning). While capabilities are the 'beings' and 'doings' available to a person, functionings are what this person 'is' and 'does" (Vecchio & Martens, 2021, p. 835). Therefore, 'living may be seen as consisting of interrelated 'functionings' selected from a set of capabilities' (Sen, 1992, p. 39).

3.1 Capabilities Approach in the mobility sector

In the field of transport and mobility literature, the Capabilities Approach has been gaining attention as an approach which contributes to consider issues of justice, primarily due to its ability to integrate

the concept of well-being into the transport and mobility sector. Central to this approach is that it puts the emphasis on the opportunities an individual has to access valued activities (capabilities) instead of focusing on realised behaviour. It therewith perceives mobility as a means to achieve valued activities (enabled by movement), rather than as an end on its own (Stanford Encyclopedia of Philosophy, 2011; Verlinghieri & Schwanen, 2020).
In relation to mobility, capabilities is most often conceptualised as accessibility. It tries to not only look at 'a person's ability to travel through space', but also considers 'the possibility of a person to translate the resource into something useful'(Martens & Golub, 2012, p. 202). Beneath, one of the two frameworks fundamental to this research by Vecchio and Martens (2021) is shown, portraying how the key concepts are interrelated, as well as how they relate to the notion of well-being.

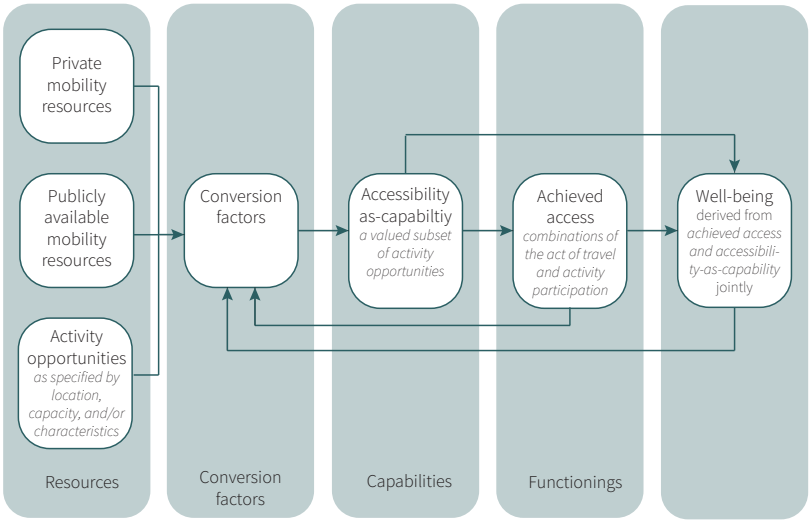

Figure 2: Capabilities Approach framework by (Vecchio & Martens, 2021)

When understanding accessibility as capability, the above mentioned concepts can be linked to the notion of well-being in two ways. In relation to ones capabilities: the greater the set of 'beings' and 'doings' a person can choose from (capabilities), the larger the freedom a person has to choose a function that will positively impact ones well-being. Secondly, achieved access (functionings) can contribute to well-being by both enjoying: the participation in an activity as well as the movement towards the activity (Vecchio & Martens, 2021).

Resources can be divided into: private mobility resources, publicly available mobility resources and activity opportunities. Private mobility resources are owned by a person where publicly available mobility resources refers to the open nature. Activity opportunities is related to the land use system and any destinations a person could employ in an activity. 'It reflects the location of the activities, as well as other features of an opportunity, such as its quality, capacity or opening times' (Vecchio & Martens, 2021, p. 842).

Conversion factors can be highly personal and interact with each other as well as change over time. In relation to activity opportunities they play a twofold role. As selection mechanism, determining which activity opportunities are considered by an individual. For example, a person's interest affects which employment opportunities are taken into consideration as potential jobs. Secondly, they shape which activity opportunities can actually be participated in. For example, most jobs require you to have a certain set of skills. Furthermore, conversion factors relate to functionings in a way that more successful experiences may enlarge the set of conversion factors available and vise versa. For instance, when a person had a bad experience riding a bicycle (conversion factor) to access an activity (functioning), this might have a negative feedback on their confidence to use a bicycle (conversion factor). 'The act of achieved access enhances the conversion factors and thus also perceived accessibility' (Vecchio & Martens, 2021, p. 845). Finally, when activity participation and travel combined enhance ones well-being this is also likely to positively influence ones conversion factors.

3.2 Capabilities Approach operationalised through Microstories

Although, in mobility literature the Capabilities Approach has been gaining attention, Vecchio (2020) argues that a tool to operationalise this approach, which considers the individual as its central focus, is still missing. Therefore, he proposes the use of Microstories as accounts of everyday mobility experience. This links mobility and capabilities as it creates understanding in how mobility contributes to, or counteracts, individuals' opportunities to participate in valued out-of-home activities and thereby affect one's subjective well-being (Vecchio, 2020). It is important to note that the this effect on individuals' valued out-of-home activities and individuals' subjective well-being is central in this research. The second important which shows the use of Microstories as accounts of everyday mobility experiences is shown in the figure beneath.

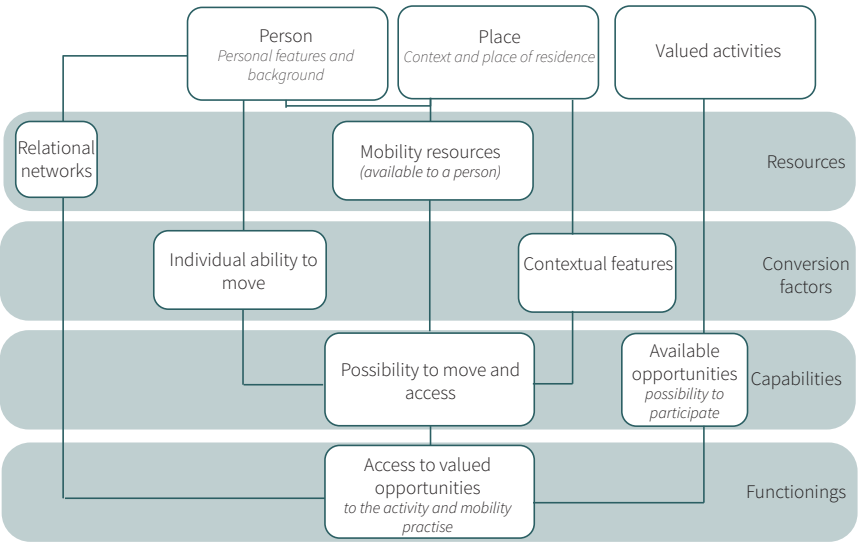

Figure 3: Capabilities approach operationalised through Microstories by Vecchio (2020)

As can be seen, this framework includes the important elements fundamental to the Capabilities Approach. It therewith adds 'person' and 'place' and 'valued activities' as well as 'social network' as elements important for everyday mobility experiences. The addition of the social network provides a complementary resource to achieve valued opportunities (if available to a person). It either gives an individual the opportunity to 'receive opportunities' without moving (e.g. groceries brought at home by the social network) or to make use of their mobility resources to achieve access. It perceives capabilities slightly different, as it uses the possibility to move and access and the availability of opportunities as two separate accounts.

This research chose to adapt Vecchio (2020)'s framework to for Microstories, but used the elements of the framework by Vecchio and Martens (2021), mainly as is was considered to provide clearer concepts. Capabilities are therewith conceptualised only as; accessibility as capability. Moreover, the research chose to split up the resources into private mobility, public mobility and activity opportunities. This was considered relevant as, when aiming to reduce accessibility barriers, it is important to know which type of (mobility) resources has primarily formed these accessibility issues. The framework created, used as the main framework for the interviews and analysis of this research is shown beneath.

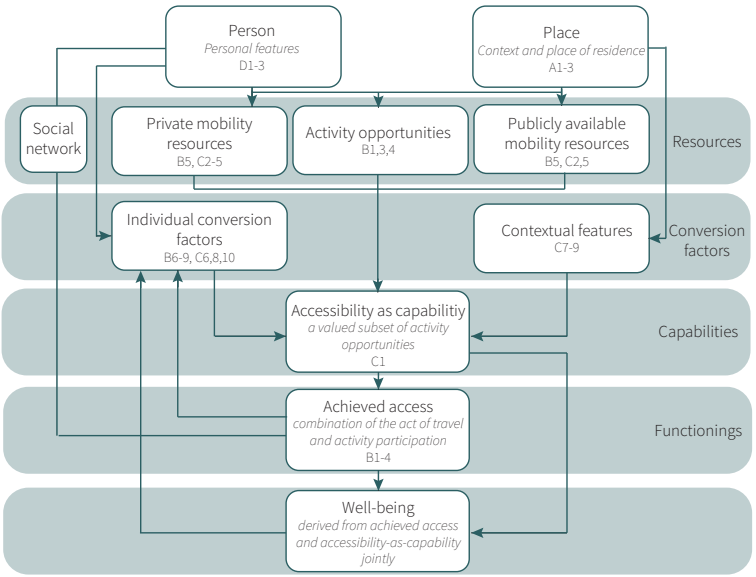

Figure 4: Own work combined the frameworks by Vecchio and Martens (2021) and Vecchio (2020)

As is shown in the figure, conversion factors can be divided into individual (internal) conversion factors and contextual features (external conversion factors). As mentioned above, they are highly personal and thus result in a very broad range of possible conversion factors. This makes it impossible to create a complete understanding of all conversion factors (even for a selection of the population). The table beneath provides a selection of resources and conversion factors, which aims to enhanced understanding of what these notions can possibly entail.

Table 6: Resources and conversion factors

Resources	**Individual conversion factors**	**Contextual features**
Private mobility resources:	Willingness to overcome distances	Social norms
Car	Cognitive ability	Cultural norms
Bicycle	Physical ability	Institutional norms
Public transport pass	Skills	Quality of infrastructure
Rollator	Knowledge of available transport services	Quality of mobility available
Publicly available mobility resources:	(Household) responsibilities	Information resources of mobility available
Pavement	Concern over (personal) safety	Social environment's concern over your safety
Public transport services	Income	
Shared mobility	Individual perception of publicly available fares	
Activity opportunities:	Individual perception of time/distance	
Buying groceries	(Job-related) time constraints	
Obtaining work	Knowledge about the available activity opportunities	
Social network	Perception of activity opportunities	

3.3 The Capabilities Approach in transportation planning

The use of the Capabilities Approach in policy appraisal appears to be a complex task and has not found a suitable form to position itself in the traditional appraisal tools. It however does provide a systematic approach to identify people and areas that might need priority for interventions, as well as enrich understanding in what policies could enhance the resources or conversion factors of the most disadvantaged (Vecchio & Martens, 2021). According to the framework provided by Hananel and Berechman (2016), using the Capabilities approach in transportation and mobility requires to begin at the end objectives. Beneath, the three primary stages are provided:

1. Create a clear idea of the capabilities and functionings that must be achieved.
2. Provide insight into the minimum conditions necessary to achieve these functionings and capabilities, primarily for the most disadvantaged.
3. Design the means to optimally achieve the desired results.

An crucial element in the use of the Capabilities Approach is from which perspective accessibility to 'key activities' is analysed. A bottom-up approach considers capabilities (expressed wants) and activities that people themselves find important and thus focuses more on perceived accessibility. A top-down approach uses accessibility-based analysis, which look at access to key activities as determined by others (Martens et al., 2011). The two approaches and their use in policy scenario appraisal is provided beneath.

Table 7: Accessibility as capability by (Vecchio & Martens, 2021, p. 840)

Analytical focus	**Appraisal of interventions**
Top-down: accessibility-based analysis of transport and land use systems.	Value of accessibility gains as key benefit to be included in cost-benefit analysis.
Bottom-up: persons' assessment of their achieved access and perceived accessibility.	Call for enrichment of traditional appraisal methods.; Specific methods not (yet) developed.

Both approaches appear to be suitable in different stages of the accessibility analysis process. As the top-down approach can be suitable to signal accessibility problems and identify which groups or areas might require most attention, it cannot identify which accessibility barriers actually play a crucial role in the limited achieved access. A bottom-up approach could then be used complementary. Therefore, when using the Capabilities Approach, a combination of top-down accessibility assessments and a complementary individual bottom-up approach is considered valuable, which will also be used in this research (Vecchio & Martens, 2021).

4

Mobility injustice related to capabilities

This chapter aims to enlarge theoretical understanding of mobility injustice, in the form of transport poverty. It provides an important framework which shows how transport poverty is linked to social exclusion and thereby to subjective well-being. It shows how the perception of fairness is rooted in the transport and mobility sector, and what effect it has on project appraisal. Finally, it provides an enhanced understanding of the notion of well-being, why there is an interest to integrate it into the mobility sector and how it links to capabilities. This chapter focuses on the first research question: 'How is mobility (in) justice related to capabilities and everyday mobility experiences'?

4.1 Transport poverty

4.2 Accessibility

Accessibility is a central concept in this research as well as in transport poverty. Therefore, before elaborating upon transport poverty this section first shortly elaborates on the definition of accessibility used in this research.

Related to passenger transport Geurs and Van Wee (2004) propose a definition to accessibility which will be used in this research: 'the extend to which land-use and transport systems enable (groups of) individuals to reach activities or destinations by means of a (combination of) transport mode(s)' (Geurs & Van Wee, 2004, p. 128). Accessibility can be perceived as the product of proximity and the ease of reaching destinations. The latter is amongst others determined by factors such as travel speed, travel costs, comfort and travel time Krabbenborg and Van Burgsteden (2023).

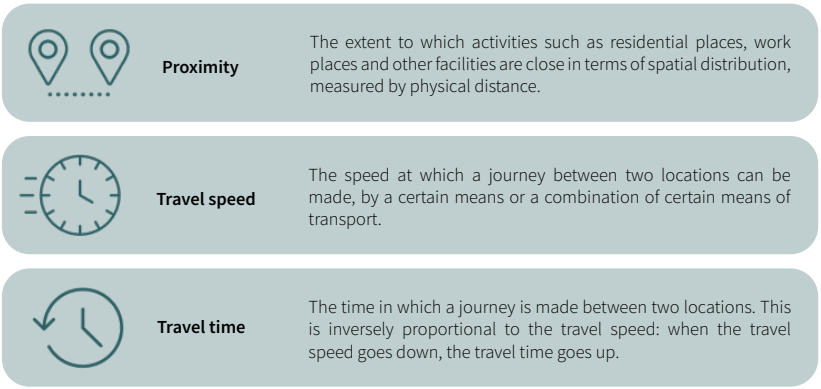

Figure 5: Notion of accessibility by Krabbenborg and Van Burgsteden (2023)

In relation to the notion of transport poverty, Lucas (2012)'s research has been of great importance. While England and Belgium have been familiar with this concept for a while, interest from policy makers as well as scientists in the Netherlands has been growing more recently (Kampert et al., 2019; Martens et al., 2011). Transport poverty loosely refers to the situation where 'when distances are large, those with less potential to be mobile may be constrained in participating in the economic and social life of the community due to reduced accessibility to opportunities, services and social networks' (Pot et al., 2020, p. 30) (Currie et al., 2010). Lucas (2012) provides a clear overview of the relationship between transport poverty and social exclusion as shown in figure 6. Most importantly, transport poverty is

argued to occur only when social and transport disadvantages overlap. These two categories often go hand in hand and can also strengthen one another, which adds to the complexities of the mechanisms which can occur. Eventually, transport poverty can lead to social exclusion. Social exclusion is '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 is considered to affect both 'the quality of life of individuals and the equity and cohesion of society as a whole' (Levitas et al., 2007, p. 9). It is considered to have a significant effect on people's subjective well-being as it prevents the act of participating in out-of-home activities (Lucas, 2012; Pot et al., 2020).

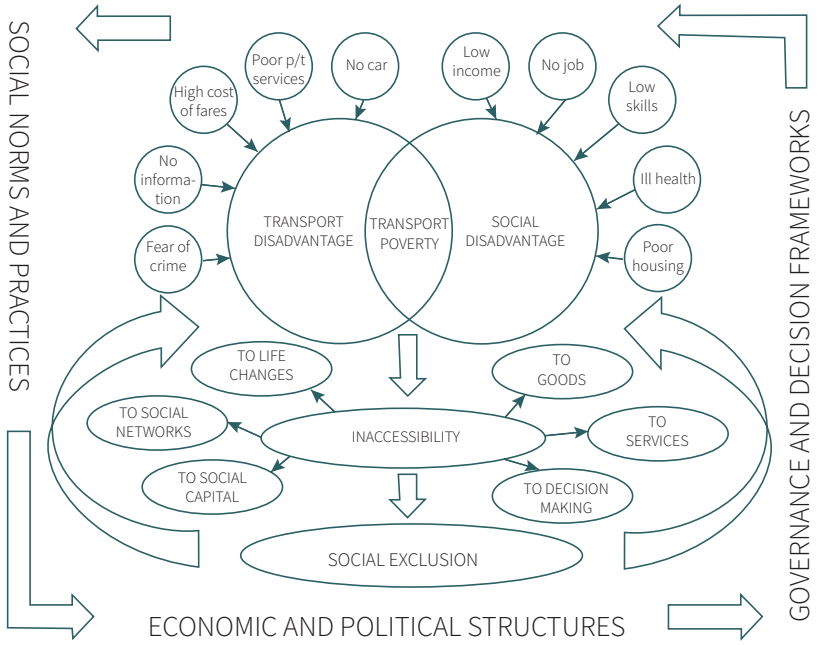

Figure 6: Relationship between transport disadvantage, social disadvantage and social exclusion from (Lucas, 2012)

To give a more precise understanding of notions related closely to transport poverty, three different sub-categories as distinguished by Lucas et al. (2016, p. 355) are provided beneath.

- **Transport poverty** - 'An overarching combination of the subsets beneath'.
- **Mobility poverty** - 'A systematic lack of (usually motorised) transport that generates difficulties in moving, often (but not always) connected to a lack of services or infrastructure'.
- **Accessibility poverty** - 'The difficulty of reaching certain key activities - such as employment, education, healthcare services, shops and so on - at reasonable time, ease and cost'.
- **Transport affordability** - 'The lack of individual/household resources to affordable transportation options, typically with reference to the car (in developed countries) and/or public transport'.

It is important to note that of primary interest in this research is the possible consequences of transport poverty on the opportunity to access valued out-of-home activities and participation in society. Society participation, according to Schmeets (2018) includes: paid work, voluntary work, participation in associations, social participation (amongst others contact with family and friends) and providing help to other households.'The SCP thereby adds sports and cultural activities' (Krabbenborg & Uitbeijerse, 2023, p. 9).

4.2.1 Risk groups exposure transport poverty

Literature identifies different groups with higher risks to be exposed to transport poverty. The identification of these groups has been used in this research as a criteria to select participants for recruitment. Moreover, it formed the scope of the case study area. It was considered relevant to focus on at-risk groups as well as at-risk areas as these people and areas might require priority for intervention to improve accessibility, in order to ensure individuals' participation in society and subjective well-being derived from achieved access. A framework which provides a clear overview of these factors, divided into four main categories is provided by Kampert et al. (2019), shown beneath.

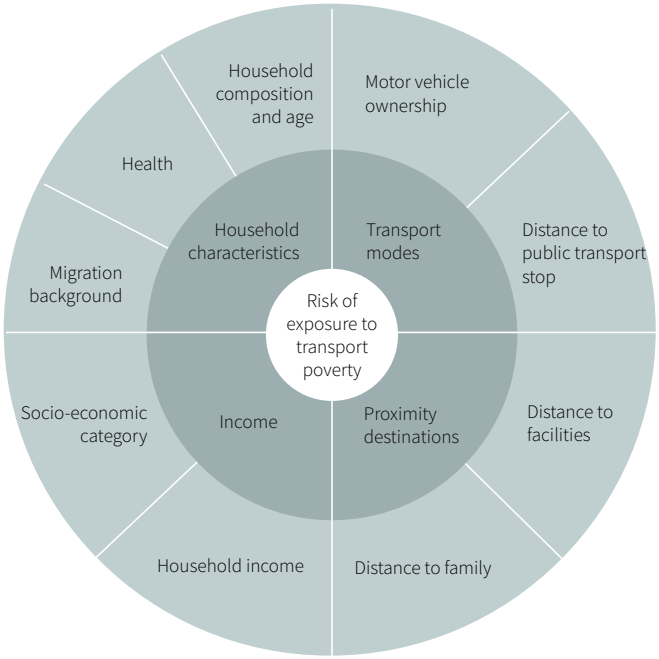

Figure 7: Theoretical framework transport poverty (Kampert et al., 2019)

Martiskainen et al. (2021) and Simcock et al. (2021) provide explanations for the different reasons for enhanced risk to be exposed to transport poverty. They differ from the framework shown above as Simcock et al. (2021) adds women to the at-risk groups. Moreover, these latter two researches do not provide an explanation for the availability of transport modes to enhance risk to be exposed to transport poverty. This is however assumed rather self explanatory as it relates to the definition of mobility poverty, provided above.

- **People on lower incomes** - 'transportation costs take up a greater proportion of their incomes, and they often lack financial resources to invest in vehicles' (Martiskainen et al., 2021, pp. 5–6).
- **People with disabilities or health difficulties** - 'have increased transport requirements ... and possibly have to make more frequent trips to medical services' (Martiskainen et al., 2021, pp. 5–6).
- **Single-parent households** - 'partly as they tend to be over-represented in low-income groups and may be living ... with fewer transport options' (Martiskainen et al., 2021, pp. 5–6).
- **Families with children or dependents** - 'have a higher frequency of journeys to transport children, which often induces car ownership'(Martiskainen et al., 2021, pp. 5–6).
- **Older people** - 'decreased mobility, making 'active travel' such as walking and cycling less feasible options and higher reliance on public transport' (Simcock et al., 2021, p. 5).
- **Women** - 'reduced access to car-based transportation due to gendered divisions of domestic labour ... women can also be more reliant on the car to make necessary journeys due to time

constraints and traditional gender roles, such as family care, which tend to result in more fragmented travel patterns' (Simcock et al., 2021, p. 7).

- **People from ethnic minorities** - 'recent migrants can face barriers to owning a personal car and using public transport due to being unfamiliar with a language and other taken-for-granted competences, including the ability to drive' (Simcock et al., 2021, p. 8).
- **People living in rural, isolated or peri-urban areas** - 'due to the need to travel longer distances to access key services' (Martiskainen et al., 2021, pp. 5–6).

This research combines the framework proposed by Kampert et al. (2019) and the groups proposed by Martiskainen et al. (2021) and Simcock et al. (2021), as categories taken into account to select the case study and to recruit participants. Proximity to destinations is a risk factor primarily considered in this research's choice for the case study; focusing on peri-urban areas. It is however not used as a selection criterion for participants, as the recruiting method did not allow to select participants in this manner. Moreover, all participants were recruited in the same neighbourhood, therefore the distances to facilities were rather similar.

4.3 Equity perceptions rooted in mobility policy

As was explained earlier, the distribution of mobility resources rests upon the perception of fairness and equity taken into account in the distribution. This perception therewith affects the choices made in the deployment of resources, measures and investments (Snellen et al., 2021). As is portrayed in table 8, the generally adopted cost benefit analysis rests upon the utilitarian perception of distributive justice, which aims to provide a maximum for as many as possible. However, as a consequence of this principle, the needs of the disadvantaged are not taken into account. Its fairness is therewith debatable. Moreover, the recognition of heterogeneity in individual needs does not agree with an egalitarian perspective; having a mobility resource available, such as a bus stop, does not necessarily mean that all individuals can convert this into actual movement. Therefore, this research chooses to take a sufficientarian perspective, which in relation to accessibility, aims to provide sufficient accessibility for all.

Table 8: Perception of equity (Buitelaar, 2020; Snellen et al., 2021)

	Maximum accessibility	**Equal accessibility**	**Sufficient accessibility**
Ethical movement	Utilitarianism	Egalitarianism	Sufficientarianism
Unit	Wellfare,willingness to pay	Income and other indicators	Possession of and access to primary goods
Distribution principle	Maximum for as many as possible	Equal	Sufficient
Methods (examples)	SCBA	Gini-index,Palma-ratio	Minimum benchmarks (optional maximum benchmarks)
Policies (examples)	Investments in main infrastructure	Adding a bus stop to every neighbourhood	15 Minute city

To show how the perception of equity is rooted in the mobility and transport system, another example is provided. When analysing transport and traffic projects using a social cost benefit analysis, the value of time is used as an input indicating the social value of travel time reduction. Essentially it provides a value that depicts what travelers are willing to pay for an hour of travel time reduction (Kennisinstituut voor Mobiliteitsbeleid, 2013). In practise, the use of marginalised values of time results in the fact that travel time for those willing to pay less is less valuable than travel time for those who are willing to pay more. This again portrays an utilitarian way of perceiving equity and fairness.

4.4 Well-being in the mobility sector

Various researchers argue that in address (fundamental) mobility injustice and create well-being for all, the diversity of human needs and personal/contextual circumstances should be recognised (Banister,

2019; Karner et al., 2020; Sen, 2009; Verlinghieri & Schwanen, 2020). From a philosophical understanding well-being points to all that is considered valuable to a person and relates to the quality of life (Stanford Encyclopedia of Philosophy, 2011). Mobility can have an important contribution to a person's well-being, both positive or negative. It can provide access to important out-of-home activities,and thereby ensure society participation, as well as create other benefits such as improved health. On the other hand, if individuals are impeded to be mobile, it might have adverse effects on the access of valued out-of-home activities and society participation. Noise or air pollution are other side effects of mobility considered to have a negative impact on one's well-being. Well-being in relation to mobility was conceptualised by Snellen et al. (2021) in four dimensions, depicted in the figure beneath.

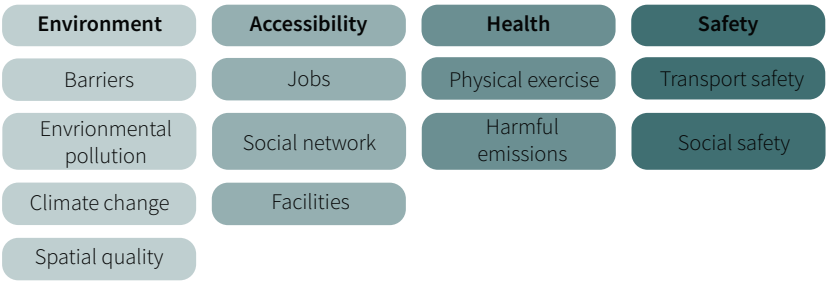

Figure 8: Dimensions of well-being in the mobility sector (Snellen et al., 2021)

According to Banister (2019) approaches which aim to understand actual situations encountered by individuals are in contrast with the commonly used measures of accessibility in the traditional rationality paradigm, as these tend to frame well-being using assumptions and aggregated evaluations. He therefore argues that a new way of thinking might be required to encompass the notion of well-being into the transport sector. According to this line of reasoning, the Capabilities Approach is considered a relevant approach to focus on individuals and their subjective well-being, derived from the opportunities to access valued activities (capabilities) and achieved access (functionings).

4.5 Conclusion

Transport poverty can have adverse effects on society participation, and thereby on one's subjective well-being derived from the opportunities to access valued out-of-home activities and participate in society, which is of primary interest in this research. This study therefore takes a sufficientarian perspective; aiming to provide a sufficient level of accessibility for all to participate in society/access valued activities. Addressing mobility injustice might require to introduce the notion of well-being into the mobility sector. A promising approach to do so is the Capabilities Approach.

5

Mobility injustice in The Hague Southwest

This research bases its discussions on a case study of the area of The Hague Southwest, and in particular the neighbourhood Bouwlust & Vrederust. This chapter elaborates upon the choice for the scope of this case study and discusses the case study itself in further detail. This chapter focuses on research question two: 'What issues of mobility injustice, relevant to accessibility, are observed in the context of a vulnerable neighbourhood in The Hague Southwest'?

5.1 Choice scope The Hague Southwest

In various studies, groups have been identified at risk to be exposed to transport poverty, which amongst others include people living in peri-urban areas (larger travel distances) and people on lower incomes (transport costs take up a greater proportion of their incomes) (Martiskainen et al., 2021). Moreover, according to Lucas (2012), transport poverty only occurs when transport disadvantage (e.g. lack of car availability) and social disadvantage (e.g. low income) overlap. Therefore, risk to be exposed to transport poverty is expected to be larger in areas where chances are higher for these two disadvantages to overlap, such as vulnerable neighbourhoods. An exact definition or absolute benchmark for what can be referred to as a 'vulnerable neighbourhood' does not exist, but it is generally used to refer to a neighbourhood with high numbers of unemployed residents, low-income residents or residents with an allowance. Often these neighbourhoods entail at least 50% social housing (Kullberg et al., 2021).

For various peri-urban areas in the Netherlands, concerns have been expressed related to high travel times and costs to visit work, school or the hospital (Raad voor leefomgeving en infrastructuur, 2020). Besides the long travel times, peri-urban areas are considered prone to transport poverty as lower densities in facilities (and possibly scarce public transport) can make people more reliant on private car usage to access key activities (Pot et al., 2020).
A city where signals of transport poverty have been observed is The Hague, where high-income earners (income of > €37,700 per year) have greater access to suitable jobs than low-income earners (income < €18,800 per year). From various national studies it appears that absence of reachable employment options is considered a problem for two thirds of low-income job seekers and that, as a consequence, one third refrains from searching(Studio Bereikbaar et al., 2022)[1]. After closer examination of The Hague, The Hague Southwest showed to be an area considered at-risk to transport poverty, due to its geographical location, as well as due to high concentrations of other at-risk groups. This is why this the choice was made to further investigate the peri-urban area The Hague Southwest.

5.2 Problem setting The Hague Southwest

This area, is located at the outer skirts of The Hague and includes the neighbourhoods Bouwlust & Vrederust, Moerwijk and Morgenstond (depicted in figure 9). This part of the city, with 70,000 inhabitants, distinguishes itself from other areas in The Hague due to its green areas; the Uithof and the Zuiderpark and spacious urban planning. It also knows various socio-economic problems, such as inhabitants living with debts, health issues, long-term unemployment and youth growing up in a socially vulnerable environment. With a total of 32-62% low-income households, this area has one of the highest concentration of low-income households in the Netherlands (Gemeente Den Haag, 2023)(Studio Bereikbaar et al., 2022)[1].

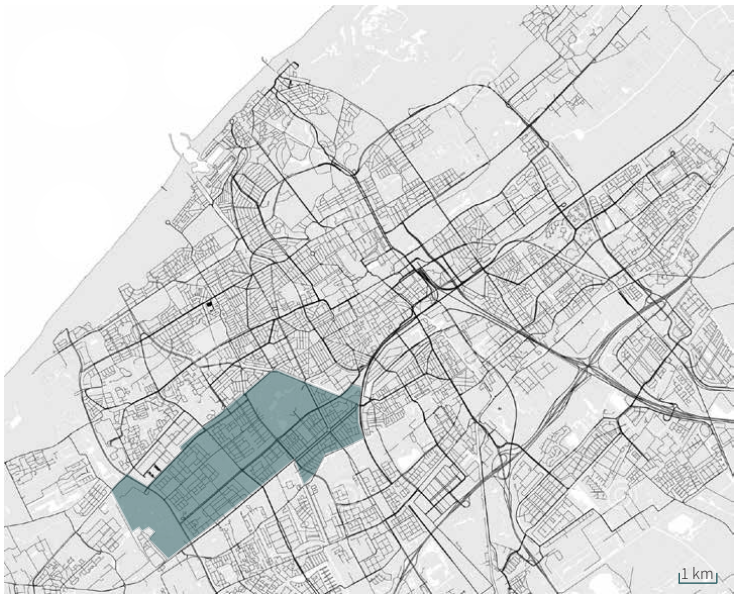

Figure 9: The Hague Southwest relative to The Hague (own work based on image from Anteagroup (2021))

Currently, 68% of the housing in The Hague Southwest are owned by housing cooperation Staedion (social housing), most of which are in bad conditions and therefore need to be renovated or demolished and redeveloped. Furthermore, The Hague is faced with a great challenge, where 50,000 new houses will be build (which equals around 80,000 new inhabitants) until the year 2040 (Gemeente Den Haag, 2023).
Therefore, besides countering issues of unjust accessibility, newly proposed solutions will also have to focus on the efficient usage of scarce public space. Furthermore, as a consequence of the Covid pandemic, public transport in the Netherlands suffers from reduced incomes and consequently staff shortages (De Volkskrant, 2021; Metropoolregio Rotterdam Den Haag, n.d.). This results into the fact that solutions must also be economically feasible from an operational perspective. Additionally, a mobility transition towards cleaner/active mobility is in motion to reduce transport related emissions. However, in various contexts, social and environmental sustainability has shown to create tensions, such as in car-dependent peri-urban and rural areas (Mattioli, 2016; Sagaris et al., 2020). Therefore, solutions which aim to address social and environmental sustainability should offer a worthy alternative in comparison to the car. All together these factors form the complex solution sphere in The Hague Southwest.

Studio Bereikbaar et al.(2022)[1] have proposed two primary goals in regard to future accessibility for residents of The Hague Southwest.

1. Scale jump public transport required to support the growth of The Hague.
2. Increasing opportunities for The Hague Southwest's residents.

In light of this research's aim, as well as when taking into account the already conducted analyses, this research assumes it most relevant to focus on the second goal. This goal primarily focuses on the societal challenges faced by The Hague Southwest's residents and how they can be solved (Studio Bereikbaar et al., 2022)[1].

The Hague Southwest's physical location has been identified as a factor that strengthens the vulnerable position of this area, as historically the area is seen as an endpoint of the city, which gives the impression that people do not travel towards this area without a specific reason. Public transport access to The Hague Southwest, and most specifically towards its furthest 'edge' Bouwlust & Vrederust is perceived as scarce, due to long travel times. Furthermore, car availability is argued to be the biggest

source of transport inequality in The Hague; it provides a good level of accessibility for the higher-income households, while low-income residents, for whom the car is hardly affordable, cannot reap the benefits (Studio Bereikbaar et al., 2022)[1]. The bicycle is however mentioned as an important resource reducing transport inequality, in The Hague as well as in other Dutch cities, as a lot if reachable at cycling distance (Martens et al., 2011)(Studio Bereikbaar et al., 2022)[1].
Drawing on this analyses, the neighbourhood Bouwlust & Vrederust was chosen for deeper research. In this neighbourhood, the largest difference in job availability was identified comparing high-income earners to low-income earners. This is assumed to be an issue in this neighbourhood as 40% of its households are low-income households (CBS, 2022). This neighbourhood was also chosen due to the fact that the municipality of The Hague has asked Rebel Living & Mobility B.V. to help develop sustainable mobility concepts for The Hague Southwest.

5.3 Case study neighbourhood Bouwlust & Vrederust

This study choose to adopt the form of a case study, focused on the neighbourhood Bouwlust & Vrederust due to the above elaborated reasons. A case study 'choses to focus on the individual unit of study and the setting of its boundaries and are known to comprise more detail, richness, completeness and depth for the unit of study' (Denzin & Lincoln, 2011, p. 301). Due to the level of detail required to understand the accessibility barriers and perceived accessibility from the local community's perspective, a case study method was considered suitable for this research aim.
The case study was adopted to focus primarily on the first research aim; to deepen the understanding of transport poverty and accessibility issues in the context of a vulnerable neighbourhood, and is divided into two sub-goals. First, through the focus on capabilities this research strives to unravel desired accessibility levels to valued activities from residents' perspective and to identify groups or activities which might require priority for intervention. Second, through the focus on everyday mobility experiences this research aims to deepen the understanding of individual accessibility barriers and their interrelated mechanisms, encountered by at-risk groups in the context of a vulnerable neighbourhood.
The case study recruited 29 participants in the neighbourhood Bouwlust & Vrederust, focused primarily to recruit at-risk groups. Some key figures for this neighbourhood, compared to the sample of participants in this research, are shown in the table beneath.

Table 9: Key figures neighbourhood Bouwlust & Vrederust population compared to sample (CBS, 2022)

		Population	**Sample**
Number of inhabitants/ respondents		28,985	29
Gender (%)	Woman	50.5	44.8
	Man	49.5	55.2
Age (%)	0-14	20.3	0
	15-24	12.1	31.0
	25-44	28.5	37.9
	45-64	23.7	31.0
	65+	15.4	27.6
Migration background (%)	Western migration background	14	3.5
	Non western migration background	61	65.5
	No migration background	25	31.0
Car ownership (%)	Per person	30	37.9
	Per household	60	55.2
Number of houses		12,831	-
Housing types (%)	Single family house	18	-
	Multiple family house	82	-
Housing ownership (%)	Rented	25	-
	Rented (cooperation ownership)	62	-
	Bought	13	-

What can be seen in the figures above is that the largest percentage resident group consist of the age groups 25-44 and 45-64. Furthermore, the largest group of the people has a migration background 75% in total. Comparing the sample with the population, percentages show to be rather comparable. The biggest difference can be seen when comparing the sample size in the age ranges 0-14 and 15-24. This first group was also not taken into account in the sample. Another difference is shown in the difference in western migration background.

The sample of interviewees is shown in the table beneath. The sample is grouped according to the age as well as categories creating risk to be exposed to transport poverty, as identified by Litman (2018), Martiskainen et al. (2021), and Simcock et al. (2021).

Table 10: Sample of participants grouped according to the age as well as categories creating risk to be exposed to transport poverty, as identified by Litman (2018), Martiskainen et al. (2021), and Simcock et al. (2021)

		Number of participants
Age group	Adolescents (12-18)	1
	Adults (19-64)	20
	Seniors 65+	8
Gender	Woman	13
	Man	16
Primary modes of transport	Car	16
	Public transport	11
	Government offered transport	2
	Scooter	1
	Bicycle	9
	Walking	22
Private mode availability	Own car	11
	Partner's car	5
	Bicycle	14
	Scooter	1
	None	6
Impairment	Physical	5
	Mental	0
	No impairment	24
Migration background	Western migration background	1
	Non western migration background	19
	No migration background	9
Single parent household	Yes	1
	No	28
Living with children or dependents	Yes	10
	No	19
Occupation	Retired	8
	Employed	9
	Unemployed	12
	Of which stay-at-home parent	6

It must be noted that participants were allowed to have multiple primary modes of transport. Therefore, the total number of respondents in the 'primary modes of transport' adds up to more than 29 participants.

5.3.1 Relevant job locations

Jobs which are assumed suitable for a substantial amount of Bouwlust & Vrederust's residents are primarily focused on either the service sector or manual labour (such as agriculture, manufacturing, construction, mining, or maintenance sectors) (Parietti, 2023). Relevant jobs in the service sector are mainly concentrated in and around the city center of The Hague, The Hague HS and in Scheveningen. The area of The Hague Southwest itself also offers some relevant jobs. Manual labour jobs in sectors such as industry and horticulture are primarily located in the Westland (Naaldwijk), Zoetermeer, Rijswijk and the port industrial complex (Europoort and Maasvlakte I and II).

5.3.2 Mobility practices already in place

The Hague Southwest is situated in the public transport region called the 'ZuidWestlandcorridor', which is the zone from Zoetermeer, via Leidschendam-Voorburg, the city center of The Hague, The Hague

Southwest and Westland to Maassluis. Two main tram lines run towards the city center. There are however no tram lines available which run in the east/west direction. Furthermore, various bus connections are available that run both north to south as well as east to west direction. It is however still stated that various public transport connections are of insufficient quality and that travel times both to the city center, The Hague HS as well as the Westland are long (Studio Bereikbaar et al., 2022)[1].
Furthermore, for various sub-groups different mobility initiatives are available. For elderly, demand-driven concepts are offered both by government and volunteer/ welfare organisations (which are also possibly financed by the government). In order to access the services offered by the government via the Wet Maaschappelijk Ondersteuning (WMO), and indication is required to show that someone's personal circumstances require support (Rijksoverheid, n.d.). Examples of WMO offered services include: AV070 and mobility scooters. Examples of services offered by welfare organisations include: 'Begeleiden en rijden', 'de Wijkbus' 'de Boodschappen begeleidingsdienst' (Social worker seniors community center Venen, Oorden & Raden, personal communication, March 14, 2023)[5]. Commercial shared mobility providers do not offer any services in Bouwlust & Vrederust. Furthermore, from research and policy documents informal personal vans are shown to be used as a form of transport by residents in The Hague Southwest, primarily to access jobs in the greenhouse horticulture sector in the Westland, Zoetermeer and Rijswijk. The horticulture sector in the Netherlands is known for its long tradition of offering work for temporary guest labour by migrant workers, the last decenia mostly from middle and eastern Europe. From research in municipality Westland it was shown that most of the workers in this area live outside of the municipal boundaries, amongst others in The Hague and Rotterdam (Engbersen et al., 2019). Characteristic of this kind of work is that it involves early work hours, which implies extra difficulties for workers to access their job using traditional public transport modes. In the research by Engbersen et al. (2019), the reliance of employees upon employment agencies is demonstrated; often these agencies are responsible for their job, housing and food supply. These costs and other costs are held back on their monthly payment. This research found that some workers who are not satisfied with their housing situation are afraid to leave as they think this might affect their chances of keeping their job. The research does not say anything about the transport offered by employment agencies, but one might wonder if the same mechanism can be observed for the transport options currently offered.

5.3.3 Mobility preferences in The Hague Southwest and Bouwlust & Vrederust

Various studies have sought to create insight into the mobility preferences of residents in The Hague and in The Hague Southwest. Although mobility preferences vary per individual, in order to create policy decisions, these preferences are often aggregated in order to find a more general group to design for. A method used more often to create some form of aggregation is through personas.
The persona profiles created by DiscVision (2021)[6] aim to describe the attitude of people towards various mobility solutions, based on their lifestyles. They identify eight different lifestyles and state that these affect important life choices such as housing conditions, political preferences and also mobility preferences. The study by Springco (2018)[7] is based on the assumption of these eight lifestyle profiles and shows that residents in Bouwlust Vrederust mainly includes lime (25%), green (19%) and yellow (15%) lifestyles. The lime and green groups are routine based travelers while the yellow travelers have a more relaxed way of traveling. Lime people are considered to travel less for work than the other groups, partly due to their age. Traveling for leisure purposes is higher, which they often do by public transport. The green group likes to stay at home and is therefore also considered less mobile than other lifestyle groups. They are less likely to own a private car. For work they might however use the car more often, partly due to the work they do which involves; irregular schedules and tools that have to be carried. Finally, the yellow group consists of the people with most private car ownership, but they might also owns a bike. This group favors to use the car over public transport to go to work. This is easier in combination with other activities such as child care. Also, costs are considered an important factor; once the car is bought it is cheaper to use it than public transport (DiscVision, 2021)[6].

Motivaction International B.V. (2019)[8] also carried out research to create insight into how lifestyle is

[5] Social worker seniors community center Venen, Oorden & Raden. (2023). *Professional expert accessibility and well-being seniors* [Interview]. Community center Venen, Oorden & Raden, The Hague.
[6] DiscVision. (2021). *DISC profielen, leefstijlen en communicatie: een introductie*[Unpublished report].
[7] Sprinco (2018). *De Grote Omgevingstest buurt Bouwlust & Vrederust*.[Unpublished report].
[8] Motivaction International B.V. (2021). *Speelruimte voor Den Haag* (Project B4151). Gemeente Den Haag.[Unpublished report].

related to mobility choices. They concluded that residents of The Hague Southwest have a positive attitude towards using the car, neutral towards public transport and bicycle and negative towards walking. Another study by TU Delft and Radboud Universiteit Nijmegen (2021) shows that 38% of the rides starting in The Hague Southwest are by car (compared to 32% in The Hague). Car ownership however appears rather low: 0.6 per household and 0.3 per person. This means 70% of residents and 40% of households do not own a car (Studio Bereikbaar et al., 2022)[1]. When comparing this to the percentage of private car rides starting in The Hague Southwest this gives the impression that people who do own a car (or multiple) use it often (Studio Bereikbaar et al., 2022)[1]. The second biggest percentage of journeys start by foot (33%) which is similar as in The Hague.

Finally, Centraal Bureau voor de statistiek (2022) researches various mobility patterns for the Netherlands in general and thus also for The Hague Southwest. In comparison to The Hague and the rest of the Netherlands, reasons to travel/move more often include: shopping/doing groceries or for personal care services. Reasons to refrain from moving more often than in The Hague and the rest of the Netherlands include: illness/injuries, disabilities, weather conditions, studies at home and financial reasons.

All of the above mentioned studies where conducted in the form of a large scale (digital) survey. It is however suspected that online interaction with residents as well as participatory gatherings might be less effective for part of the residents in this neighbourhood, which by policy makers is often referred to as ‘hard-to-reach’. The question therefore arises if outcomes of these studies include all perceptions, or if some information might not be included in these studies as a consequence of the difficulties reaching all participants.

5.4 Conclusion

This research bases its discussion on a case study focused on the neighbourhood Bouwlust & Vrederust. The choice to focus on this neighbourhood was primarily made as objective low levels of accessibility were observed, and as this neighbourhood is considered to include high percentages of at-risk groups to be exposed to transport poverty. Moreover, analyses show that relevant jobs for high-income earners are three times more accessible than for low-income earners. When observing the demographics of this neighbourhood, the latter group is a substantial amount of Bouwlust & Vrederust’s residents. These signals of potential low degrees of accessibility observed in a top-down manner give rise to the question if residents of Bouwlust & Vrederust themselves also experience accessibility issue; to access relevant jobs and to reach other valued out-of-home activities. Furthermore, the question arises what the crucial barriers are in limiting their accessibility. These aspects will be touched upon in the next chapter.

6

Capabilities & mobility experiences

This chapter is devoted to show the results gathered within the case study area Bouwlust & Vrederust, through the use of Microstories as accounts of everyday mobility experiences. The first part of the chapter focuses on three age groups separately. It elaborates upon the causes of accessibility issues/good levels of accessibility (in the Capabilities Approach referred to as resources and conversion factors). Moreover, it focuses on the consequences of accessibility issues on the opportunities to access valued activities (capabilities), as expressed by residents. The second part of the chapter elaborates upon the key insights intersecting the age groups and the identified mechanisms underlying the causes and consequences of the accessibility issues. This section also takes into account the perception of 'community experts' (social workers, workers/volunteers at community centers). Finally, the chapter identifies two types of activities for which access has showed insufficient in this neighbourhood, either expressed by residents (bottom-up perspective of accessibility), or from accessibility analyses (top-down perspective on accessibility). The choice to take these two perspectives into account will also be elaborated upon. This chapter focuses on research question three: 'What capabilities and everyday mobility experiences can be observed for residents of a vulnerable neighbourhood in The Hague Southwest'?

6.1 Main issues raised interviews

The table beneath provides a summary overview of the main issues raised, related to the main concepts of the Capabilities Approach: resources, conversion factors and capabilities. The participants are grouped according to age. Moreover, specific sub groups are mentioned when it was considered to provide additional value related to the possible barriers or consequences encountered by at-risk groups.

Table 11: Summary of main issues raised by individuals in various age groups

Group	Issues raised
Seniors (65+)	**Resources** • Most of the activities visited by this age group are locally accessible; groceries, the doctor, the community center. Access is perceived as good as all in the area is at walking distance. Their main form of transport is focused on walking (with a rollator) or the bicycle if they are (physically) able. • Further destinations such as the hospital or city center are visited occasionally, either by government offered transport, public transport (mostly used by the ones without physical disabilities), bicycle or to a lesser extend the private car. On a regional scale, families are visited seldom by a few. • The reliance on a social network is mentioned more often in relation to: obtain knowledge (which transport options are available), receive help when booking transport systems, get a ride by car or receive help in other situations: 'When I need to get a lot of groceries I always ask my son' (senior woman).

Group	Issues raised
	Conversion factors
	• The willingness to overcome smaller distances is large for this group of people: 'I love to walk around the block and get out of the house once every while' (senior woman). 'You see a lot of people and it is not quiet when you go to the store, which is nice' (senior man).
	• The observed willingness to overcome further distances is not as large for most participants: 'I go to the big marketplace in the city center by tram once every while, that is enough' (senior man). 'I am not much of a person to go out a lot' (senior woman).
	• Expenses are considered less of an issue because of the 'WMO' and the 'Ooienvaarspas' and because expenses for one are not perceived as that high: 'With the Ooienvaarspas I can access everything I want to, the community center is only four stops by bus' (senior woman). 'Money is not as important when you are alone. At my age you do not need much; I wear the same clothes for years' (senior woman).
	• The use of public transport is perceived as scary and difficult by the ones in lesser physical condition: 'The driver always already starts driving before you can sit down' (senior man). 'Access and egress is hard with a rollator, especially when you also have to carry your groceries' (senior man). Moreover, the need to make a lot of transfers, far walking distances and challenges learning time schedules by heard are other mentioned barriers to take public transport.
	• Some enjoy to use the bicycle, although feelings of fear or physical disabilities are also expressed as barriers to ride a bicycle. 'Cycling on the road is dangerous, I am scared, especially due to the traffic' (senior woman).
	• Concerns are expressed relevant to the requirement to book government offered transport in advance: 'You cannot plan a week ahead if you will get sick and need a doctor' (senior woman).
	• The bad conditions of the sidewalks is mentioned often by this group: 'I always look down when I walk, to make sure I do not fall' (senior man).
	Capabilities
	• Destinations that require many transfers by public transport are mentioned as places not visited anymore: 'I got rid of my car because I could not afford it at that time (1992), I do not miss it at all, but places which require to transfer multiple times, such as Wassenaar, I do not visit anymore' (senior man).
	• This group often mentions all valued activities visited regularly are easily accessible: 'Reaching places is not an issue, everything is at walking distance in this neighbourhood' (senior man).
Adults(19-64)	**Resources**
	• The valued activities accessed regularly highly depend upon one's 'role in society'. Employed either travel outside of the neighbourhood for their work (by car) or stay in the neighbourhood to go to work. Activities for the non employed are mostly concentrated around the neighbourhood and accessed on foot or by bicycle.
	• Stay-at-home mothers usually take their young children to school everyday, which are often local; access on foot is seen as easy. Dependent upon the parents' preferences, older children either also are brought by a stay-at-home mother or go on their own by bicycle or tram.
	• Local grocery stores are visited once every day/two days for smaller things and during the weekend with (the partner's) car.

Group	Issues raised

- The people without a car often stay around the neighbourhood for social activities, access in the neighbourhood is perceived as good by all, as everything is at walking distance. Walking is considered pleasant and healthy by most. Some also use the bicycle to go to the 'Haagse Markt' and seldom (once every two/three weeks) to go into the city center by tram.
- The people in this group with a car use it during the weekend for social activities either in the neighbourhood or other (close by) areas for: family visits, restaurants, the Mosque, the zoo or to bring relatives/partners to appointments: 'The mosque is very close by: it is in this neighbourhood. Everyone however always comes by car. During the Ramadan it will be very crowded and the mosque advises everyone to come on foot' (adult man).
- In this group, the social network is mentioned more often enabling accessibility due to the ability to make use of the network's motorised vehicle: 'My man brings me to my sisters once every week. But no men are allowed, he brings me and after a while comes to pick me up again' (adult woman).

Conversion factors

- Some enjoy cycling and perceive it as healthy and pleasant. Others, in this research mostly observed in the group non-western migrant women, express feelings of fear and embarrassment: 'Sometimes I find it a shame that I forgot how to ride a bicycle, I learned it when I came here but I got scared and do not use it anymore' (adult woman). It is also mentioned as 'not an option' when you are new to the cycling culture and you have to carry a child.
- Multiple women express feelings of fear when going out alone at night.
- Various women with a migration background in this group express a lack of confidence and language barriers as a reason to not use public transport to get to the city center or other cities: 'If I were to go by public transport, I would have to go via the city center, but I do not understand how to do that' (adult woman). 'If I would be able to go together with someone, I would' (adult woman).
- One woman raises feelings of fear related to her child taking the tram, she would rather see him walking. Another woman also expresses feelings of fear using public transport, particularly when it is too crowded.
- Two stay-at-home mothers mention their main accessibility barriers are shaped by time restrictions related to child care: 'I do not have any problems in regards to mobility, except that I have to rush back home for the children. They also come home for lunch' (adult woman). A working man also mentions job related time constraints.
- Language barriers also form an issue for some to get their driving license: 'Some people even take two/three years to pass the exam. For native Dutch speaking people it is easy, but for non-native speakers it can be completely different. I know some ladies with a Turkish migration background, they spent five years and in the end did not get the drivers license. Sometimes they then look for an illegal way to get a license' (adult man).
- High tram fares are often mentioned as a reason not to travel by tram more often than once a month. Also in family composition, tram fares are perceived as too expensive and a reason to use the car: 'If I calculate what we would pay for the whole family to use the tram it would be way more than by car. If public transport would be cheaper we would be more willing to take the tram' (adult man). Another woman however does not experience the tram fares as an issue as she mostly dodges the fares: 'Public transport for me is not expensive, when it comes I just get in' (adult woman).

Group	Issues raised

- The importance of the car is mentioned in three main forms: related to family context, to access jobs and to derive status from. 'My youngest is a baby, we have to carry her around in the baby cart. For the sake of the kid we go by car' (adult man). In relation to jobs, the car is mentioned in various forms: travel time reduction, locations which are not accessible by public transport or constantly change, irregular work schedules, having to carry tools for work and to have a job which requires to drive. The car is also mentioned as a status symbol: 'It is part of the Dutch mindset, where non-migrant people would say 'cycling is healthy' we would say 'cycling is for the poor'. It is considered a symbol of status I think, which is determined by background and religion' (adult man).
- In this group, concerns regarding parking issues are often raised. For some this is their main concern regarding their mobility: 'The most important thing for me is to keep parking free of charge' (adult man).

Capabilities

- Some of the people in the group who mentioned the high tram fares also say they do not feel the need to visit the center more often: 'There is no need to take the tram or train as all is accessible in the neighbourhood on foot' (adult man). However, multiple stay-at-home mothers and families expressed they would like to take the tram more often if it were more affordable: 'Going to the city center with the whole family is expensive, that is why we do not go there a lot (adult woman)'.
- Two women with a non-western migration background express that if they would be more confident in the use of public transport or if they could go together with someone they would like to visit the city center or other cities more regularly.
- Two stay-at-home mothers say they would have liked to visit further places more often if they did not have the time restrictions related to the care of their children. Another man mentions time restrictions related to his job as a barrier to his opportunities to access further places.

Adolescents (12-18)

Resources

- The location of valued activities visited often depends on the age. Schools for younger children are locally accessible on foot where adolescents have to move further out of the neighbourhood for school (in the city center), using the bicycle, scooter or public transport.
- Social activities include: sports (football) which is accessible in the area but also in further places such as Delft for the ones who own a car or scooter. Another activity includes hanging with friends outside or at the community center.
- A part time job mentioned is fulfilled in and around the neighbourhood, and requires the use of a scooter to get around quick and easily.
- Adolescents who do not own a car or scooter and want to move out of the neighbourhood might depend on the availability of their social network to get a lift. Younger adolescents or children often depend on their parents in order to bring them to places further away.
- Younger children are also dependent upon their parents' perception of safety in regard to which transport options they are allowed to use.

Conversion factors

- The use of a scooter is mentioned by the respondent as an accessibility enabler in and around the neighbourhood. Especially when going into the city it is mentioned as more useful than the car due to traffic jams.

Group	Issues raised

- The choice for either car or scooter is made depending on weather conditions.
- Car purchase expenses are considered doable due to a received discount: 'I was able to get an A class car for half the price, similarly when I bought my scooter' (adolescent boy).
- Expenses for gas for the scooter or car are perceived as expensive: 'It is expensive and it depends if my business is doing good if I can afford it' (adolescent boy).
- Public transport is the least preferred mode of transport by the participant: 'I do not like to use public transport, it takes too long and the atmosphere is not fun' (adolescent boy).

Capabilities

- The lack of sports activities that can be reached in the area, especially for girls, is mentioned by two parents. They state the area is rather football focused, and that sports facilities such as ballet and basketball are not offered in proximity.

6.2 Identified capabilities, resources and conversion factors

The section beneath provides a clear overview of the wide variety of conversion factors and resources observed. Moreover, it aims to show if these accessibility issues, according to the residents, actually formed hindrance to their capabilities (opportunities to access valued out-of-home activities). Furthermore, as the group of adolescents only contained one respondent, this was perceived as too little to provide an overview for.

6.2.1 Capabilities, resources & conversion factors Seniors

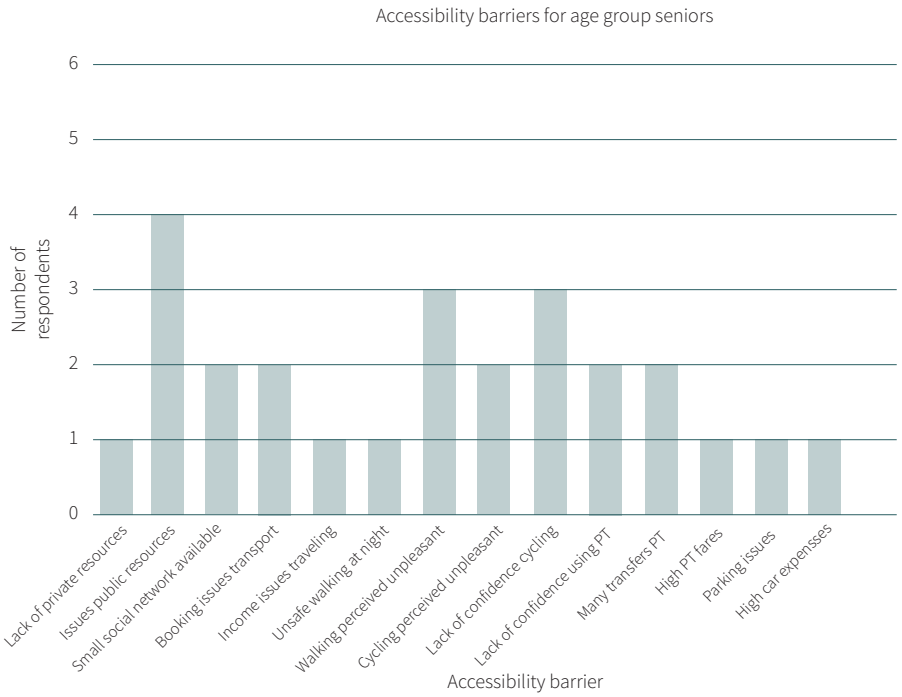

Figure 10: Accessibility barriers in the age group seniors

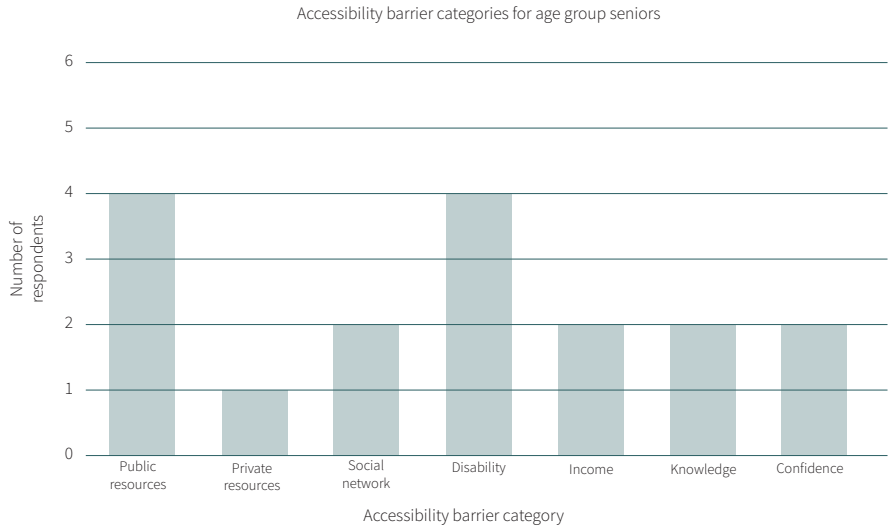

Figure 11: Accessibility barriers per category observed in the age group seniors

The two figures above show the various conversion factors and resources observed to create accessibility issues for the age group seniors. In the first figure the issues are provided with a specific name, where in the second figure they are grouped according to various categories. It can be observed that accessibility issues in this group mostly relate to issues which challenge the ability to walk, such as the bad conditions of the sidewalks or physical difficulties. Moreover, the accessibility issues were also related to the lack of confidence to use various forms of transport, which included the use of the bicycle and public transport. Various other issues were mentioned but this varied per respondent.

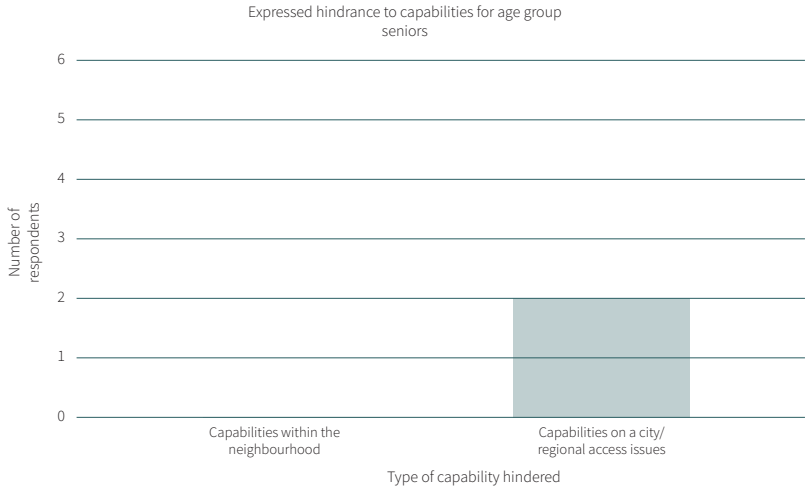

Figure 12: Expressed hindrance of capabilities in age group seniors

The figure above shows an overview of the amount of respondents who mentioned that accessibility issues also hindered their capabilities, thus the opportunities to access valued opportunities. It can be observed that almost all respondents in this age group experienced good levels of accessibility; very rarely did participants express it also hindered to participate in out-of-home activities. Only two respondents mentioned accessibility issues as actual barriers which hindered to participate in activities outside of the neighbourhood. These barriers related to the use of public transport; which included

difficulties related to public transport transfers and too far distances to access the bus stops.

6.2.2 Capabilities, resources & conversion factors adults

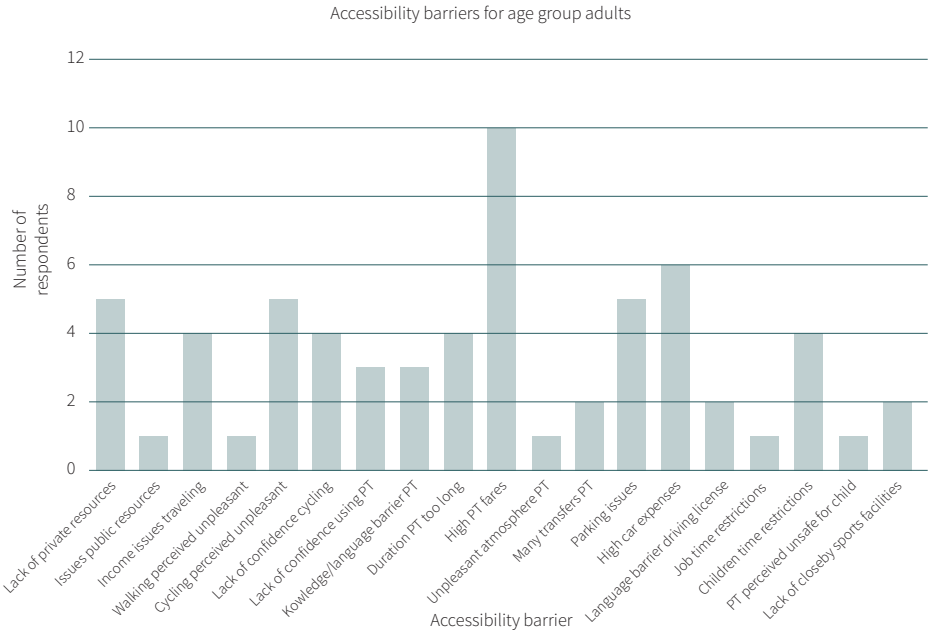

Figure 13: Accessibility barriers observed in the age group adults

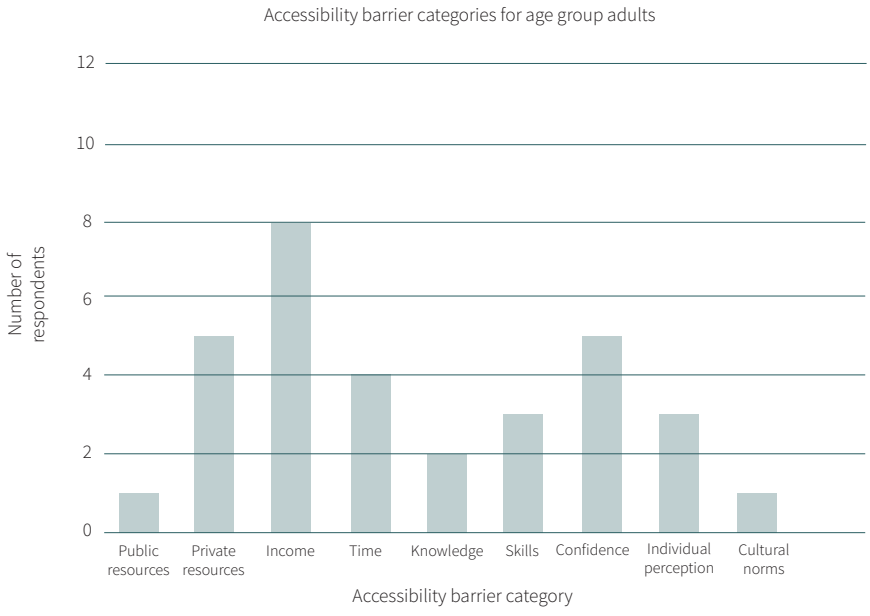

Figure 14: Accessibility barriers per category observed in the age group adults

In the two figures above a variety of resources and conversion factors are shown encountered by the age group adults, which might limit accessibility. In the first figure the accessibility issues are provided with a specific name, where in the second figure they are grouped according to categories. In this age

group an often mentioned accessibility issues was the high fares of the trams. Furthermore, various respondents mentioned they did not own a car due to high expenses of the car but would like to have one.

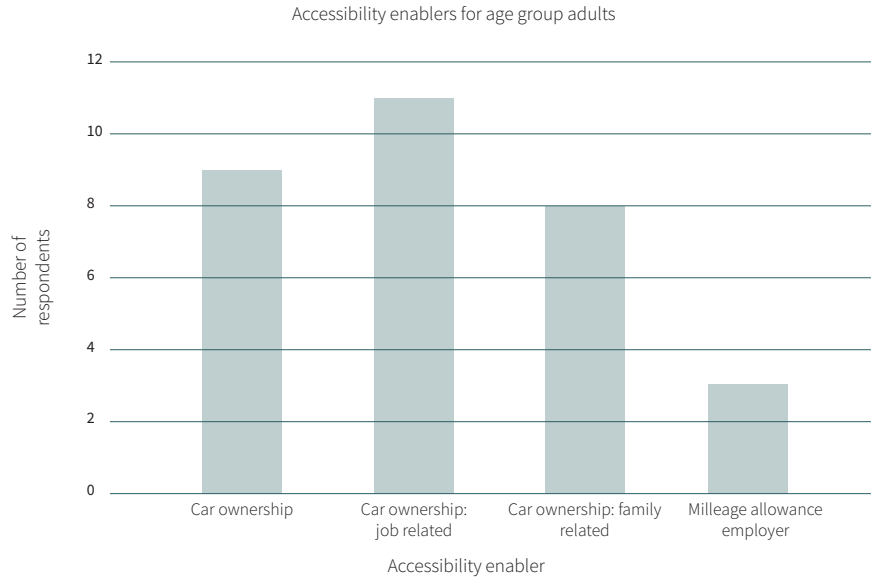

Figure 15: Accessibility enablers observed in the age group adults

In this age group, both limiting conversion factors as well as enabling conversion factors were observed. Especially in relation to employment and family, the importance of the car as a factor enabling accessibility was mentioned often. Various stay-at-home mothers also mentioned their partner owned a car to access work. The primary reason expressed was often that the job was not reachable by the use of other forms of transport.

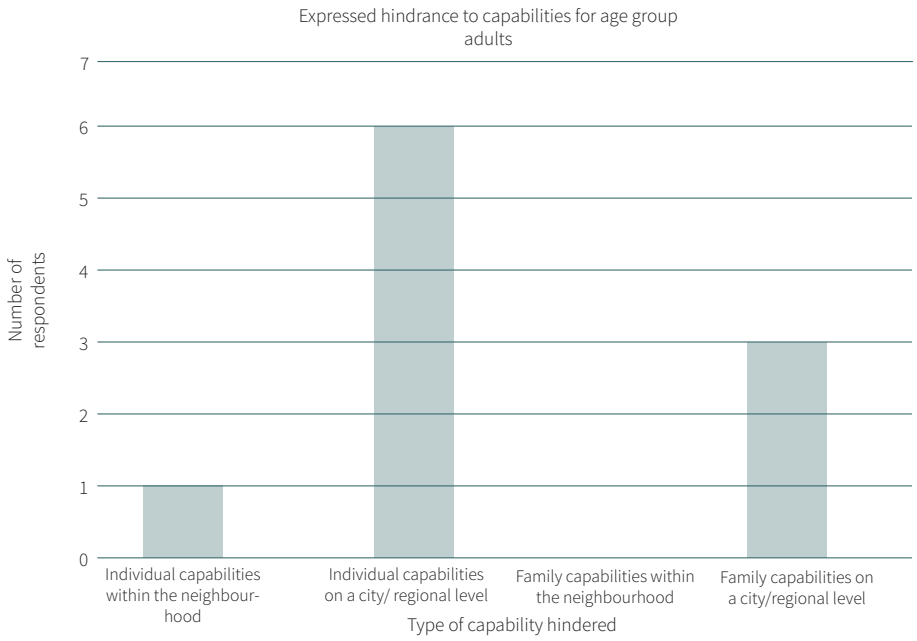

Figure 16: Expressed hindrance of capabilities in age group adults

For this group, two forms of capabilities were taken into account; one in relation to individual perceived accessibility to valued opportunities and one in relation to the family. It can be observed that in this age group again, almost all respondents considered their accessibility in the neighbourhood as good; they did not express that accessibility hindered participating in out-of-home activities in the neighbourhood. However, some participants did express hindrance to the opportunity to participate in out-of-home activities outside of the neighbourhood; they stated they would like to travel outside of the neighbourhood to access valued activities more often. Most often, the accessibility barrier mentioned to hinder participation in out-of-home activities was the high public transport fares.

6.3 Key findings from the study

In table 11 and the figures above, the key issues raised by participants relevant to capabilities, conversion factors and resources in various age groups are shown. In these interviews, some elements seemed to overlap all age groups. Furthermore, the second-hand interviews with community experts (workers/volunteers at community centers and social workers) also provided important insights. These led to the identification of key findings regarding the capabilities and main conversion factors/resources for residents in Bouwlust & Vrederust. These findings are discussed in the sections beneath.

6.3.1 Causes of accessibility issues/good levels of accessibility

Importance of the car

The importance of the car appeared in different forms throughout the research. Even though expenses for a car were perceived as high by all, its importance to enlarge residents' capabilities was noted for various reasons, and even considered 'a necessity, not a luxury' (adult woman). The people who are able to afford a car (either used by themselves or by their partner) perceive it a critical accessibility enabler, either to participate in their job, participate in valued activities with the family or to rely on to receive a ride by car to access valued activities. Moreover, multiple non-car owners expressed the importance of the availability of a car in their social network to get a ride to sports, social activities, jobs or to receive groceries at home which require heavy lifting. For some of this group (the non-car owners who made use of the resources of their social network), the usage of their networks' car seemed crucial to access valued opportunities. However, others seemed to be less dependent upon their social network, as it was expressed as one of multiple transport options they could use to reach a valued activity. Moreover, the car was expressed explicitly as an important factor to derive status from. One of the workers at a community center says to a lesser extend the same mechanism is observed for the tram, as tram usage shows you have the money to let someone drive you instead of having to move yourself (Workers community center Zijden, Steden & Zichten, personal communication, March 20, 2023)[9]. In family context the car was mostly expressed a resource which, once the investment costs were made, saved money in terms of not having to pay high public transport fees for every family member. To participate in relevant jobs outside of the neighbourhood, all car owners reported the need of the car to: save travel time, access a place which is hardly accessible by public transport, reach changing job locations, bring tools or just because the job requires driving a car. 'You can get there by public transport but I am not going to spend 1,5 hours traveling while by car I can do it in 20 minutes' (adult woman). 'I work on an industrial estate in Bleiswijk, I cannot get there without the car, I really need it' (adult man). 'I need my car to carry my tools, or I get picked up by others' (adult man).

Conversely, no job seeking participants mentioned accessibility barriers to reach suitable jobs due to the absence of a private car. Some non car owners mentioned they did not own a car because they were not able to afford one. They however did not mention any particular (job related) reasons why they would like to have one. In family context the role of the absent car was mentioned: 'Our most important hindrance in accessibility is money, currently it is too expensive to go to the city by public transport with the whole family and we do not own a car' (adult man). Moreover, in relation to the opportunity to participate in social activities the importance of the car by non car owners was mainly recognised in relation to some places which were perceived difficult to reach by public transport, as they require many transfers. The one activity where the use of the car was not always perceived as beneficial was when going into the city center, due to traffic jams and high parking costs.

[9] Workers community center Zijden, Steden & Zichten. (2023). *Experience expert accessibility and well-being adults* [Interview]. Community center Zijden, Steden & Zichten, The Hague.

Importance of a social network
In various interviews, the social network was mentioned as a resource enlarging participants' capabilities. It therewith was primarily mentioned related to the possibility to receive a ride by car (from family, friends or colleagues) or to receive help getting groceries. For seniors, social networks especially appeared to provide help with (transport related) issues such as the booking of government offered transport systems. Being able to reap the benefits from a social network naturally depends on the availability of a social network, as well as a social network who owns a motorised vehicle to offer you a ride. One of the interviews portrayed the effects of an absent social network; walking distances to bus stops were actually too large for one participant as he fell a few times and was impeded walking ever since. He however showed to not know of any other options and therefore continued walking to his daily activities, even though this clearly showed to take a lot of effort. Evidence was however also shown that having a social network does not necessarily mean one also uses it to enlarge his/her set of capabilities: 'Asking of help still shows to be an issue; they want to be able to do things independently, asking for help is seen as a defeat' (Volunteers 'Begeleiden en Rijden', personal communication, March 14, 2023).[10]
Besides enabled access due to a social network, respondents also seemed to derive joy from the act of offering each other rides. For example, a son brings his father by car, who lives one street away from the community center and does not have any physical difficulties: 'I bring my father by car to different places, here, the doctor' (adult man).

Feelings and perceptions as accessibility barriers
In the results, it was expressed that rather often accessibility issues were shaped by feelings or individual perceptions (of safety). These 'feeling related barriers' create accessibility issues related to both conversion factors (individual and contextual) and resources (the activity opportunities considered).
First, relevant to individual conversion factors, familiarity with a certain mode of transport and the confidence were most expressed, primarily by women: 'I once knew how to ride a bicycle, but I forgot and now I am scared to use it' (adult woman). It however seemed that most who could not ride a bicycle did not consider this a problem as everything they wanted to reach close by was doable on foot. Individual perceptions and habits also affected the set of travel options considered; many did not considered the bicycle for longer distances, besides the question if they were capable of riding a bicycle or not.
Perceptions of safety from parents was expressed as a contextual feature which created an accessibility barrier for children: 'When we want to plan an activity outside of the neighbourhood, the first question raised by parents is often: 'how will you get there?' If then the answer is 'By public transport' it is often perceived as too unsafe to give their children permission to go' (Social workers adolescents, personal communication, March 27, 2023).[11]
Besides barriers related to conversion factors, perceptions also influenced the activity opportunities taken into consideration. From the perspective of workers at the community center, the lack of chances adolescents had had to familiarise themselves with activities out of their comfort zone affected the activity opportunities taken into account by them. One of the social workers said 'for adolescents in the neighbourhood their expressed need is very limited, mainly due to the fact that they have never had the chance to familiarise themselves with more. An activity in a community center is already considered good enough' (Social workers adolescents, 2023)[11]. When the researcher asked: 'Do they themselves perceive the fact that they stay around the neighbourhood as an issue?' one of the community center workers answered with the Dutch saying: 'Wat een boer niet kent dat eet hij niet'. 'Introducing them to new opportunities really requires to guide them out of their comfort zone and familiarise them with unknown activities' (Social workers adolescents, 2023)[11].

Proportion of income related to costs as main accessibility barrier, not time
The most often mentioned reason not to use public transport more often related to monetary resources. It therewith seemed that the proportion of transport cost, related to income, was the main barrier experienced: 'In this neighbourhood, it is not a matter of unavailable transport resources; if transport requires payment, people refrain from moving' (Volunteer community center Venen, Oorden & Raden, personal

[10] Volunteers 'Begeleiden en Rijden'. (2023). *Behavioural expert accessibility and well-being seniors* [Interview]. Community center Venen, Oorden & Raden, The Hague.
[11] Social workers adolescents. (2023). *Experience/professional expert accessibility and well-being adolescents* [Interview]. Community center Venen, Oorden & Raden, The Hague.

communication, March 16, 2023).[12] 'I either walk or go by bicycle because it is cheap' (adult woman). Furthermore, travel costs to reach cultural activities such as museums were also mentioned to create a barrier for activity participation in larger groups: 'a museum is offered at a reduced rate with an Ooienvaarspas, which is ideal, but getting a group of adolescents there is quite a task. We do not have suitable transport available and are dependent upon funds. Often the costs to arrange transport already forms a great challenge to organise such an activity' (Social workers adolescents, 2023)[11].
In contrast, long public transport travel times were almost never mentioned by participants as an accessibility issue by the ones who used public transport. The only participants who considered travel times by public transport as too long were the ones who had an alternative; the car owners. This brings the attention to an important aspect; it seemed some accessibility issues perceived as critical and insufficient from a top-down perspective, such as public transport travel time, were under reported by participants in the research.
Similar patterns appeared comparing volunteers' and elderly' s perspective related to travel time by government offered transport. 'You could say, the transport is available, AV070 is offered, but it just does not work. Waiting times are terrible, when you call during the day, it takes an hour' (Volunteers community center Venen, Oorden & Raden, personal communication, March 14, 2023).[13] 'Often those busses need to make a whole round, which of course saves time for the driver but for the passenger it easily takes an hour to get to an appointment' (Volunteers 'Begeleiden en Rijden', 2023)[10]. From the respondents point of view the long waiting times were mostly mentioned in a way that showed they considered it 'part of the deal': 'I mostly book it a week in advance to make sure it is available. I do not have any complaints in regards to the government offered transport. They always come to pick me up, one time they were too late but that is what you sign up for' (senior woman).
It gave the impression that, both related to the long public transport travel times, as well as the elderly transport services, residents accepted it as part of their everyday life and often found a way to reach their valued activities. This gives rise to the question from which perspective the accessibility standards should be set, and if accepting residents' standards in this particular case is good enough.

Accumulation of accessibility barriers
The accessibility issues experienced by respondents were expressed to be shaped by a combination of multiple barriers. A combination which was expressed more often by women with a non-western migration background was a lack of confidence to use public transport (due to difficulties with the language), as well as the high tram expenses. For some this was also combined with a lack of time due to child care: 'I would like to reach other places such as Amsterdam. However, it is difficult with my two children at home. The language is also a problem for me. If it would be possible to go together with someone I would go, otherwise it is difficult to reach an unfamiliar city' (adult woman). Moreover, another combination which was expressed to create accessibility issues more often was by seniors with physical difficulties who expressed to have issues to book government offered transport and had a small network to help them: 'I would like to go to Leidschendam. I used to go there often with a friend by taxi. However he passed away and now it is difficult for me to book a taxi' (senior woman).

6.3.2 Consequences of accessibility issues (on capabilities)
Hindrance to capabilities outside the neighbourhood
The first remark made by all participants was that they experienced good levels of accessibility. As the interview progressed it often became clear that they meant the accessibility inside the neighbourhood was perceived as good, primarily due to easy access of daily activities on foot, which was considered a pleasant mode of transport as it is both healthy and free. However, hindrance in the neighbourhood was expressed primarily related to the lack of accessibility for (sports) facilities for children/adolescents: 'It is such a shame that in this area there are little sports facilities for children. Accessing ballet studios requires to travel, which is why they cannot take part in ballet' (adult woman). In this neighbourhood, an activity as sports does not only appear important from the widely acknowledged mental and physical benefits, but also for the actual place in space it provides (Overheid, 2023): 'What I notice for High school students it that they want to have a place where they can go after school instead of just going

[12] Volunteer community center Venen, Oorden & Raden. (2023). *Experience expert accessibility and well-being adults* [Interview]. Community center Venen, Oorden & Raden, The Hague.
[13] Volunteers community center Venen, Oorden & Raden. (2023). *Experience experts accessibility and well-being seniors* [Interview]. Community center Venen, Oorden & Raden, The Hague.

home and having to do their homework'(Social workers adolescents, 2023)[11]. 'The adolescents around here have very little, they just sit around and get bored, which goes from bad to worse'(Volunteer community center Venen, Oorden & Raden, 2023)[12].
While most weekly trips for the non-working (bringing the children to school, going shopping or for social activities) were mostly centered around the neighbourhood, on a monthly basis did participants undertake trips towards the city center/ on a city level. It often became clear that on a city and regional level more accessibility issues seemed to occur: 'Moving to places close by feels easy, moving to places far away is difficult' (adult woman). 'I travel to the city center once a month by tram, for me a ticket is €4,- or €5,- , for the kids it is €1,-. If I do this once a month it is oke, but going more often would be too expensive' (adult woman). Only part of the respondents mentioned these accessibility issues actually also hindered their capabilities (thus their opportunities to participate in valued out-of-home activities). On the one hand, some respondents specifically mentioned they did not visit places outside the neighbourhood often or at all, but also did not feel the need to. On the other hand, there were respondents who mentioned they would like to visit certain places outside of the neighbourhood more often, either if it were cheaper or easier to move by public transport (enhanced confidence, more time at hand). Elaborately, hindrance to one's capabilities outside of the neighbourhood was mostly expressed by stay-at-home women with a non-western migration background. .
Trips on a regional level for social activities were mostly shown to be undertaken by individuals/households who owned a car or by seniors receiving reduced transport fares.

Discrepancy objective and perceived accessibility
Not only related to accessibility barriers (travel time) did it seem information was under reported, also the effect it has on one's capabilities was expected different. From earlier analyses, as well as expressed by the strategic account manager of the municipality The Hague, job accessibility in this area is often a challenge: 'How to get people to the job is a challenge, they often also do not posses a car (Strategic account manager Municipality The Hague, personal communication, May 01, 2023).' [14]
However, as discussed in the section above, no job seeking participants mentioned accessibility issues towards suitable jobs due to the absence of a private car. It could be that this research did not observe any job seekers who valued jobs outside of the neighbourhood. However, the difference in prior measured low accessibility levels and high perceived accessibility can also be explained by the possible occurrence of various mechanisms. Research by Jorritsma et al. (2023) as well as Pot et al. (2020) shows that objectively low accessibility levels does not necessarily lead to low perceived accessibility levels. The mechanism of 'adaptive preferences' might occur, where respondents mainly 'adapt to adverse situations and develop criteria that are deformed by one's negative experiences' (Comim, 2008, p. 229). An example where adaptive preference occurs is when people without a car might adapt to the situation where they cannot reach jobs which are only accessible by car. Their level of perceived accessibility is high, as they do not take the jobs which require a car into consideration while assessing their accessibility. Second, people make a trade-off when they move somewhere, which also includes accessibility. In this regard, self selection can occur, where people with less strong preferences for city activities might move to more rural or suburban areas, where objective low accessibility levels are measured. They might therefore still perceive high levels of accessibility, as they are less interested in participating in city life (Jorritsma et al., 2023). Another explanation might be that people who choose to live in geographically less accessible places might still perceive their accessibility as good when they have mobility resources which can 'compensate' the low degree of accessibility, such as a private car (Jorritsma et al., 2023). Moreover, Krabbenborg and Uitbeijerse (2023) also identifies a mechanism, arguing that people with accessibility issues often find a way to reach their destination, may it require a lot of effort. This leads back to the same discussion as was brought up in the section above, posing the question from which perspective accessibility standards should be set, and if the standards set by residents in vulnerable neighbourhoods, possibly formed by one of the mechanisms mentioned above, should be enough. This benchmark between 'acceptable accessibility issues' and 'unacceptable transport poverty' is 'ambiguous as concrete accessibility objectives are missing' Krabbenborg and Uitbeijerse (2023, p. 3).

Consequences of accessibility issues, besides reduced capabilities

[14] Strategic account manager Municipality The Hague. (2023).*Professional expert job accessibility The Hague Southwest* [Interview]. Phone call.

Although the actual hindrance of one's capabilities was not expressed as much, accessibility issues and mental challenges (related to socio-economic issues such as debts) were expressed by a worker at a community center to enhance the effort required to move: 'Being mobile often also has an important mental aspect; for you and me it is easy to plan ahead when you have to get to an appointment, but when you have debts and other worries on your mind you just do not have the ability to oversee it all. In some streets 86% of the households are in debts, they are in such a spiral for survival' (Workers community center Zijden, Steden & Zichten, 2023)[9].
Moreover, this effort was more often observed, although often not explicitly mentioned as a problem, even though some residents were observed to clearly struggle to access their valued activities. For example, a senior in lesser physical condition expressed 'When you enter the tram at the first stop, this already costs €0.90. My card is almost empty so I have to wait until I have some money as I also need to buy groceries. I will use up the money available on my card to go there, and will go back walking. It will take 40 minutes, I will have to rest on my rollator but I will be completely exhausted when I get back' (senior woman).
Another expressed consequences shaped by accessibility barriers was that it made one respondent's wife more dependent upon him: 'My wife does not have a drivers license, because we just had a baby she has to stay at home. (...) Now she is reliant on me. She is just waiting for me at home, which is not good for her psychological and personal development' (adult man). This reliance was observed more often, but not expressed as an issue by other respondents.

6.4 Conclusion

The results observed a wide variety of individual and contextual conversion factors. Most of the conversion factors showed to be personal, or sub-group and sometimes age group specific (e.g. reduced confidence using public transport due to language or physical difficulties). Other accessibility barriers or enablers intersected the different age groups. Some of these factors were (mobility) resource related; high fares related to income as main barrier for public transport usage, the importance of the car to enable accessibility and the importance of the availability of a social network (in possession of a motorised vehicle). Moreover, individuals' feelings and perceptions showed to affect one's choice in transport mode, which sometimes reduced the set of transport options. This included one's: confidence levels (language barriers), familiarity with the use of a transport mode and individual perceptions of safety. For example, some did not take the bicycle into consideration as a travel option for longer distances, as they were unfamiliar with its usage over longer travel distances and were used to the car for longer distances. Some barriers appeared in other sectors than the infrastructure and mobility sector. For example, mental issues related to socio-economic problems for some affected the ease of moving and the activity opportunities considered. Moreover, accessibility issues were often shaped by an accumulation of barriers. The distinction of possible consequences on resident's capabilities however appeared more difficult. The first remark made by all participants was that they perceived the accessibility inside of the neighbourhood as good, primarily due to easy access of daily activities on foot, which was considered a pleasant mode of transport as it is both healthy and free. It often became clear that accessing places outside of the neighbourhood for most participants was considered more difficult; reasons mentioned mostly concerned high tram fares. However, only for part of the respondents did these barriers also affect their level of perceived accessibility, contrary to what was expected based upon the objectively low accessibility levels measured in previous conducted analyses. Some specifically mentioned they did not visit places outside the neighbourhood often or at all, but also did not feel the need to. On the other hand, there were respondents who mentioned they would like to visit certain places outside of the neighbourhood more often, if it were cheaper or easier to move by public transport i.e.; enhanced confidence (with the Dutch language or someone to travel with), more affordable, less transfers or more time at hand. For adolescents, the main consequences on their capabilities related to the little sports facilities available in proximity. It showed especially difficult to research the consequences of accessibility issues, due to the possibility that different mechanisms might occur. Moreover, residents often found a way to reach their valued activities, even if it showed to require considerate effort (long travel times, physical capacity, or else). These efforts were often not expressed, possibly as they are unnoticed, or are shaped by a mechanism such as adaptive preference (where one adapts to an adverse situation).
The differences in expected low levels of accessibility, and relatively high levels of perceived acces-

sibility, raise the question ‘who should be responsible to create accessibility standards’? Moreover, efforts often required to access valued out-of-home activities, raise awareness for the ambiguity between accessibility issues and transport poverty. It can be argued that, from a certain level, the amount of effort required to access activities should also be considered as unacceptable, even though not expressed by residents themselves. Following this line of reasoning, the adaptation of a top-down approach was considered more suitable to assess and monitor a standard level of accessibility for all, at least to the activities which are seen as ‘central elements of truly human functioning’ (Nussbaum, 2000, p. 74). Therefore, although not explicitly mentioned by residents, relevant job accessibility was perceived as insufficient, from a top-down perspective. In this regard, two key activities showed insufficient accessibility levels; social activities (from a bottom-up perspective, as expressed by participants in the research) and job related activities (from a top-down perspective, as measured by accessibility assessments). Hence, the next chapter will explore potential solution pathways to enhance accessibility towards social activities and relevant jobs for Bouwlust & Vrederust’s residents.

7

Potential solution pathways

The results in chapter 6, studied residents' capabilities and everyday mobility experiences, which identified two types of activities with insufficient levels of accessibility in the neighbourhood under study: relevant jobs and social activities. This chapter is devoted to propose promising solution pathways to enhance accessibility to these activities, while taking into account the barriers identified in the previous chapter. First, this chapter will elaborate again upon the chosen activity types shortly. Thereafter, it provides some background information on the fundamental challenges rooted in transport. This additional information is required to understand the complexities arising while searching for suitable mobility solution pathways. Thereafter, a combination of frameworks is provided, including relevant interventions to address insufficient/unjust accessibility. Finally, promising solution pathways are provided to enhance accessibility to jobs and social activities. The aim was to set out various promising solution pathways which could by implemented either by the municipality of The Hague or private actors. Rebel Living & Mobility B.V. is currently working together with the municipality of The Hague to find sustainable mobility concepts for The Hague Southwest. They are involved as consultants as well as potential private investor in newly developed solutions, which is why the choice was made to focus on these two types of actors. This chapter answers research question four: 'When recognising individuals' everyday mobility experiences and capabilities, what potential solution pathways can be identified'?

7.1 Activities with insufficient access

Drawing on the analysis from chapter 6, low degrees of accessibility were expressed, primarily related to social activities in the city center and in places which are hardly accessible by public transport (Wassenaar). Moreover, a lack of (sports) facilities for children/adolescents was mentioned. It must therefore be noted that the bottom-up perspective primarily observed hindrance to access social activities for three at-risk groups: children/adolescents, women with a non-western migration background and physically impaired elderly. Therefore, the barriers mentioned by these groups were taken into account for the proposed solution pathways. Moreover, these groups were often observed to not posses a private motorised vehicle, which was also considered when shaping the solution pathways.
Secondly, access to suitable jobs for low-income earners without a motorised vehicle was perceived limited from a top-down accessibility perspective (Studio Bereikbaar et al., 2022)[1]. Although this research did not find any evidence of accessibility issues to relevant jobs from residents' perspective, it was taken into account that this could possibly be due to the occurrence of one of the mechanisms identified in chapter 6 or due to an unintended bias in the sample. Moreover, the primary interest of this research was to guarantee sufficient levels of accessibility to valued activities as well as society participation. Society participation, according to Schmeets (2018) includes o.a. paid work, voluntary work and social participation, which is why it was considered valuable to also focus on enhancing accessibility to relevant jobs.

7.2 Fundamental challenges in transport

7.2.1 Heterogeneity of mobility needs

As can be observed in the previous chapter, mobility patterns are shaped by a wide range of personal and contextual circumstances. A solution that suits the mobility needs for one group might not suit the needs for another group; where on demand responsive transit might be suiting for seniors or disabled, it is mentioned to serve very particular niches and is not suited for all travelers (Palm et al., 2021). Furthermore, where public transport fits the needs for those who want to reach places close to big

transport hubs, it might be less suitable for the ones who need to travel to areas less accessible by public transport, as well as travelers who experience difficulties transferring. This heterogeneity in mobility needs creates complexity in regard to finding a suitable mobility solution, as one solution often does not satisfy the needs for all.

7.2.2 Dynamics of mobility preferences over time

A strong body of social-scientific evidence has shown that mobility practices are dynamic over a person's lifespan. Mobility practices are therewith not only shaped by personal and contextual circumstances but also change over time; coinciding with so called key life events (getting a drivers license, childbirth, residential relocation etc.) (Rau & Manton, 2016; Scheiner, 2014; Schoenduwe et al., 2015; Van der Waerden et al., 2003). This shows that a solution which might be appropriate at one point during one's life might not fit the needs at another point in time, again adding to the complexity to plan for individuals' mobility preferences.

7.2.3 Public transport: speed vs accessibility for all

An often mentioned solution pathway to counter mobility equity issues, also in the specific situation of The Hague Southwest, is to improve public transport (Goudappel, n.d.). Improving public transport however requires to make strategic choices which often involve a conflicting interest. Focusing on regional accessibility, quality of public transport is achieved obtaining high speeds, which requires as little stops as possible. A consequence of the decreased number of stops is that it affects local accessibility as it limits the ramification of the public transport network (also called intricacy). Again, the solution pathway chosen affects which kind of accessibility is considered and therewith which group of people is taken into account (the travelers who benefit from a bus stop around every corner or the travelers who want to cross further distances).

7.3 Policy measures addressing insufficient accessibility

There are different ways to classify transport policies, according to the: policy goal, kind of instrument or policy body responsible for implementation (Van Wee et al., 2013). In the context of this research it is considered relevant to categorize policy measures according to its goal; address insufficient/unjust accessibility for people on lower incomes.

For this goal the three frameworks by Vecchio (2018), Goudappel et al. (2021) and Ewing and Cervero (2010) have been combined. These frameworks were considered suitable, as especially the first two considered similar disadvantaged groups (people on lower income). The combined framework is shown in figure 17 on the next page. The framework created by Vecchio (2018) provides three categories of policy measures to address insufficient access by intervening in the mobility, infrastructure & land-use system. The three categories provide the base of this framework. From a built environment perspective the 5 D's proposed by Ewing and Cervero (2010) also provide five categories of interventions to create 'inclusive mobility by making walking, cycling and the use of public transport more attractive' (Phd candidate TU Eindhoven researching sustainable mobility concepts in neighbourhoods, personal communication, May 01, 2023).[15] Finally, Goudappel et al. (2021) propose examples of more concrete policy measures and interventions, focusing on different parts in the decision process (either in the investment phase or more towards the implementation phase). They therewith also take solutions into account which might be more related to the social sector, such as to offer cycling lessons.

[15] Phd candidate TU Eindhoven. (2023). *Research expert possible solution pathways sustainable mobility concepts in neighbourhoods* [Interview]. Video call.

Interventions based on mobility, infrastructure & land-use system (Vecchio, 2018)	*Interventions based on land-use system; the 5 D's (Ewing and Cervero, 2010)*	*Interventions based on mobility, infrastruture, land-use & social system (Goudappel et al., 2021)*
Create proximity *provide closer opportunities; improve offered facilities or intervene on land-use.*	**Density** *the denser the functions in an area the shorter the distances.* **Diversity** *number of different functions in an area and the degree to which they are represented.*	• Consider how investments will influence vulnerable groups, involve them. • Provide a better match in work and residential locations; either bring more suitable jobs to residential locations or the other way around.
Enhance usability of existing connections to reach existing opportunities *provide improved infrastructure or introduce policies that might improve the usability of existing connections.*	**Design** *how much space do you give each modality, encouraging or discouraging certain behaviour.* **Distance (transit)** *average shortest street routes to neareast rail station or bus stop.* **Destination accessibility** *ease of access to trip attractions, also concerns first and last mile.*	• Consider how investments will influence vulnerable groups, involve them. • Implement pricing policies taking into account distribution effects. • Providing access to new forms of mobility such as shared scooters; introducing discounts and assured availability in vulnerable neighbourhoods. • Tailor made solutions per target audience; guarantee travel comfort (travel information, social safety), public transport compensation for job seekers, cycle lessons).
Introduce new services to reach existing opportunities *provide new services to opportuntities.*	**Distance (transit)** *average shortest street routes to neareast rail station or bus stop.* **Destination accessibility** *ease of access to trip attractions, also concerns first and last mile.*	• Consider how investments will influence vulnerable groups, involve them. • Consider which strategic investments will address inequity most. • Tailor made solutions per target audience; e.g. elderly transport.

Figure 17: Interventions to address insufficient access by Vecchio (2018) Ewing and Cervero (2010) and Goudappel et al. (2021)

7.4 Enhancing access to social activities and relevant jobs

The combined frameworks (figure 17) were used as an inspiration for possible interventions to enhance access to social activities and relevant jobs for residents in the neighbourhood. The three categories as proposed by Vecchio (2018) have been used as the base for a new framework, adding two categories which appeared interesting based on the observed barriers in the research. The category 'provide alternatives for the need to travel' was added as the social network sometimes showed to function as a substitute for the need to travel (e.g. bringing groceries to elderly). Furthermore, the appearance of accessibility barriers outside of the mobility/infrastructure sector revealed the importance to also focus on other sectors, adding 'collaborate with other relevant sectors'.

	Create proximity	**Enhance usability of existing connections**	**Introduce new services**	**Provide alternatives for the need to travel**	**Collaborate with other relevant sectors**
Social activities	1. Adopt a co-design approach to develop sports facilities for children / adolescents. 2. Create norms for sports facilities per neighbourhood for children/adolescents.	1. Improve the walking environment 2. Introduce public transport pricing policies for low-income households. 3. Promote initiatives which enhance residents' cycle/PT skills 4. Train 'the help offering side' e.g.; how to deal with vulnerable passengers	1. Facilitate an informal ride sharing system. 2. Facilitate informal (car) sharing system.	1. Introduce behavioural approach to offer services at home. 2. Strengthen residents' digital skills to communicate with social network online	1. Set up empowerment programmes at schools for adolescents. 2. Train social workers to help residents overcome their mental barriers.
Relevant jobs	Provide a better match in work and residential locations; 1. Attract suitable employers to the neighbourhood. 2. Build residential areas near places such as the Westland/ports of Rotterdam.	1. Facilitate public transport at earlier hours and reduced fares to low-income earners. 2. Provide access to shared scooters at earlier hours and reduced fares to low-income earners. 3. Promote initiatives which enhance residents' cycle/PT skills.	1. Introduce bus service or van services to relevant work locations. 2. Facilitate an informal ride sharing system. 3. Facilitate an informal (car) sharing system.		1. Set up support programmes to get employees mentally/physically ready to start working again.

Figure 18: Solution pathways addressing insufficient access to participate in social activities and relevant jobs (own work)

The solution pathways described in figure 18 above are aimed to address different accessibility barriers, which were expressed by different groups of people. Therefore, the sections beneath elaborate upon the various solution pathways; for whom they are intended and which accessibility barrier it aims to address.

7.4.1 Solutions focusing on accessibility to social activities

Create proximity

Sports facilities are often located on the outer edges of the build environment and therefore difficult accessible walking or by bicycle (Cammelbeeck et al., 2014). Naturally, it depends upon the type of sports facilities (required space) weather it is an option to move the facility closer. For the sports facilities mentioned to have insufficient access in the results (ballet, basketball or just a more general place for adolescents to entertain themselves) it is considered a feasible option to create proximity. Barriers to access these sports facilities mainly related to travel distance which is why it could be suitable to focus on density and diversity of the facilities in the neighbourhood.

First, to guarantee a consistent level of access to sports facilities for children, a possible solution pathway could be to create a minimum norm or maximum range in which sports activities should be available. The policy document focused on sports by Gemeente Den Haag (2015) shows an analysis of sport participation for all the neighbourhoods in The Hague. Bouwlust & Vrederust's residents are shown to participate less in sports than average. It is therewith stated that instruments implemented last year to encourage sports activity participation (Ooienvaarspas, sports coaches) have not had the desired effect. It however seems that proximity is an indicator which has not been taken into consideration in the analysis. It might therefore be that the higher sports participation in certain neighbourhoods have coincided with the fact that sports facilities in some neighbourhoods are better accessible (this is however an unsupported hypothesis which would require to further investigate residents' needs, relevant to sports facilities). An example to create such a norm is provided in policy documents regarding playgrounds, which categorizes children according to various age groups, and provides a maximum range in which a playing ground should be available per age group (Overheid, 2023). However, if the variety for sport facility demand in different neighbourhoods/within a neighbourhood were to be taken into consideration (which is highly recommended), this might be more difficult to include in a rather robust measure as a norm.

Therefore, another proposed solution pathway is to adopt a co-design approach, which involves the children/adolescents in the neighbourhood during the design process, to take into account the diversity in wishes for various groups; 'Sports fields are only interesting for a certain group of adolescents. Teenage girls generally prefer to sit in smaller circles. Dependent upon their cultural background they sometimes have to babysit younger brothers or sisters, which has to be facilitated as well. In Rotterdam they experimented using co-design, where designers sat down with children. When you make sure that the children taking part in this design process are representative for the population in a neighbourhood, this might create a feasible way to facilitate diversity in design. But then again, the more diverse the design team, the more focus there is on diversity in your design' (Phd candidate TU Eindhoven, 2023)[15].

Enhance usability of existing connections

For other social activities, the journey itself seemed to be part of the joy in the experience. Therefore, creating proximity is not always an option. For these activities a more feasible solution category would be to enhance the usability of existing connections, in order to guarantee access to valued activities.

First, a primary mode of transport for the observed residents often included walking. They seemed to enjoy walking to access valued activities, but also as an activity on its own. However, the quality of the sidewalks was often expressed to hamper (mainly by elderly, but also in general) their travel experience. Therefore, it is considered a suitable option to focus on improving the walking environment. This primarily includes to straighten the paving stones. Moreover, another relevant aspect of improving the walking environment includes the introduction or improvement of green infrastructure. This has shown to have a positive effect on perceived mental and physical health, birth rates and morbidity and is therewith on one's well-being (Dipeolu et al., 2021; Maas & Postma, 2020). Additionally, various studies provide evidence that this relationship is stronger for people with lower socio-economic

status. It is therefore considered to have even more value in areas with higher concentrations of residents with lower socio-economic status. Moreover, it is also important to take into consideration that different types of green infrastructure have different purposes. 'For a positive experience of green, it is important to facilitate green at eye level, including shrubs. If the focus would be to limit the effects on health by reducing noise pollution, green facades are a suitable option' (Consultant Economology Rebel, personal communication, May 03, 2023).[16]

The second solution pathway is focused on activities in the city center which showed to have insufficient access. This was primarily expressed by women with a non-western migration background, for which traveling seemed to be an important part of the fun; 'for many clients (mostly women) getting out of the neighbourhood and experiencing something new is part of the fun in the activity' (Workers community center Venen, Oorden & Raden, personal communication, March 16, 2023).[17]. Barriers for this group appeared in two main forms: public transport costs and a lack of confidence/skills to use certain modes of transport. Therefore, two solutions are proposed aimed to reduce these barriers. The research showed that the main barrier to use public transport to access this activity (for this group of women, but also mentioned in general) was related to the high public transport fees. Therefore, solutions which aim to enhance accessibility to the city center should primarily focus on the affordability of public transport, through the implementation of pricing policies which takes into account the distribution effects for different people. A suggestion could be to offer a free ticket to low-income households once or twice every month. In order to limit overloading the network system, it might be suitable to offer these services at off-peak hours. This would also fit the travel purpose, as social activities are not bound to specific travel times.
A non mobility related solution refers to the more often expressed lack of confidence by these women to use public transport and the bicycle. Cycling lessons are an often mentioned example, aimed to enhance residents' familiarity with the use of a bicycle, and enlarge their confidence. Other initiatives include to focus on the confidence using public transport. Good examples are initiatives such as MEE Samen (n.d.), which offers a public transport 'buddy' or the initiative by Stichting Digisterker (n.d.) which helps with travel planning. Offering the HTML application in another language than Dutch could also be of great importance to take away challenges regarding language barriers during traveling.

Finally, other activities which were expressed to have insufficient access were the social activities difficult to access by public transport. The group of elderly therewith expressed two main barriers which might be better addressed through the focus on the help offering side. These barriers included difficulties with transferring and expressed feelings of fear to use public transport. It is therefore suggested to train public transport operators to deal with vulnerable passengers, such as elderly. These training (for example for bus drivers), could touch upon aspects such as: broadcasting transfer information in the bus (in a similar manner as is used in trains) and driving behaviour (wait until passengers have had the time to sit down before driving).

Introduce new services
If currently existing systems are of insufficient quality to guarantee access, it is suitable to focus on the option to introduce new services. This would thus be primarily interesting for places which are difficult to reach by public transport. This would however be subject to the condition that the service costs are lower than current public transport options, as this was considered too expensive by most participants. First, practices which promote the sharing of resources are seen as a relevant approach to address mobility issues, especially in places where the 'provision of traditional infrastructure and transport service is more difficult'(Vecchio, 2018, p. 1). Shared services often include business models based on access rather than ownership of vehicles. Furthermore, 'the emerging 'sharing economy' is particularly interesting in the context of cities that struggle with population growth and increasing density' (Cohen & Kietzmann, 2014, p. 279), as goes for the future situation in The Hague. However, in order for such a service to work in practice, it seems crucial to involve the group for whom the new services is intended for. Elaborately, customs and habits showed to have an important role in the observed mobility practices (e.g. the importance of the social network and therewith the role of ride sharing; bringing

[16] Consultant Economology. (2023). *Professional expert green infrastructure* [Interview]. Rebel, Rotterdam.
[17] Workers community center Venen, Oorden & Raden. (2023). *Experience expert accessibility and well-being adults* [Interview]. Community center Venen, Oorden & Raden, The Hague

relatives/colleagues/friends to appointments). Therefore, an understanding in the customs and habits for the group under study is needed to understand why a service might or might not work for a particular group. For example, the interviews gave the impression that some residents did not consider the bicycle as a feasible option for longer distances. Introducing some form of sharing system (may it be e-bikes) therefore might not fit their customs and habits and is expected not to add any accessibility value for some groups. However, for a car sharing system, users must be able to drive, which generally would be less suiting to amongst others the group of elderly. Moreover, in previous participation gatherings, residents of The Hague Southwest expressed they perceived commercial car sharing systems as 'too much of a hassle' (Rebel Living & Mobility B.V., 2021)[1]. This would suggest an informal (car) sharing system would be more suiting.
An option to involve residents in the design as well as operation of a new service is through the use of co-production. This type of system aims to create a collaboration between professionals and users/communities. Where co-design can be used to provide input for the design of a service, the difference is that full co-production is aimed to also involve the community in the delivery of services. In relation to mobility, co-production initiatives may include a private car sharing, made possible by different vehicle owners (Boyle & Harris, 2009; Kudo, 2016). For example, a system designed in collaboration with professionals and the community, facilitated by multiple car owners. Figure 19 shows its workings from a responsibility and design perspective.

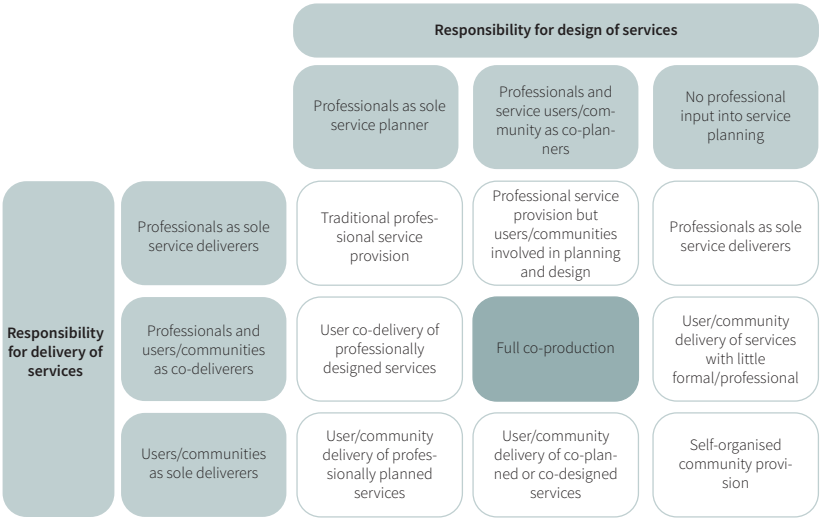

Figure 19: Co-production user and professional roles in design and delivery of services by (Boyle & Harris, 2009)

Second, as respondent's mobility practises showed to overlap quite regularly in terms activities, it was considered interesting to also look at the demand side of mobility. Elaborately, initiative which match residents according to their destination, to facilitate informal ride sharing. This is considered interesting as, although various participants showed to have similar social trip destinations, they mostly participated in it alone. Combining trips has the benefit of saving money. Moreover, non-organised/informal ride sharing systems were already observed often and are therefore considered suitable to the customs of various respondents.

Provide alternatives for the need to travel
For some (social) activities it might also be feasible to partly take away the need to travel. An example which is already seen in practise in Bouwlust & Vrederust is 'de Boodschappen begeleidingsdienst', where people can subscribe to voluntarily get groceries for elderly (Social worker seniors, 2023)[5]. Another example would provide an initiative for stay-at-home parents to take away the expressed barrier of a lack of time related to child care. Parents could be matched, where one is responsible to pick up the children from school, while the other parent gets the groceries for the two families.

Second, digital options such as video calling with family might provide as an addition to the need to

travel to see loved ones. Although it cannot replace the need to see family face to face, it might provide an addition to the need to travel, and accompanied travel costs.

Collaborate with other relevant sectors
This research showed that accessibility issues to access social activities were not only shaped by barriers in the mobility sector, but also in other sectors. Therefore, addressing accessibility issues also requires to look at solutions in other sectors. For example, in order to familiarise adolescents with new activities requires to guide them out of their comfort zone. This would suggest to set up a programme which aims to empower adolescents. These programmes can use the help of so called 'gate keepers', who have build up trust and have gotten to know residents well such as; social workers, workers at community centers, schools and other key figures. An interesting initiative such as the Roots & Shoots programme by Jane Goodall provides a four step model as well as lesson plans aimed at engaging adolescents; it helps them to map out local needs and create a plan which benefits their community (Jane Goodall Institute, n.d.). Moreover, it is considered relevant to focus on the help offering side in other sectors than the mobility sector. For example, by training social workers how to deal with more often identified mental barriers which impede one's ability to move.

7.4.2 Solutions focusing on job accessibility

Create proximity
Creating jobs in proximity might be a less feasible option as it involves different challenges. First, not all employers are considered suitable to work with part of the residents in this neighbourhood; 'employers need to be willing to invest in their employers; to guide them and intervene when needed' (Strategic account manager Municipality The Hague, 2023)[14]. Furthermore, many suitable jobs in manual labour are located in set places, such as the Westland and Rotterdam ports. Bringing these places closer is therefore not an option. Another option might be to facilitate residential areas for employees closer to places where jobs are located. However, this must be in line with the employees' preferences, as well as the availability of sufficient quality residential facilities.

Enhance usability of existing connections
As was mentioned in the section above, providing enhanced access to jobs might be less suitable through creating proximity. Therefore, it is interesting to focus on the enhanced usability of existing connections, in order to guarantee access to jobs.
The enhanced usability of existing connections is focused on three optional solutions.

First, relevant jobs in manual labour or service jobs are known to often start early, at which public transport is not running yet. Therefore, an aspect of enhancing the usability of public transport would involve to run the public transport lines at earlier hours. However, offering, currently existing public transport at earlier hours might however not be a feasible option for jobs in places as the Westland, due to the unavailability of east/west direction connections. The service jobs in the city center might however benefit more from earlier transport times. Subject to the condition that these policy measures were to be combined with some form of pricing policy specifically for low-income earners, as offering early services still does not solve the often mentioned barrier of the high tram fares. An option would be to form a public/private collaboration for the financial feasibility. This would mean to involve the group of employers who would benefit from these earlier services.

Another solution pathway involves to provide commercial shared mobility services at irregular hours, by making arrangements with a provider such as Felyx. These options would be financed by the employer: 'What is often thought a possible solution, but not yet a proven concept, is the introduction of shared mobility, through commercial or privately available vehicles. The option of offering services by Felyx has been considered, financed by the employer. However, not all employees have a drivers license. There is no one size fits all solution' (Strategic account manager Municipality The Hague, 2023)[14].

Moreover, similarly as for social activities, to enhance access to relevant jobs it might also be relevant to build up residents' confidence using a bicycle or public transport. The feasibility of the solution 'enhanced confidence to cycle' depends on the distance to the job taken into consideration. This solution pathway would therefore be more suitable for jobs in the city center than the Westland.

Introduce new services
If the currently existing system are of insufficient quality to guarantee access, it is interesting to focus on the option to introduce new services. This would thus be a feasible option for jobs currently hardly accessible by public transport, such as jobs located in the Westland.

One way to provide such as service is to make the employer responsible for the offering of suitable transport services. An example for a company which provides a bus service is Royal Flora Holland, which stops at locations where employers live. This however suggests that employers must have the financial resources to offer such a transport system, and that the ones who are not able to offer transport services might not be reachable by employees 'We mostly make arrangements with employees who either offer their own transport services or are reachable through some other form of transport' (Strategic account manager Municipality The Hague, 2023)[14].

The second solution aims to also help the employers financially struggling to offer worthy transport options. For these companies it might be interesting to involve a private party which offers the van service, and which sets up a collaboration with various companies who are currently struggling to find employees. Again, to set up such a new service it is considered crucial to involve the group for whom the service is intended for, in order to make the service suiting to their customs and habits, which is considered needed to make the service successful. An example of an interesting pilot in a similar area is shown in a peri-urban area in Florence byInclusion (n.d.), where they (o.a. employer representatives, employees and operative parties) collaboratively designed a new bus service for migrant workers in a peri-urban area in Florence.

Finally, from the demand side, it would be interesting to facilitate informal ride sharing systems. This however is considered to entail some challenges; 'When considering private ride sharing systems; not everyone works at the same company, and shifts might start at different times. Additionally, they also have to live near each other for it to be a success. Again, there is no one size fits all solution' (Strategic account manager Municipality The Hague, 2023)[14].

Provide alternatives for the need to travel
As relevant jobs often require manual labour, which thus requires to be physically present, this option is considered not suitable for job accessibility.

Collaborate with other relevant sectors
Again, similarly as for social activities, it showed that accessibility issues not only seemed to appear in the mobility sector. It is therefore also of importance to focus on the help offering side. For some residents, enhancing job accessibility would also include to get them mentally as well as physically ready after they have been unemployed for a period of time (Strategic account manager Municipality The Hague, 2023)[14].

7.5 Conclusion

This chapter showed possible solution pathways to enhance accessibility for relevant jobs and social activities for Bouwlust & Vrederust's residents. The suitability of a solution might be considerably different for different travel purposes, as they for example create different travel time constraints. Therefore, solution pathways were proposed for the travel purposes separately. The solutions are proposed in the five main lines of reasoning: create proximity, enhance usability of existing connections, introduce new services, provide alternatives for the need to travel and collaborate with other relevant sectors. The various solutions were aimed to reduce the accessibility barriers as were observed in the interviews, for different sub-groups. Furthermore, customs and habits showed to be an important criterion to take into account during the design of a new service, as it will presumably determine whether the new service will be supported by the community and thus whether it will be effective in reaching its goal (enhancing accessibility) or not. It is therefore considered crucial to involve the group designed for (or a representative/association), to enhance understanding in the particular group's customs and habits. The benefits and limitations of the proposed solution pathways will be discussed in the next chapter.

8

Advantages & disadvantages solutions

In the previous chapter, various potential solution pathways have been identified which aim to enhance accessibility to relevant jobs and social related activities for the neighbourhood under study, Bouwlust & Vrederust. In this chapter the advantages and disadvantaged will be discussed, primarily based upon the criteria to achieve 'healthy' policy, as well as one additional proposed criterion. The aim was to take into account that these options could be implemented either by the municipality of The Hague or private actors. This chapter focuses on research question five: 'What are the advantages and disadvantages of the identified solution pathways'?

8.1 Criterion for 'healthy' policy

In order to achieve 'healthy' policy, Van Wee (2009, p. 11) distinguishes six criteria for policy intervention. One additional criterion was added, which from the interviews appeared as an important criterion to make a solution a success, in the context of the neighbourhood under study. Therefore, the criterion 'customs and habits' was added to the list. These seven criteria are described beneath.

- **Effectiveness** - 'does the policy do what it is supposed to do?'. Thus, does it increase access to social or job related activities for Bouwlust & Vrederust's residents?
- **Efficiency** - 'can often be expressed in terms of cost-effectiveness ... It is less simple to use cost-effectiveness as an efficiency indicator if a policy option has 1. multiple effects or 2. monetary, as well as non-monetary costs.'
- **Equity** - 'are there winners and losers because of the policy instrument and who are the winners and losers?'
- **Ease of implementation** - 'it is an advantage if a policy option is easy to implement... A policy option should be considered as an important candidate option if it could have major effects and is cost-effective... It is worth trying to understand the major barriers for implementation, and to learn from successful implementations elsewhere.'
- **Flexibility** - 'relates to the ease to adapt the policy, because of the ease or difficulty to foresee changes.'
- **Long-term robustness** - 'whether a policy is 'no regret' under uncertain long term developments that could have a major impact on society. This criterion is strongly related to flexibility... Long-term robustness relates to major changes.'
- **Customs and habits** - Does the policy or a solution fit to the (mobility) practises of the group it is intended for?

8.2 Rating the solution pathways

The section beneath provides a first overview of the feasibility of the proposed measures, ranked according to the criteria described above, within a range of -, +- or +. These ratings are primarily based upon the researcher's insights gathered during the interviews. The ratings for the policy measures are provided in table 12 beneath, and are grouped according to the five categories for solution pathways as provided in chapter 7.

Table 12: Solutions and policy measures to reduce unjust/insufficient access to social and job activities for Bouwlust & Vrederust, rated by the criteria of 'healthy' policy by Van Wee (2009)

		Effect.	Effic.	Equity	Ease impl.	Flex.	Rob.	Cust.& hab.
Create proximity	Co-design sports facilities	+	?	+	-	-	+-	+
	Norms sports facilities	+-	?	+-	+	-	+-	+
	Attract suitable employers	+	?	+	-	-	+	+
	Build residential areas closer to jobs	+	?	-	-	-	+	+
Enhance usability of existing connections	Improve the walking environment	+	?	+	+-	-	+-	+
	Public transport pricing policies	+	?	+	+	+	-	+
	Public transport at earlier hours	+-	?	+	-	-	-	+
	Provide access shared scooters in vulnerable neighbourhoods	+	?	-	+-	+	-	-
	Initiatives enhancing confidence using bicycle/public transport	+-	?	+	+	+	+	+
Introduce new services	Facilitate informal car sharing services	?	?	+	-	+	+	+-
	Facilitate informal ride sharing systems	?	?	+-	+-	+	-	+-
	Introduce new bus or van services	+	?	+	+-	+	+-	+
Provide alternatives for the need to travel	Introduce behavioural approaches to offer services at home	+-	?	+-	+	+	+	+-
	Strengthen residents' digital skills	+-	?	+-	+	+	+	+-
Collaborate with other relevant sectors	Train 'the help offering side'	+-	?	+	+	+	+	/
	Set up empowerment programmes at schools for adolescents	+-	?	+	+	+	+	-
	Set up support programmes for employees	+-	?	+	+	+	+	+

The efficiency criterion might be rather self explanatory; this research searched for solution pathways according to their policy goal, which was to address insufficient/unjust accessibility. Therefore, the solutions taken into account are all considered efficient for this goal; one might be slightly more effective than the other. Second, the efficiency in reducing unjust accessibility is a criterion which is very hard to measure as there are many different effects to consider, as well as different groups to take into account. Additionally, as the proposed solutions are all designs which are suited to the needs of minorities, they will never be as efficient as a measure which fits the needs of a larger group. This is however not the goal for the proposed solutions, which is why it has been chosen to not focus on this criterion (thus a question mark is added for all). Third, it might seem odd that the criterion of equity is also taken into consideration, as all measures are primarily focused to provide equitable accessibility. However, one measure might contribute more to equitable accessibility than the other, which is why this criterion has also been taken into account. The ease of implementation primarily considers if the measure is easy to implement by the actors taken into account (the municipality of The Hague and private parties). Flexibility and long-term robustness were taken into account in this study but not as a primary focus, as they are considered less important in light of the aim of this research. Finally, the criterion added by the research 'customs and habits' seems important in the particular context of this study, primarily to assess

whether an option might be accepted or supported in the context of the vulnerable neighbourhood under study. The support of is a solution will also have an affect on the effectiveness of a measure; if a measure is not adopted by the group it is intended for, it will also not be effective in 'doing what it is supposed to do'. The sections beneath will elaborate shortly upon the rankings of the different policy measures and solutions.

8.2.1 Create proximity

Co-design sports facilities children/adolescents

Creating proximity for facilities is assumed to be effective in enhancing accessibility to facilities, as well as important in light of the value from an equity perspective. Elaborately, it takes away the prominent barrier of continuous transport expenses, as facilities in proximity can often be accessed on foot. It is therefore considered to enhance accessibility effectively, and as well as for a large group of children.
Related to the method adopted, a co-design approach is considered effective, mainly due to the fact that it involves the subject designed for; the children. It is therefore able to assess the level of added accessibility in practice, taking into account any barriers limiting access that might not have been noted in accessibility studies. For example, physical barriers formed by large parking places are hard to identify in accessibility studies but could shape challenges to access sports facilities (Cammelbeeck et al., 2014). This also touches upon the equity criterion; adopting a participatory approach is a good way to take into account the needs of a wide group; 'The more diverse the design team, the more diverse the design (...) I would suggest to adopt a participatory approach, because how well would you and I know what the needs are, for example of someone who was born and raised in the mountains in Turkey?'(Phd candidate TU Eindhoven, 2023)[15]. What however appears as a main challenge for participatory approaches is that it can be very time consuming and therewith costly. Gathering participants can be challenging, especially when sampling in vulnerable groups (Ellard-Gray et al., 2015). Experience during this research showed that it was essential to work together with gatekeepers (trusted figures), such as volunteers at community centers. This might however create challenges relevant to the statistical representation of the sample. Also, when adopting a participatory approach, careful consideration has to be taken in regards to raised expectations: 'including some form of participatory project you have to be very careful, especially as it forms expectations. It can potentially be harmful if the raised expectations are not lived up to' (Consultant Economology Rebel, 2023)[16]. The measure is not considered flexible, as land-use intervention is a rather permanent intervention. Furthermore, depending on the design, it can be very long-term robust, as it sustains increased access in a permanent way and can also take other factors into account in the design, such as social cohesion and climate adaptation (e.g. introducing ways to collect water on playgrounds). The long-term robustness is expected to be higher when including a representation of the neighbourhood in the design, as it is expected to satisfy the accessibility needs for residents over a longer period of time (assuming a consistent composition of the neighbourhood) than without participation. This measure is considered suiting to the customs and habits of residents, as it allows to access facilities on foot, which was an often observed, as well as enjoyed, form of mobility.

Norms sports facilities for children/adolescents

Through the same line of reasoning, creating proximity is considered both effective and an important intervention in terms of equity. In relation to the approach to create proximity, norms for sport facilities is considered efficient in the sense that the number of facilities, once the norm is there, cannot be debated anymore. Naturally, the effectiveness of this measure highly depends on the norm created (which distances are considered). It is expected less effective than a participatory approach, mainly as it cannot take into account all the individual barriers limiting access. It is therefore also ranked negative on the equity criterion, as it seems almost impossible to involve the wide range of facilities and needs into one norm. On the other hand, implementing a norm might be less complex participatory approach, as it is more objective and mostly considers distances/ranges as parameters. Furthermore, as was explained in the previous section, the policy is not considered flexible, as land-use intervention is a rather permanent intervention. Moreover, depending on the design, it can be very long-term robust, as it sustains increased access in a permanent way and can also take other factors into account in the design such as social cohesion and climate adaptation (e.g. introducing ways to collect water on playgrounds). The long-term robustness is expected to be lower than when using a participatory approach, as the design adopted might not fit the needs of the residents and therefore might require to change

the design more short term. The measure is considered to suit customs and habits of the residents, using the same line of reasoning as the previous measure.

Attract suitable employers to the neighbourhood
Accessibility, and more specifically proximity is argued to form an important component in offering a sustainable workplace for residents(Strategic account manager Municipality The Hague, 2023)[14]. Therefore, intervening on land-use to create more proximity is assumed to form an effective, as well as equitable measure in enhancing accessibility for relevant jobs. Implementation however shows to be rather complex: 'not all employers are suitable to work with employees on welfare. Employers need to be willing to invest in their employers; to guide them and intervene when needed' (Strategic account manager Municipality The Hague, 2023)[14]. This measure is not considered flexible as it aims to attract employers to settle in the neighbourhood, which requires moving and thus is not considered to be adaptable to change. It is considered robust as it sustains increased access in a permanent way and creates job opportunities in the long run for residents. The measure is considered to suit customs and habits of the residents, using the same line of reasoning as the previous measure.

Build residential areas closer to suitable jobs
Using the same line of reasoning as the previous measure, intervening on land-use is expected to form an effective and equitable measure to enhance accessibility to relevant jobs. However, it must be added that in implementing this measure, employees are required to move closer to their work location, which is debatable in terms of ethics. Due to the spaciousness in areas such as the Westland, it might be feasible to build extra residential locations. However, the long waiting lists for building of new housing, due to the current shortages in housing, are expected to reduce the feasibility (De Minister van Binnenlandse Zaken en Koninkrijksrelaties et al., 2022). Furthermore, it brings up the question which municipality should bear the costs, as the residential areas would be build in another municipality, but it would provide opportunities for residents currently living in The Hague. As was argued for the previous measure, it is not considered a flexible solutions, as it intervenes on land-use and is therefore rather permanent. It is considered robust as it sustains increased access in a permanent way and creates job opportunities in the long run for residents. The measure is considered to suit customs and habits of the residents, using the same line of reasoning as the previous measure.

8.2.2 Enhance usability of available connections

Improve the walking environment
This policy measure is expected to affect the ease of walking and therewith quality of traveling. It is considered an important measure on an equity level as walking is a free transport option, and therefore, can be enjoyed by all. This is also what was observed during the interviews; many participants enjoyed walking. Sustaining that residents can enjoy this option to the fullest might therefore form an important aspect in this neighbourhood. Furthermore, currently especially the elderly and physically vulnerable are limited, as they have to pay close attention not to fall. Therefore, this solution pathway might substantially improve the daily mobility experiences for both the group elderly as well as the physically vulnerable. Implementing this solution would require to assess which sidewalks require improvement, as well as what aspects to consider in the design, for which it is suggested to simultaneously take other factors into account which make walking more appealing (introducing green at eye sight, marking walking routes for recognition, possibly placing some benches at strategic positions to enhance social cohesion) (Cammelbeeck et al., 2014). Again, it would be beneficial to gather input from the community in a participatory manner to be able to assess what the community needs. Therefore, the ease of implementation is expected to depend on the scope of the project which is considered. Again, this solution is not considered flexible as it involves land-use intervention. As explained in the previous sections, the design might be more robust when taking into account the residents' needs, assuming a similar composition of types of residents in the upcoming years. Furthermore, introducing green spaces and material which absorbs water is considered more long term robust, relevant to climate change, than when only using hard surfaces. The measure is considered to suit customs and habits of the residents, using the same line of reasoning as the previous measure.

Public transport pricing policies
Pricing policies are expected to be highly efficient in enhancing accessibility to social activities as well

as jobs in the city center, mainly due to the fact that this was the main barrier mentioned in the interviews. Its effectiveness is however expected to depend on the ability to communicate the availability of this service to residents; they have to be aware that this option exists. However, as was explained in the previous chapter, high tram fares might not be the only barrier encountered. For some, language barriers or a lack of confidence are also barriers to not perceive public transport as an option. Moreover, for this measure to be efficient to access jobs, it has to be implemented simultaneous with measures facilitating public transport at earlier service times. For jobs in the Westland pricing policies are not assumed to be a relevant option, as there are currently no feasible public transport connections to these areas.
Again, adopting a participatory approach to implement pricing policies is suggested, primarily to find a benchmark for the prices which should be considered. Another option is to start a pilot which provides a free ticket to low income households or low-income earners to track the actual effectiveness of this measure. From an equity perspective this measure is considered very suitable as it is accessible for many, also for the ones who do not own a drivers licence. The ease of implementation is dependent upon the method chosen to adopt (using a pilot or implementing benchmarks). Challenges during implementation are therewith expected to be shaped primarily by ambiguity related to the type of income which should be taken into account. Moreover, arguments against the introduction of pricing policies or free tickets for residents on a welfare benefit say that the well fare budget already includes financial support for transport expenses. financing transport for all might also not be a fair solution (Strategic account manager Municipality The Hague, 2023)[14]. This policy is considered flexible as changes can be made rather easy. It is not very robust, as policies can change every year. as it is easy to use for residents and the use does not come with a lot of new challenges and/ or barriers. Related to the customs and habits this option is considered suitable, as the mobility practices often involved the use of the tram (if the income allowed it). Moreover, the focus on policies on a micro-level fit into the mobility practises of residents more than to focus on large scale public transport projects which residents of this neighbourhood might not be able to reap the benefits from.

Facilitate public transport at earlier hours
Enhancing access to relevant jobs through regulated public transport schedules would take away an important barrier in accessibility; relevant jobs in manual labour as well as service jobs start at times at which the public transport does not run yet. It is therefore considered to be an effective measure enhancing accessibility to relevant jobs, which also touches upon the fact that this measure is considered highly relevant from an equity perspective. It is also considered an equitable option as public transport can be used by a large group of people, e.g. also the ones who cannot drive. However, primarily to locations in the Westland it still does not provide a feasible option as there are no feasible connections currently. Moreover, it also does not take away the barrier of expenses, which asks for a simultaneous implementation of reimbursement offered by employers. The operational costs accompanied with this measure form complexities, mainly taking into account that running public transport services at early hours probably involve half empty vehicles. It might be feasible to collaborate with groups of employers struggling to attract workers, the municipality and public transport operators to organise a feasible financial plan. Furthermore, the current staff shortage as well as scarce budgets after the Covid pandemic form extra barriers for implementation (De Volkskrant, 2021; Metropoolregio Rotterdam Den Haag, n.d.). The financial feasibility also affects both the flexibility as well as the robustness of this option, as naturally its long term success is dependent upon the question if it is also financially feasible from the operational side. Using the same line of reasoning as the previous measure, this option is considered suitable to residents' customs and habits.

Access to shared scooters in vulnerable neighbourhoods (earlier hours/reduced fares)
A collaboration with a shared mobility operators such as Felyx has been mentioned as a potential to enhance accessibility to relevant jobs (Strategic account manager Municipality The Hague, 2023)[14]. As electrical scooters have a wider range than e.g. bicycles, it is considered an effective solution to enhance accessibility, both to the jobs in the city center as well as the ones in the Westland. This solution however creates two challenges. First, relevant to the equity criterion, it does not fit all needs, as not everyone has a drivers license. It must therewith be taken into consideration that language barriers can create difficulties. Furthermore, financial feasibility makes the implementation more complex; making the employee responsible to bear the cost might not solve the problem if they are not able to afford it,

which can also be said for the employer. It is a flexible solution, as it would probably involve 'pay by use' and therefore adapt to the numbers of users. It might not be a long-term robust solution as, if the usage of this service is too low for a commercial party such as Felyx to offer their services in an area, they might withdraw their services. Moreover, as an earlier analysis identified residents for shared services in The Hague Southwest, it is not considered an optimal solution fitting to residents' customs and habits.

Initiatives enhancing residents' confidence using bicycles and public transport
Strengthening resident's skills and therewith their confidence is considered an important aspect in order to effectively solve unjust accessibility, as it is a crucial aspect in the usage of a mode of transportation. It is however always assumed to require a combination with other policies. Elaborately, residents can be offered cheaper public transport tickets but without the confidence to use it they will presumably not use it to the fullest. From an equity perspective it is considered very beneficial, as it questions the assumption that everyone is able to convert a resource such as an available tram line into actual movement. The challenge in implementation is however expected to arise in the ability to reach residents with such a measure. In the community centers initiatives to teach women how to ride a bicycle already exist. The lessons however sometimes showed to have a lack of participants. This might suggest they either do not know it exists, or it might not fit their interest/needs/habits. Moreover, it is a flexible and not a robust solution, as it can easily be adjusted.

8.2.3 Introduce new services

Facilitate informal (car) sharing systems
The effectiveness of informal (car) sharing systems highly dependents upon the context it is intended for; do the users see added value in the new service? (Vecchio, 2018). This would suggest the requirement to involve the group the service is intended for. From an equity perspective, it is considered suitable to share resources as this would provide a chance for more residents to have access to these resources. Implementation can however form some challenges as this solution requires different stakeholders to work together. Moreover, practical issues regarding car ownership, insurance, payment of gas etc. also pose additional challenges. It is a flexible solution as it involves the individuals in the design as well as the delivery of services and can therefore move with the needs of the individual. Relevant to robustness, successful community engagement might shape a robust solution as it may create a sense of responsibility. The solution is considered to suit the customs and habits of residents as it was already observed more often in a non organised manner. It is however considered to dependent upon the form the solution is implemented in, e.g. an application might be less suiting than a more informal system.

Facilitate informal ride sharing systems
As well as the previous car sharing initiatives, the effectiveness of the ride sharing system would also require to be assessed in the context it is intended for. Again, this would require to involve the group it is intended for. From an equity perspective it is primarily considered interesting as it is able to reduce transport costs, due to the sharing of e.g. gas costs. Moreover, it might enhance accessibility for residents who do not own a car. However, criticism towards behavioural measures argue that it 'may simply conceptualize citizens as passive users or consumers, rather than focusing on their self-realization as human beings: these approaches lean toward 'forced choices' (Berndt & Boeckler, 2016, p. 23) (Vecchio, 2018, p. 5). It is a flexible solution as it can adapt to the traveler's preferences. As was shown in the previous section, forms of engagement are expected to be robust, as they are tailor made to the needs of the community as well as create residents' engagement. Moreover, in the neighbourhood, informal ride sharing amongst social networks was already observed and is therefore assumed to be suiting to the customs and habits of the residents. This however depends upon the form it is implemented in; complicated apps or systems are expected to not suit their needs.

Introduce bus or van services
Introducing a bus or a van service is considered to be effective in countering issues of accessibility to relevant jobs, primarily to the jobs located in the Westland, for which currently no feasible connections exist. An employee such as Royal Flora Holland already successfully offers a bus line which runs specifically towards their location and back to relevant residential locations (Strategic account manager Municipality The Hague, 2023)[14]. Again, such a service is assumed to be most effective if designed

in co-operation with the employers as well as employees. Identical as with public transport services, these solutions are assumed an equitable solution as it can be used by many (also non car owners as well as people who cannot drive). The main challenge is assumed to relate to the financial feasibility of implementation, as well as the many stakeholders required to cooperate. In order to make the service accessible for low-income earners, presumably reimbursement should be offered to access these services. It might be relevant to look into a partnership where the service is offered by a private company, financed by a group of employees who are currently struggling to attract employers. As this service would be demand driven, it is assumed to be rather flexible in the amount of vans/buses which run a milk run around the jobs; stopping at fixed spots where more employees live. Its robustness is however dependent upon the economic stability of the companies involved, as these are the ones who will have to bare the costs collaboratively. It also depends on the question if an operational party can be found willing to collaborate. It is considered to fit the customs and habits of residents, as it is not considered to pose any additional 'burdens' on residents.

8.2.4 Provide alternatives for the need to travel

Introduce behavioural approaches to offer services at home

This type of behavioural approach is considered effective only for a very specific type of activity; the services which can be offered at home. Therefore, it is not considered effective for all needs. Related to equity, it would be an option which also takes into account the group of vulnerable who are less able to leave the house. It would also be able to take away the accessibility barrier related to time which was mentioned more often by women. However, critique related to equity argues it gives the individual a passive role; it takes away the choice to travel or not. The ease of implementation depends on the form taken into consideration for implementation (creating an app might require more effort). It is a flexible solution as it can adapt to the residents' preferences. Moreover, as was shown in the previous section, forms of engagement are expected to be robust, as they are tailor made to the needs of the community as well as create residents' engagement. Its suitability to the customs and needs depend upon the form adopted to implement this approach; an app might be less suitable.

Strengthen residents' digital skills

For particular social activities, strengthening residents' digital skills would provide an option to partially take away the need to travel, and therewith reduce unjust accessibility. From an equity perspective it can be debated if reducing the need to travel is a fair option, as it does not offer the choice to access activities physically, which might be the preferred option over accessing activities online. Implementation is assumed to be rather easy as it would entail to offer workshops at places such as community centers. It is considered a flexible option as the workshops can be scaled quite easily according to demand. Moreover, the training of individuals' skill is considered robust as it is something which can be used by residents throughout their lives. It might not be something which fits all the residents' habits, but that is also why it might be needed for some.

Train 'the help offering side'

Training the help offering side is considered effective in addressing unjust accessibility, in combination with other measures. Some barriers appear to require the help of others in order to be lifted (e.g. elderly who are afraid to use public transport because the driver already starts driving before they can sit, or residents who show to struggle overseeing the travel or work planning as a consequence of debt related issues). Therefore, this solution is effective, complementary to other measures which e.g. offer the right (mobility) resources. From an equity perspective this measure is therefore also considered important as it focuses on the vulnerable who are not able to reduce their accessibility barriers alone. Its implementation is expected to face some challenges especially determining the exact content of the workshops offered to the help offering side. It requires to work together with various stakeholders: public transport operators, social workers, workers at community centers. This measure is considered flexible as it can be adapted rather easily to the stakeholders required to involve, e.g. the same kind of workshop set up could be developed, which is used and adopted slightly according to the help offering stakeholder who needs to be involved under specific circumstances. It is also considered a robust solution as it aims to sustain a different way of handling accessibility issues in the long run. As this solution does not involve the residents themselves, the criterion of customs and habits is not considered.

Set up empowerment programmes for adolescents
This measure is again considered effective as it was observed that issues of accessibility cannot always be solved by solely offering the right type of mobility resources. Therefore, this solution is assumed effective in combination with other resources. Again, it is important from an equity point of view as it takes into account the fact that not all residents are able to convert provided resources into capabilities. The implementation requires to work together with the education sector to set up a suitable programme. It is considered flexible as it can be adopted easily to suit the needs of the group. Moreover, it is a robust solution as it aims to empower adolescents, which sustains perception (hopefully broadens their options considered) on the long run. Finally, it might not be suiting to their current customs and habits, which might create challenges in its effectiveness.

Set up support programmes for employees
This measure follows the same line of reasoning for all criterion discussed in for the previous measure. The only difference is that it might be more challenging to reach this group of people than it is to reach adolescents at a school. Therefore, the effectiveness for this measure is more dependent upon the question if job seekers can be reached effectively with these workshops.

8.3 Conclusion

This chapter proposes various promising solution pathways and policy measures to enhance accessibility to social and job related activities for Bouwlust & Vrederust's residents. A general overview of their benefits and limitations is provided, based upon the six criteria for 'healthy' policy as categorised by Van Wee (2009), and one additional criterion, related to residents' 'customs and habits'.
Primarily in light of the equity criterion, promising solution pathways in the neighbourhood under study are focused to create proximity, as they take away the need for continuous travel expenses. Other solutions expected to be of most value in light of equity are the policy interventions which intervene on a micro-level. These are expected to fit into the mobility practises of residents more than to focus on large scale public transport projects, which a large group of residents presumably would not be able to reap the benefits from, if fares would not be reduced simultaneous. Relevant to social activities this would point at the improved walking environment and focus on public transport pricing policies. Related to the accessibility of service jobs in the city center, public transport pricing policies are also assumed relevant, however, they should be combined with a measure which offers services at earlier hours in order to be effective. Jobs in the Westland (for which there currently are no feasible connections), the introduction of a new service would provide a more feasible option. Besides the criterion of equity, another criterion which appeared to be of great importance to assess solution pathways in context of the area under study (and most likely also in other vulnerable neighbourhoods which consist of a wide variety in cultural backgrounds) are residents' 'customs and habits'. This is considered an important criterion to take into account during the design of a new service, as it will presumably determine whether the new service will be supported by the community and thus whether it will be effective in reaching its goal (enhancing accessibility) or not. When setting up a pilot programme for a new design of a service it is therefore highly recommended to include the group designed for (or representative groups). From an equity perspective a demand driven bus/van service is promising as it also takes into account the people who do not own a driver's license or a car. Moreover, to reduce accessibility barriers for some activities/sub-groups it is also interesting to focus on the 'help offering side'. One feasible solution includes to offer training to public transport operators, touching upon topics such as: the added value to broadcast transfer information in the bus and the importance to wait until all passengers have taken their seat before driving. Finally, providing access for all requires to involve other relevant sectors, complementary to the solutions in the mobility/infrastructure sector. The development of programmes which support residents to lift mental barriers that impede movement, and thus access to valued activities, are considered particularly important in the context of this neighbourhood and presumably other vulnerable neighbourhoods. This is due to the fact that often the mental barriers impeding movement were related to socio-economic problems (such as debts and little exposure to activities out of their comfort zone). Examples include to set up empowerment programmes for adolescents and support programmes for future employees.

9

Reducing mobility injustice

The previous three chapters focused on the case study area Bouwlust & Vrederust specifically. It provided insight into residents' capabilities and mobility experiences, and proposed solution pathways to enhance accessibility, suiting to the activities as identified with insufficient access in this area. On a conceptual level, the chapters 6 and 7 provided input for a more general approach to address insufficient or unjust accessibility in vulnerable neighbourhoods. This chapter will first elaborate upon these elements. They are combined into a flow-diagram in the last section, made to support municipalities during the process to identify and then address issues of mobility injustice, relevant to accessibility. This chapter strives to answer research question six: 'When recognising individuals' everyday mobility experiences, capabilities and evaluated solution pathways, how can municipalities and private parties reduce mobility injustice, relevant to accessibility, in vulnerable neighbourhoods'?

9.1 Identification of accessibility issues

9.1.1 Combined bottom-up and top-down approach

This research primarily adopted a bottom-up approach to identify accessibility issues and valued activities. The use of the bottom-up approach provided insights into its strengths as well as drawbacks during various phases. It therewith showed that the bottom-up approach and the top-down approach have different strength in different stages, and therefore would be best used complementing each other. The bottom-up approach showed to have two main strengths. First, it provides enhanced insight into the contextual and personal circumstances (conversion factors) possibly shaping accessibility barriers encountered by individuals. This is primarily interesting as it shows the barriers which cannot be observed from a top-down perspective, but might nevertheless hamper one's ability to convert available resources into capabilities. For example, it can develop sensitivity for a benchmark between affordable and unaffordable transport fees, as perceived by the community. Second, it provides insight into the valued activities and desired levels of accessibility from a community perspective, which enables to observe levels of accessibility to activities difficult to grasp in accessibility studies (e.g. social activities, family visits). These activities can however be of similar or even more value to a person, and are therefore important to also consider. Moreover, desired levels of accessibility can be different per community, which effects one's perceptions and expectations of accessibility. If from a community's perspective accessibility 'issues' are not experienced a problem, there might be no interest in the use of a solution which tries to solve this 'problem'. On the other hand, it can also be argued that levels of accessibility from a community perspective might not always be 'good enough', when taking into account that these perspectives might have been shaped by a mechanism such as adaptive preferences. Moreover, although often not expressed by residents as a problem, it can also be argued that, the amount of effort required to access activities should also be considered as unacceptable, from a certain level. Following this line of reasoning, the adaptation of a top-down approach has its strengths to assess a standard level of accessibility to basic human needs for all. It therewith fits to adopt a top-down perspective in the first phase; to signal if there are certain at-risk groups or areas which require priority for intervention. This would however require to develop concrete accessibility standards. The bottom-up approach could then be used in the second phase to target the identified group specifically.

9.2 Addressing unjust accessibility

9.2.1 Prioritise proximity & intervention on micro-level

The strategy most suiting to address accessibility issues depends upon the type of activity taken into account; some allow to create proximity, whereas for other activities it might be required to introduce

a new service. When it is feasible, it is considered most equitable to address insufficient accessibility for people on lower incomes through the focus on creating proximity; it allows to access activities on foot and therewith takes away the need for continuous travel expenses. The activities for which creating proximity is not a feasible option, it is considered most equitable to focus on solutions and policy interventions which intervene on a micro-level. These are expected to fit into the mobility practises of residents more than to focus on e.g. large scale public transport projects which a large group of residents of vulnerable neighbourhoods probably cannot reap the benefits of. This includes solutions such as to offer free public transport ticket to low income households/earners (and at earlier service hours), to improve the walking environment or to introduce a demand driven van service financed by the employer.

9.2.2 Involve the group designed for

An important aspect in addressing mobility injustice appears to revolve around listening to the needs of the disadvantaged groups, which requires to involve the group designed for. This is considered crucial due to two primary reasons. First, the suitability of a proposed solution depends upon the customs and habits of the group designed for; the user also has to see the added value of the proposed solution. Whether or not a solution is adopted by users naturally affects the efficiency of a solution in enhancing accessibility. Second, barriers encountered have shown to differ highly per sub-group under study. Therefore, taking the diversity of needs and barriers into account also requires to involve the group designed for, or to involve user's associations/cooperatives. Moreover, involving 'community experts' (such as community centers or voluntary organisations) is considered a valuable source of information to enhance insight into the customs and habits and barriers encountered by residents.

9.2.3 Take an interdisciplinary perspective to address accessibility barriers

The results showed that accessibility barriers did not only relate to the mobility/infrastructure sector, but were also intertwined with various mental barriers, related to socio-economic problems. In other vulnerable neighbourhoods with similar socio-economic problems, addressing accessibility issues are therefore expected to also require a focus on other relevant sectors. Taking an interdisciplinary perspective supports to see mobility as a means to access valued activities, rather than an end on its own. This creates possibilities to design out of the box solutions to solve the problem. For example, a lack of schools available in the surroundings can also be solved by adapting policies for the number of children allowed in a school (Goudappel et al., 2021). Furthermore, it often appears crucial to find collaborations with other sectors additional to a solution within the mobility/infrastructure sector, for example in the situation where accessibility issues are shaped by both a lack of resources as well as mental barriers which impede movement (related to socio-economic problems).

9.2.4 Flow diagram

The flow diagram shown in figure 20 on the next page combines the elements as discussed in the sections above. This flowchart therewith aims to support municipalities in the Netherlands in their process while addressing mobility injustice, relevant to accessibility, in vulnerable neighbourhoods.
As is shown in the legend (bottom left corner) the green boxes indicate an required action, while the white boxes provide a question which the municipalities can ask themselves. Actions sometimes require to collaborate with other parties. For example, accessibility assessments might need a collaboration with a company specialised in transport engineering (who use a suitable approach to measure mobility/accessibility injustice). Both purple boxes provide the start for the flowchart. This draws the attention to the first important aspect of this flowchart; assessing issues of unjust accessibility requires the suggested combination of bottom-up and top-down approach. These approaches should therewith be adopted simultaneously. Even if there are no at-risk groups observed with objectively low accessibility levels through top-down accessibility studies, crucial barriers might have gone unnoticed through the top-down perspective. Therefore, a complementary bottom-up assessment is always required which involves the community to find out what they need. This results into two pathways; focused on the mobility and infrastructure sector and other relevant sectors e.g. the land-use, housing, social, education & health sector. Related to the mobility & infrastructure pathway, it is first important to realise that the best suitable solution depends both on: the group taken into consideration as well as the travel purpose or activity taken into account. It is first relevant to ask the question if activity participation requires traveling. If not, relevant solution pathways might involve strengthening residents' digital skills

or to introduce behavioural services. If the activity does require traveling, the first relevant question is to consider if it is feasible to create proximity. Other ways of creating proximity might also include other sectors, such as to adapt policies for the maximum number of students in a school. If it is not feasible to create proximity for the activity under consideration, the primary focus should be to intervene on a micro-level, either enhancing the use of existing connections or otherwise introduce new services (in collaboration with the group the service is designed for). The second pathway is aimed to address accessibility barriers in other sectors, which should primarily ask itself what collaborations could help to reduce residents' accessibility barriers and enlarge their opportunities to access valued activities (capabilities).

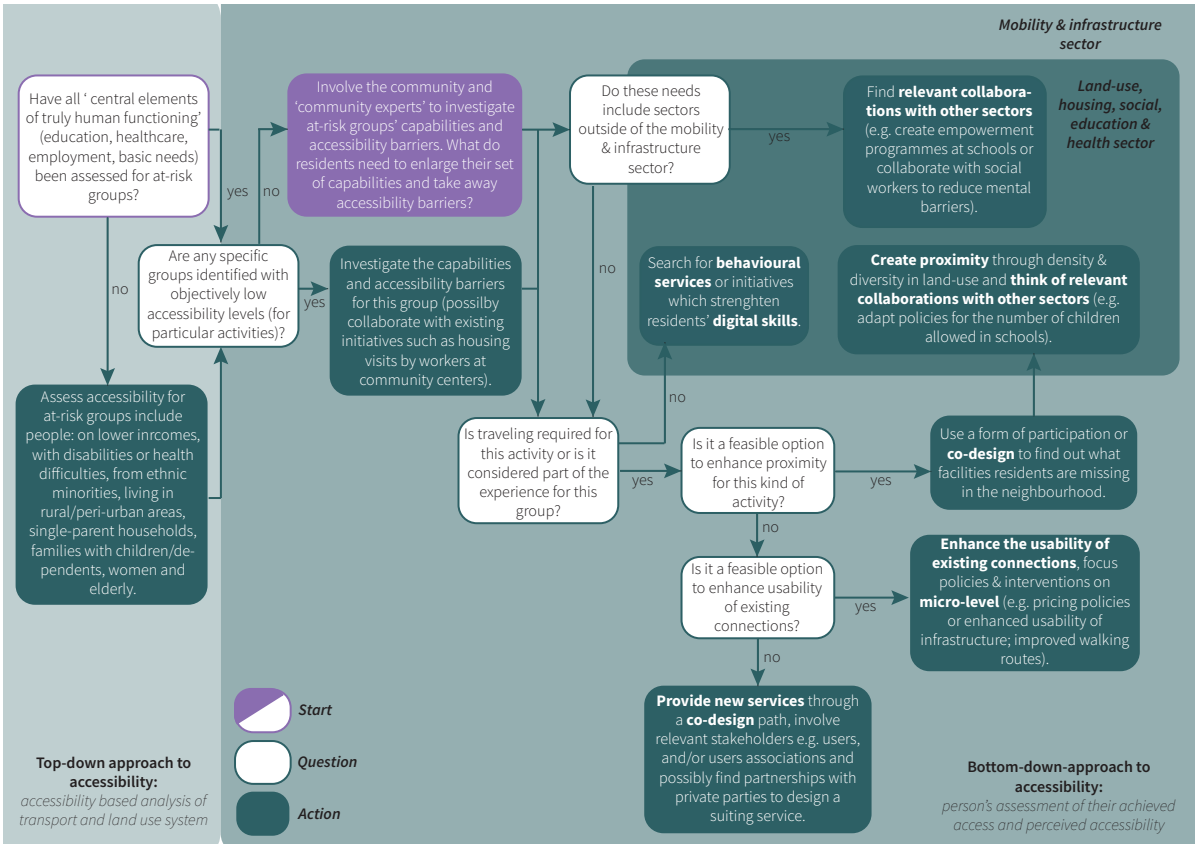

Figure 20: Flowchart for municipalities (own work based on insights from the case study and elements by Vecchio and Martens (2021), Sen (2009), Ewing and Cervero (2010), Goudappel et al. (2021) and Vecchio (2018))

9.3 Conclusion

This chapter discusses various elements which have shown valuable to create a general approach to address mobility injustice, relevant to accessibility. First, to identify accessibility issues it shows of considerate value to combine a bottom-up and top-down approach, due to their strengths in different stages of the process. Moreover, when addressing issues of mobility injustice in vulnerable neighbourhoods, it appears suiting to primarily focus to create proximity or to focus on policies/ solutions on a micro-level scale. Second, in the design phase, is has considerate value to involve the groups designed for to take their 'customs and habits' and diversity of needs into account. Valuable stakeholders to include are: user's associations/cooperative and 'community experts' (such as community centers or voluntary organisations). Finally, as barriers showed to appear in other sectors than the mobility/infrastructure, addressing these barriers also requires to adopt an interdisciplinary approach.

10

Discussion and Conclusion

This final chapter provides a discussion, elaborating on the research's interpretations, implications, limitations, generalisability and a reflection on the use of the Capabilities Approach operationalised through Microstories. Thereafter a conclusion is drawn and recommendations are provided for future research and practise. It gives an answer to the main research question: 'How can municipalities and private parties reduce mobility injustice through the focus on individuals' capabilities and everyday mobility experiences to identify solution pathways, in the context of vulnerable neighbourhoods'?

10.1 Discussion

10.1.1 Interpretations

Through the use of a case study, this research provides an enhanced understanding of the capabilities and everyday mobility experiences from the community's perspective in a vulnerable neighbourhood in The Hague Southwest. This creates an enhanced understanding of the mechanisms underlying the causes of accessibility issues or enabling access (resources and conversion factors) as well as the consequences of accessibility issues (on one's capabilities). This section elaborates upon the interpretations of interesting differences or comparable results to literature or earlier conducted analyses. Reasons for the possible differences in results compared to literature are provided. It must however also be noted that, the possibility of an unintentional bias in the sample cannot be excluded, although precautions were taken to avoid it to the best of the research's ability.

Causes of accessibility issues (resources and conversion factors)

Insights into individuals' everyday mobility experiences provided a deepened understanding of the factors creating accessibility issues or enabling access (resources and conversion factors). The sections beneath will elaborate on four interesting aspects: 1. different everyday mobility experiences observed than expected 2. barriers appearing outside of the mobility/infrastructure sector 3. often observed accumulated accessibility barriers 4. unobserved sub-groups.

Certain elements in participants' everyday mobility experiences appeared different than was expected from earlier research. This gave the impression that this study observed different groups with different mobility preferences and thus different mobility needs than previous studies. First, almost all participants expressed to enjoy walking, and considered it one of their primary modes of transport. This is contrary to what was depicted in the analysis by TU Delft and Radboud Universiteit Nijmegen (2021), which showed that The Hague Southwest's residents had a negative perception of walking. Second, an often used assumption is that transport poverty in Dutch cities plays a more moderate role than in less bike oriented countries (Martens et al., 2011) (Studio Bereikbaar et al., 2022)[1]. The importance of the bicycle to reduce accessibility issues in this research however seemed less evident. It often seemed that participants did not include the bicycle in their 'choice set' of transport options for further distances. Third, as was expected from the analyses by (Studio Bereikbaar et al. (2022)[1], the car was often mentioned as the primary reason for good levels of perceived accessibility by residents who were able to afford one. Along the same line of reasoning, it was expected that the absence of a private car would have been mentioned more often by non-car owners as an accessibility barrier. However, the lack of car availability was only in two interviews explicitly mentioned as a problem. These differences could be explained through various lines of reasoning. First, it could be that this research observed a different group, which has other customs and habits (possibly shaped by cultural factors) than taken into account in early studies. These customs and habits could have played a role in the different way of shaping mobility practices. Durand et al. (2023) for example showed that first generation non-western

migrants cycle less than people with no migration background. A second possible reason could hint at different groups recruited as a consequence of the strategy as well as location to recruit participants. In the study by TU Delft and Radboud Universiteit Nijmegen (2021), participants were approached at public shopping areas, possibly attracting more car oriented travelers. Moreover, these previous analyses often rested upon large scale surveys, which exclude groups who have difficulties to use the internet or might have no interest in participating in large scale research. Third, various mechanisms might have played a role, such as the mechanism of 'adaptive preferences', where respondents mainly 'adapt to adverse situations and develop criteria that are deformed by one's negative experiences' (Comim, 2008, p. 229). For example, people without a car or bicycle might adapt to the situation where they cannot reach jobs on longer distances; they adapt the set of job options considered and solely take into account the jobs reachable in walking distance.
These observed differences have two primary implications; to determine if the mobility preferences of this group is really different, there is a need for further research into the 'hard-to-reach' group in vulnerable neighbourhoods. This is considered valuable information to develop mobility solutions which solve accessibility issues more effectively as they are more suiting to residents' mobility needs (possibly shaped by customs and habits). Furthermore, various assumptions often adopted relevant to transport poverty might need adjusting, to take the group observed in this research, and their mobility practices, into account.

Addressing transport poverty/mobility injustice is currently mainly approached from a mobility and transport perspective. However, this research observed that accessibility barriers outside of the infrastructure/mobility sector might play a just as important role in impeding one's ability to move, and therewith access valued out-of-home activities. This is a less noted barrier in literature related to transport poverty/mobility injustice. It seems that, as this barrier appears outside of the transport/mobility sector, it is also not taken into consideration when addressing the problem. However, it showed more often that, in order to provide access for all, it is required to address barriers inside and outside the mobility sector simultaneously. For example, offering a bus service to a job does not provide access if a person does not even consider this place an option (possibly due to a narrowed scope as a result of mental barriers). This research therewith builds upon the argument by Krabbenborg and Uitbeijerse (2023) that addressing transport poverty cannot rest upon solutions in the mobility and infrastructure sector alone and calls for an interdisciplinary approach.

This research showed that accessibility issues were always shaped by an accumulation of barriers, often related to one of the 'risk factors' as identified in literature by Martiskainen et al. (2021) and Simcock et al. (2021). This often showing accumulation of barriers was also observed in previous research by Krabbenborg and Uitbeijerse (2023) and Van Der Bijl (2020). In this research, hindrance to one's capabilities was most often expressed by women with a non-western migration background. The expressed accumulation of barriers often related to: a lack of confidence using public transport (due to language barriers), a lack of confidence riding a bicycle, too high public transport fares and time related restrictions related to child care. To research the scale of the problem (hindrance to one's capabilities) for this sub-group it is considered of value to focus on this group specifically; does this combination of at-risk factors also appear to hinder residents' capabilities in other vulnerable neighbourhoods? Do similar barriers seem to impede this group's ability to move and therewith access valued activities? And are there other more often appearing accumulations of barriers for whom capabilities are hindered? Insights into the scale of the problem for this sub-group, and possible other sub-groups, is considered valuable information to estimate if this group requires priority for intervention to enhance their accessibility.

Finally, it seems that two particular groups of residents was underrepresented in this study. Study by Centraal Bureau voor de statistiek (2022) gave insight into the travel reasons and mobility patterns for The Hague Southwest's inhabitants. Most showed to be comparable to this research. However, the analysis also showed one primary element different from this research: the reasons to refrain from moving related to disabilities and illness or injuries. This research did not observe any participants who expressed to refrain from moving due to this reason. This is assumed to relate to the choice in recruiting participants. As the choice was made to recruit participants at locations 'out of home' this naturally excludes the residents who refrain from moving and stay at home. Moreover, the lifestyle

profiles depicted by DiscVision (2021)[6], describes a group of 19% of Bouwlust & Vrederust's residents which likes to stay at home and is therefore considered less mobile than other lifestyle groups. Moreover, due to difficulties during the recruiting process, this research did not have the chance to recruit a lot of adolescents. Therefore, interesting lines of further research entail to recruit these two groups, to asses whether they experience any accessibility issues and how their barriers could be best addressed.

Consequences of accessibility issues (on capabilities and else)
The second part of the results provided insight into residents' capabilities; the possibilities to access valued opportunities, from a residents' perspective. The results (and their similarities and differences with literature) provided four main aspects considered of interest: 1. difference in desired levels of activity participation for different communities 2. consequences of accessibility issues besides reduces capabilities 3. the activities as valued per sub-group differ 4. consequences of perceptions of safety for women/children.

Contrary to what was expected by the objectively low observed levels of accessibility from earlier analyses (mainly to relevant jobs, but also related to the argued insufficient qualities of various public transport lines), levels of perceived accessibility were considerably high. The primary reason expressed was that residents enjoyed walking around the neighbourhood and as all was at walking distance. On a city level, more accessibility issues were observed. Some explicitly expressed hindrance to the possibility to access valued opportunities outside of the neighbourhood. However, others expressed that they did not feel the need to access places outside of the neighbourhood, or more regularly than they currently did. Research by Pot et al. (2020) also shows that objectively low accessibility levels do not necessarily lead to low perceived accessibility levels, as 'people compare their accessibility to levels of accessibility and means of travel that they believe are normal and acceptable in their local context' (Pot et al., 2020, p. 42). This could be due to self -selection, where people make a trade-off when they move somewhere and people without strong preferences to participate in city activities might move to more rural places or peri-urban areas (Jorritsma et al., 2023). Finally, people who choose to live in a geographical less accessible places might still enjoy high levels of accessibility when they have mobility resources which 'compensate' the low degree of accessibility; such as a private car. This latter mechanism is however assumed to have a more moderate role than in the study by Jorritsma et al. (2023), as the costs for car purchase and usage are considerably high in comparison to the average income per person in this neighbourhood (€20,300 per year) (CBS, 2022). This research therefore builds upon the evidence that the desired levels of accessibility can be different per community, possibly shaped by cultural factors, and cannot be ignored when aiming to address accessibility issues, as this poses the risk of solving a problem which does not require solving from a community's perspective.

On the other hand, this research also recognises that other undesired mechanisms, such as adaptive preference, could underlay the high levels of perceived accessibility. When aiming to create well-being for all, the possible occurrence of these undesired mechanisms could be argued as unwanted. Second, other consequences of accessibility issues were observed besides one's ability to reach their valued activity. Although, many respondents were able to reach their valued activities, this often showed to require a lot of effort (time, cost, physical capacity). For example, debt related issues were expressed by one of the community experts to affect residents' ability to overcome distances, which enlarged the effort (e.g. oversee and plan the journey) it takes to move and access valued activities. Moreover, accessibility issues were expressed, as well as observed, to make people more dependent upon their social network, which made them less flexible. This supports the research results by Krabbenborg and Uitbeijerse (2023) who states that people often find a way to participate in valued activities, even if it requires a lot of effort. These additional efforts can however have adverse effects on one's transport options, which limits their set of activity opportunities and makes them vulnerable to change. The additional efforts were however seldom expressed by residents themselves as an issue. The subjectivity inherent to the bottom-up approach to accessibility makes it difficult to assess when to refer to something as 'acceptable accessibility issues' and 'unacceptable transport poverty'. This does not only create complexities related to estimate a benchmark for travel time but also for travel costs. From earlier analysis by (Studio Bereikbaar et al. (2022)[1] a benchmark for too high fares was expected on a regional level (such as Zoetermeer, Delft, Den Haag Noordwest). However, results show that, from a participant's point of view, fares on a city level were already perceived as too expensive by most,

if visited more often than once every three weeks/ a month. This presumably indicates that the two researches used different benchmarks relevant to what is considered 'too expensive', as there are no concrete standards for 'affordable transportation'. Therefore, this research supports to combine a top-down and bottom up approach to accessibility, as recommended by Vecchio and Martens (2021) . A top-down approach could then function to guarantee a minimum level of accessibility, at the least to basic human needs. This requires to create concrete accessibility standards, not only related to distance, but also to time as well as costs.

This research mainly observed participants who expressed a lack of accessibility for social activities, however, not to relevant jobs, which was expected from analyses by (Studio Bereikbaar et al. (2022)[1]. The first thing this research wants to clarify is that this could be due to an unintended bias, which is not considered a problem as this research did not aim to draw any statistical conclusions about the occurrence of transport poverty or accessibility issues. It must therefore clearly be noted that the point here is not that relevant jobs might be better accessible than expected. However, what can be argued is that these result indicate that different types of activities are valued differently by different sub-groups, depending on one's 'role in society' and possibly dependent upon cultural factors. According to Schmeets (2018) society participation not only includes paid work but also includes; voluntary work, participation in associations, social participation (amongst others contact with family and friends) and providing help to other households. 'The SCP thereby adds sports and cultural activities' (Krabbenborg & Uitbeijerse, 2023, p. 9). However, accessibility analyses mostly seem to focus on work and school accessibility (Bastiaanssen et al., 2020; Goudappel et al., 2021). Moreover, the fact that it is normal to receive compensation to receive compensation to travel to work, but not to e.g. bring children to school implies that policy is also more focused on job accessibility. However, the results in this research show that reaching a job does not add to the capabilities and well-being of all. This suggests that, in order to provide access to valued activities for all, a different way of assessing accessibility is required. This approach should also take into account that different groups can value other activities, as well as weigh them differently.

Perceptions of safety, the lack of confidence and one's skills to use certain transport modes are more often mentioned accessibility barriers in literature (Krabbenborg & Uitbeijerse, 2023; Van Der Bijl, 2020). This was also observed in this research, were fear was primarily expressed related to the use of the bicycle and public transport (for participants themselves and for their children). Moreover, it seemed that these feelings of fear and a lack of confidence were mostly expressed by women (with a non-western migration background), which is also indicated in the analysis by Goudappel et al. (2021), who suggest a difference in subjective perception of safety for gender.It was however more difficult to say whether these feelings also impeded these women's movements and their ability to participate in society. In literature the consequences thereof also appear unknown. Moreover, it often seemed that their children were also affected by their parents' perceptions of safety, which might possibly also impede their movement. Therefore an interesting line of research could focus on the consequences of feelings and perceptions of safety on society participation for women, as well as for their children. This enhanced insight could provide valuable insight into the scale of the problem for this sub-group specifically.

10.1.2 Implications

For further research

The interpretations in the previous section provided input for implications for further research in other vulnerable neighbourhoods, based on four lines of reasoning: 1. investigating the 'hard-to-reach' group 2. researching the adopted assumptions relevant to transport poverty 3. researching underrepresented groups in this study 4. researching the often accumulated barriers.

First, in this research the impression was raised that the 'hard-to-reach' group, observed in this research, might have a different way of shaping their mobility practices, as well as might have different desired levels of activity participation (possibly shaped by cultural factors). Further research is required to justify these assumptions, adopting a research method which effectively reaches these groups in other vulnerable neighbourhoods in peri-urban areas. This is considered valuable information to develop mobility solutions which solve accessibility issues more effectively, as a result of the better connection to the residents' customs and habits, shaping their mobility needs. Moreover, ignoring the desired

levels of activity participation from a community perspective pose the risk of implementing ineffective solutions, when the 'problem' does not need solving from the community perspective. Second, the less evident role of the bicycle in participants' everyday mobility experiences gives the impression that the bicycle might also have a more moderate role limiting transport poverty in this neighbourhood, and presumably in other neighbourhoods with high concentrations of first generation non-western migrants (or other groups who are generally assumed to be less confident using a bicycle). Further research is required to support this assumption, and to research what consequences this has on their options to access valued activities and participate in society. This is considered relevant to enhance insight into the scale of transport poverty, also valuable to address it more effectively. Third, the difference in low expected levels of accessibility and perceived accessibility gave the impression that two groups are underrepresented in this study; adolescents and the group who often refrains from moving (stays at home). An interesting could focus to asses whether these groups experience any accessibility issues and how their barriers could be best addressed. These insights can provide important insights in the scale of the problem, transport poverty, as well as provide valuable elements which can be used to design more effective solutions. Finally, the group of women with a non-western migration background was a group which more often seemed to be hampered in their capabilities. Moreover, perceptions of safety and feelings seemed to play an important role limiting their transport options, as well as their children's' transport options. Further research is needed to support these assumptions, focusing on this specific sub-group specifically, as well as on the role of fear/safety. Most important is considered to focus on the effect on society participation, as well as the enhanced travel effort required to access valued activities. This is considered relevant as it provides insight into the scale of the problem for children and women with a non-western migration background specifically. This might give insight into the question whether this group requires priority for intervention, to help them access their valued out-of-home activities. Moreover, if similar accumulations of accessibility barriers appear more often for specific sub-groups, it might be easier to provide a more aggregated approach/ standard 'solution package' for sub-groups specific.

For policy
Implications for policy to address mobility injustice, relevant to accessibility in vulnerable neighbourhoods, concern five lines of reasoning; 1. the combination of the bottom-up and top-down approach 2. development of new accessibility standards 3. interdisciplinary approach to address mobility injustice 4. take into account the different desired levels of activity participation/valued activities per sub-group 5. take into account the importance of customs and habits when creating new solutions/policy.

First, this research observed various elements which provide input for a different way to identify as well as address issues of mobility injustice, relevant to accessibility. Primarily, it is considered to require a combined bottom-up and top-down perspective. The bottom-up perspective is considered suitable to involve the individual nature, required to address accessibility issues and to focus on the activities as valued by residents/desired levels of activity participation. On the other hand the top-down approach is considered important to take away the ambiguity of when to refer to something as 'accessibility issues' or 'transport poverty'. An objective way to guarantee a minimum level of accessibility is primarily perceived important as the often required additional efforts to access valued activities go unnoticed by residents, but nevertheless has adverse effects on one's well-being. Moreover, the combination of a top-down and bottom-up approach take into account that the bottom-up approach also has operational limitations (time/labour intensive). Second, in order to take away the previously mentioned ambiguity, there is a need to develop specific accessibility objectives, not only related to distance, but also to time as well as transport expenses proportionate to income. A bottom-up approach could be used to gather input on the perception of 'affordable transport' from a residents' perspective, complementary to policy makers' judgement. This is considered of significant value to guarantee that the benchmark perceived suiting from a top-down perspective by policy makers actually also effectively provide access in practice. Third, the observation that barriers are often encountered in other sectors than the mobility/infrastructure sector suggests to adopt an interdisciplinary approach to address these barriers, focusing on other sectors additional to the mobility and infrastructure sector. For example, in vulnerable neighbourhoods addressing mobility injustice should not only revolve around the offering of mobility resources but also requires to encourage engagement and support residents to reduce mental barriers, allowing them to access the activities they value. Fourth, this research observed that activities as

well as desired levels of activity participation can be valued differently by different sub-groups, possibly shaped by cultural factors. This suggests a different way of assessing accessibility, which takes into account that different groups can value other activities, as well as weigh them differently. This requires to develop a new approach/method to assess accessibility which for example allows to integrate the results gathered through a bottom-up approach into a top-down accessibility assessment. Last, the observation of different mobility practices (customs and habits) suggests there is a need to take these differences, possibly shaped by cultural factors, into account when designing a new mobility services, as well as when adapting policies. This is considered important to create solutions which address accessibility issues effectively, due to the fact that a solution better fitting to residents' customs and habits is assumed to be used more. Concretely, this research observed a value to access valued activities at walking distance and the importance to access valued activities through informal ride sharing systems. This suggests to consider solution pathways which focus on proximity. However, it also suggests to carefully consider the consequences of policies which reduce car access in vulnerable neighbourhoods, primarily the effect it has on the disadvantaged (for some it might be their only feasible option to access valued further destinations).

10.1.3 Limitations

This research chose to base its discussion on in-depth interviews, as this was expected to be most suitable to the in-depth perspective aimed to reach, in order to get a deeper understanding underlying the causes and consequences of accessibility issues. Moreover, traditional methods such as an (online) surveys and focus groups were expected to be ineffective in reaching the hard-to-reach group aimed to study (Ellard-Gray et al., 2015).

Results of in-depth interviews are not aimed to draw any quantitative on the occurrence of accessibility barriers or transport poverty in the neighbourhood or to a larger population, as the sample is not representative of the neighbourhood. Moreover, this study choose to take into account the whole group of residents of Bouwlust & Vrederust, and not only respondents who mentioned to experience accessibility issues. This choice was made due to the fact that it was also considered interesting to research how residents themselves perceived their accessibility and to not solely focus on participants expressed to experience accessibility issues. As a consequence of this choice, the mechanism of adaptive preferences is assumed to have played a larger role than if the study would have only selected participants who had mentioned to have accessibility issues. This might have had an effect on the data in a way that some aspects, which from a top-down perspective would have been noted as 'accessibility issues', might have gone unnoticed as participants themselves did not perceive it as an issue.
The place of recruitment might also have affected the data in a way that a place such as a community center possibly attracts people who generally enjoy to be more social and get out of the house. These people might have a different perspective on accessibility as well as encounter other accessibility barriers than people who generally refrain from moving. To avoid a bias in the sample to the best of the researcher's ability, this research choose to recruit participants at different places; community centers, a central service point, a general practitioner and at a public library. Selection bias however always remains a challenge; people willing to participate in this research on a voluntary basis are generally people who enjoy to be social or want to express themselves.

10.1.4 Generalisability

This study chose to use in-depth interviews, in a considerately small representative group. It is therefore not expected to be representative for the neighbourhood under study, or vulnerable neighbourhoods in general. However, as the aim of this research was mainly to gather new information on the mechanisms underlying causes and consequences of accessibility issues, this is not considered an issue. Moreover, desired levels of accessibility, as well as encountered barriers, are highly personal, or at least subgroup specific. The results are therefore also not meant to give a representative overview of transport poverty, the appearance of accessibility barriers, or the hinder to residents' capabilities in the context of vulnerable neighbourhoods. However, the understandings in the mechanisms behind accessibility barriers as well as the consequences of accessibility issues are expected to apply to other vulnerable neighbourhoods (with similar demographic characteristics) as well, as they often appeared to coincide with socio-economic challenges. Therefore, the solution pathways proposed, which primarily took into consideration the equity perspective for low-income residents, and the suitability to their customs and

needs, are considered suiting to part of the resident groups in other vulnerable neighbourhoods as well. However, as this research clearly states, mobility needs are highly sub-group but also context specific. Therefore, different areas are expected to have different accessibility challenges, due to differences in urban planning, geographical characteristics or other socio-demographic characteristics. Moreover, the earlier discussed customs and habits of the group under study is also expected to affect the efficiency of a proposed solution. Therefore, the actual added value of a new service design should be determined in the context under study. Finally, the general approach created to address issues of mobility injustice was designed based on the conceptual level of the mechanisms arising in the study. This approach is therefore also expected to be generalisable to other vulnerable neighbourhoods.

10.1.5 Reflection use of Microstories to operationalise the Capabilities Approach

The use of the Capabilities Approach, and its operationalisation through Microstories, has provided relevant insights into the use of Microstories to assess causes and consequences of accessibility issues, and how mobility contributes to, or impedes, individuals' opportunities to access valued out-of-home activities. Moreover, it has provided insight in the use of Microstories as accounts of everyday mobility experiences as a tool to operationalise the Capabilities Approach in practice, relevant to mobility. The bottom-up approach to accessibility, inherent to the use of Microstories, showed to have its strengths as well as drawbacks. It therewith showed to have two main strengths. First, it provides enhanced insight into the contextual and personal circumstances (resources and conversion factors) possibly shaping accessibility barriers encountered by individuals. This is primarily interesting as it shows the barriers which cannot be observed from a top-down perspective, but might nevertheless hamper one's ability to convert available resources into capabilities. For example, it can develop sensitivity for a benchmark between affordable and unaffordable transport fees, as perceived by the community. Second, it provides insight into the valued activities and desired levels of accessibility from a community perspective, which enables to observe levels of accessibility to activities difficult to grasp in accessibility studies (e.g. social activities, family visits). These activities can however be of similar or even more value to a person, and are therefore important to also consider. Moreover, desired levels of accessibility can be different per community and within a community, which effects one's perceptions and expectations of accessibility. If, from a community's perspective, the levels of accessibility are as desired, there might be no interest in the use of a solution which tries to solve this 'problem'. However, it can also be argued that levels of accessibility from a community perspective might not always be 'good enough', when taking into account that these perspectives might have been shaped by a mechanism such as adaptive preferences. This touches upon the first drawback when adopting Microstories: the subjective nature inherent to the use of Microstories makes it challenging to assess whether the accessibility issues encountered by an individual should be classified as acceptable or not. It more often showed to require a lot of effort to access valued activities, which was often not expressed explicitly as a problem. It can however be argued that, from a certain level, the amount of effort required to access activities should also be considered as unacceptable. Following this line of reasoning, the adaptation of a top-down approach is more suitable to assess and monitor a standard level of accessibility for all, at least to the activities which are seen as 'central elements of truly human functioning' (Nussbaum, 2000, p. 74). This would require to create clear accessibility standards. The second drawback is that for some residents it seemed difficult to answer to capabilities (all possibilities to reach valued activities) instead of functionings (actually realised behaviour). It was therefore difficult to assess if people were really satisfied with all that was possible, or if possibly (maybe even unconsciously) they might have other desired which they did not express. However, to really come to the 'deepest desires' of a person would possibly require to observe a group for a longer period of time, also noticing any non verbal communication etc. A third drawback to ask residents' themselves for accessibility barriers is that some were not identified as barriers by residents themselves, but clearly showed (or was expressed by community experts) to impede their mobility, and therewith accessibility to valued activities. It is therefore considered important to not only ask residents themselves but also to involve key stakeholders who know the residents well.

The Capabilities Approach in general has shown to be an approach which helps to focus on the accessibility to valued activities, rather than to mobility itself. It can therewith create understanding of how mobility contributes or impedes one's abilities to access valued opportunities. Moreover, it has shown to create more insight in which interventions could help most to provide access to valued opportunities. Its main challenge is however the policy appraisal. For example, how to integrate the bottom-up results

gathered in more general appraisal methods, as well as how to assess one added 'capability'? The Capabilities Approach therefore currently has more strength to identifying populations which require priority for intervention and to suggest a framework for potential interventions to strengthen individuals' conversion factors and resources. It has less strength in the stage afterwards: to compare these proposed interventions with each other to see which one adds most to residents' capabilities. There is a need of new appraisal tools which are able to combine these two approaches, as well as which is able to use the worth of added capabilities.

10.2 Conclusion

This research aimed to enhance understanding of the mechanisms underlying the causes (accessibility barriers) and consequences (on the opportunities to access valued activities) of accessibility issues from a residents' perspective, in the context of vulnerable neighbourhoods. The focus on everyday mobility experiences and capabilities contributes to a deeper understanding of the nature of the problem from the perspective of a group for which currently very little is known. Moreover, it provides insight in how mobility contributes to, or impedes, individuals' opportunities to access valued out-of-home activities. This is considered vital information for the effective design of solutions/policy instruments countering mobility injustice, relevant to accessibility. This research uses the enhanced understanding of these mechanisms to propose a general approach to the problem under study.

Based on qualitative, subjective data, it can be concluded that in order to reduce mobility injustice it is crucial to focus on the circumstances encountered by individuals. Factors enhancing or limiting individuals' ability to move, which affect one's opportunities to access valued activities, are sub-group or age group- as well as context- specific. Moreover, the activities considered relevant to an individual, and the way they are valued, also depend upon one's sub-group and possibly depend upon cultural factors. This suggests to adopt a new approach to assess accessibility, which allows to vary the types of activities taken into consideration, as well as their weighing, dependent upon the group under study. Moreover, desired levels of accessibility can be different per community, affecting one's perceptions and expectations of accessibility. If from a community's perspective accessibility 'issues' are not experienced a problem, there might be no interest in the use of a solution which tries to solve this 'problem'. On the other hand, this research recognises that the observation of the consequences of accessibility issues are more difficult to identify in a subjective way (using a bottom-up approach), as individuals might not oversee the consequences or identify them as an issue. Often, people find a way to reach their valued destination, even if it showed to require a lot of effort. Nevertheless, these efforts reduce one's transport options which have adverse effects on the choice in activities (thus on one's capabilities) and makes one more vulnerable for change. Therefore, these additional efforts cannot be ignored, which is why a standard level of accessibility should be guaranteed through the use of a top-down approach. This however requires to develop concrete accessibility standards.

The case study results have shown that in the context of a vulnerable neighbourhood, if an activity allows to create proximity, it is considered most effective to reduce unjust accessibility, as it enables accessibility on foot and thereby takes away the prominent barrier of continuous transport expenses. Moreover, for the activities where creating proximity might not be feasible, suitable interventions should focus on a micro-level rather than on large, costly public transport projects, as many residents presumably would not be able to reap the benefits of such projects if the fares are not reduced simultaneously. Promising micro-level policies include to offer a free public transport ticket once a month to low-income households, or improve the walking environment; introducing green areas and straightening the pavement. The strategy to address unjust accessibility however highly depends on the travel purpose and type of activity. When enhancing access to an activity requires to introduce a new service, it seems essential to include the group designed for in order to develop a solution supported by the community; to fit their 'customs and habits' and account for the diversity in needs. Valuable stakeholders to include are user's associations/cooperative as well as 'community experts' (community centers or voluntary organisations). In light of the observed customs and habits, facilitating an informal ride sharing system is more appropriate, and also observed in a non organised manner, than to offer a commercial system. Furthermore, it appears crucial to adopt an interdisciplinary approach to address issues of mobility injustice, as often accessibility issues are shaped by a combination of barriers manifesting throughout different sectors. Programmes focusing on the empowerment of adolescents and job seekers therefore shows promising to counteract mental barriers, additional to solutions in the mobility/infrastructure

sector. Collaborations with parties trusted by residents, such as workers at community centers and teachers, is considered crucial for their effectiveness. Moreover, adopting an interdisciplinary approach allows to design out of the box solutions to solve the problem. For example, a lack of schools available in the surroundings can also be solved through the adjustment of policies for the number of children allowed in a school. Finally, further research relevant to the needs of specific at-risk groups, and the added value of mobility solutions in vulnerable neighbourhoods in practice through pilots, are expected to be of significant value in reducing mobility injustice.

10.3 Recommendations

10.3.1 For further research

As was shown in the implications, further research using the Capabilities Approach should focus on the causes and consequences of accessibility issues, for the 'hard-to-reach' groups in vulnerable neighbourhoods specifically. Recommendations for further research into this group entails two primary lines of research: a top-down and bottom-up accessibility perspective. Another pathway is focused at the further development of the Capabilities Approach as a method .

Top-down accessibility perspective

In order to identify groups which require priority for intervention, it is recommended to conduct further top-down analyses focusing on at-risk groups (as identified in chapter 2) in vulnerable neighbourhoods, which is considered valuable to further identify the scale of the problem. These analysis should be focused on the activities which in the Capabilities Approach are called the 'central elements of truly human functioning that can command a broad cross-cultural consensus' (Nussbaum, 2000, p. 74), such as: health care, employment, education and food facilities. An analysis could include to compare a group's capabilities with functioning. 'For instance, in case top-down analyses show that a particular population group enjoys a reasonable level of public transport-based accessibility (capability) yet shows a low level of activity participation (functioning), this raises questions' (Vecchio & Martens, 2021, p. 847).

Bottom-up accessibility perspective

The adopted top-down approach described above should then be complemented with a bottom-up approach to identify which of the conversion factors or lack of resources shape the main problem. Moreover, various elements in this research have showed more specific elements interesting for further research from a bottom-up perspective. This research suggests to adopt a bottom-up approach to research these elements, as they mostly involve possible barriers or elements which are difficult to identify from a top-down perspective. A suggestion to reach this group in a bottom-up approach is through housing visits, possibly collaborating with existing initiatives. During this research it was observed that workers at community centers were already conducting housing visits for other purposes. Possibly, these community centers could be approached to ask if an extra paragraph could be added to their survey, regarding residents' everyday mobility experiences, in the form of capabilities and resources/conversion factors.

- To enhance insight into the nature as well as scale of transport poverty in vulnerable neighbourhoods it is suggested to further research the 'hard-to-reach': how do they shape their everyday mobility and what are desired levels of activity participation for this group in other vulnerable neighbourhoods? This kind of research can add to the information gathered in this research, providing insight into the priority to address accessibility issues, from the perspective of the community. Moreover it can add to shape solutions more suiting to the customs and habits of residents in vulnerable neighbourhoods.
- Moreover, to further investigate the scale of the problem, transport poverty, in vulnerable neighbourhoods, it is considered of value to further research the role that the bicycle has in providing access, as well as the role of informal ride sharing systems in the context of vulnerable neighbourhoods.
- To create more insight into the scale of the problem, it would be interesting to research if in other vulnerable neighbourhoods similar combinations of barriers also appear to hinder residents' capabilities. This could create a more concrete idea of how to solve accessibility issues for particular

sub-groups. Does this combination of at-risk factors which most often appeared in this research also appear to hinder residents' capabilities in other neighbourhoods? And what are the main barriers identified? As well as; can other more often occurring accumulations of accessibility barriers be identified which seems to hamper one's ability to access valued activities?

- This research suspects that there are two groups underrepresented in this study, which could be interesting to target specifically for further research on the causes and consequences of accessibility issues. It appears interesting to focus on the group who generally stays at home more often and the adolescents. For this latter group a lack of trust or a lack of interest to participate in research seemed to play a bigger role in refusing to participate. Further research into other barriers these groups might encounter would give more insight in how to address them. It is suggested to set up this research collaborative with a school or a community center or another trusted party.

Development of Capabilities Approach
The first two of the recommendations are related to problem identification through the Capabilities Approach, the last two are related to the implementation of the Capabilities Approach in policy appraisal.

- The first line of reasoning suggest to further explore to signal problems relevant to transport poverty. Most of these top-down studies focus on distance related measures, vehicle ownership or the lack of movement and therewith try to estimate the exposure to transport poverty (Krabbenborg & Uitbeijerse, 2023). However, these kinds of studies do not take into account the possibility that someone might have willingly stayed at home. Furthermore, these top-down approaches have not yet found a way to integrate conversion factors into their analyses.
- Further empirical studies can experiment with the bottom-up approach to accessibility used in the Capabilities Approach; what is the best form and which questions are best to ask about participants' capabilities? Does an approach exist which makes it easier for people to answer in capabilities (opportunities to access valued activities) than in functionings (achieved access)?
- In order to integrate the Capabilities Approach into transport policy it is required to develop a uniform approach to the various notions, as well as the exact sub-concepts they entail. Currently, different researches use slightly different notions and include different aspects in the key concepts of the Capabilities Approach. What is a resource, a conversion factor, and what categories of conversion factors exist. Specific guidelines should be developed which provide uniform categories for the Capabilities Approach in order to integrate it in policy.
- Moreover, in order to use the Capabilities Approach in traditional appraisal tools there is a need for further development. This includes to find an approach which integrates the findings from the bottom-up approach in general accessibility assessment and appraisal methods. Most important following from this research; the activities as valued by residents, and their different weighing by various sub-groups, identified from the bottom-up approach, should be integrated into the top-down accessibility assessments. For the appraisal of the solutions it is required to develop an idea of how much one unit of enhanced capability is worth. Suggested forms include 'value of capability gains' and the use of a logsum function to assess the persons' ability to reach activities (Nahmias-Biran & Shiftan, 2020).

10.3.2 For policy
Recommendations for policy are primarily focused to create proximity, if feasible, or otherwise to focus on interventions on micro-level. The pilot programmes suggested are based upon the activities as observed in the case study (which showed to have insufficient access). However, they might also have considered value in other vulnerable neighbourhoods if similar types of activities appear to lack access.

- In order to use the top-down approach to assess accessibility, clear objectives are to be developed, which provide a benchmark for when to refer to something as unwanted transport poverty. From a justice perspective, these should not solely focus on distance and time, but also take into account the affordability (price of transport proportionate to income). Taking a sufficientarian perspective, this requires to find a benchmark which provides sufficient levels of accessibility for all to access valued activities, also for the low-income. To create this benchmark, the group of low-income residents should be included to also take into consideration what their perspective of affordable transport is.

- Moreover, a new method for accessibility assessment should be adopted which also takes into account that each sub-group can value different activities, as well as weigh them differently. This asks for an approach which is able to integrate the results gathered through a bottom-up approach (valued activities as perceived by residents) in a more general assessment method, or to develop a complete new method.
- It is recommended that, when the activity under study allows to create proximity, this is considered the most equitable option for low-income households, as it takes away the need for constant travel expenses. Improving the walking environment is assumed to have a positive impact on all age groups and therefore important from an equity perspective. For Bouwlust & Vrederust specific, this includes the straightening of the pavement, as well as to think of additional green infrastructure and a variety of green, also on eye level. Research has shown that green infrastructure has a positive effect on perceived mental and physical health, birth rates and morbidity and could therefore contribute to a positive walking experience. Additionally, various studies provide evidence that this relationship is stronger for people with lower socio-economic status (Dipeolu et al., 2021; Maas & Postma, 2020).
- To enhance access to activities for which public transport connections exist, as was observed for the social activities and service jobs for Bouwlust & Vrederust, it is considered promising to create a pilot programme which offers free tickets to low-income households or low-income earners, to see how this affects their accessibility to valued activities. To effectively address accessibility issues for relevant jobs, this pilot programme should also facilitate public transport at earlier service hours. To create financial feasibility for the service operator, relevant collaborations with employers could be entered into to partially finance these services. This is considered interesting for the area specific, as well as for other vulnerable neighbourhoods.
- To enhance accessibility to activities for which no feasible connection currently exist, it is considered of great value to create a pilot programme for a new service. In order to create a service which is effective in enhancing accessibility, it should include the group designed for: to make the solution suiting to the customs and habits of the particular group. For Bouwlust & Vrederust specific it is therefore advised to create a pilot programme to enhance access to relevant jobs in the Westland. Valuable stakeholders to include are: user's associations/cooperative as well as 'community experts' (such as community centers or voluntary organisations) and relevant employers. A good example is shown by Inclusion (n.d.), who adopted a specific form of co-design to create a bus service in a peri-urban area in Florence for low-income migrant workers.
- This research observed an importance of informal ride sharing systems in providing access for many participants. In the interviews, various informal organisations of ride sharing were expressed: friends, family and colleagues who regularly offered each other rides. This shows that informal ride sharing system (in this neighbourhood and presumably in other vulnerable neighbourhoods) has an important role in providing residents accessibility to valued activities. For the one's dependent upon their social network to access valued activities, this might be the only feasible option to access further destinations. This is recommended to take into account when designing new policy interventions aimed at reducing car access (what equity consequences does it have, primarily for the low income residents?).
- The training of skills and therewith confidence for at-risk groups, is presumed to positively influence their accessibility. Cycling lessons are an often mentioned example. Furthermore, other examples which are assumed to fit the needs of residents are initiative such as MEE Samen (n.d.), which offers help to use public transport or Stichting Digisterker (n.d.) which helps with travel planning. Offering the HTML application in another language than Dutch could also enhance confidence for certain groups of people. This is considered a valuable recommendation, also in other vulnerable neighbourhoods with similar demographic characteristics.
- The previously mentioned point also entails a challenge; residents must be informed effectively of the options and initiatives available to them. Examples include to collaborate with relevant stakeholders: e.g. place flyers at community centers or general practitioners waiting rooms to inform residents on the options available to them.

- Another aspect assumed highly important to reduce transport poverty in vulnerable neighbourhoods is to not only train the skills of the group exposed to accessibility issues but also the help offering side. Examples include; to reduce elderly's feelings of fear to use public transport by training the staff how to handle vulnerable passengers (offer assistance and wait until they are seated before driving). Furthermore, social workers could be trained to offer help to oversee accessibility barriers and help to address them (give them advise on the travel options and initiatives available to them).
- Relevant to the mental barriers observed for adolescents, it is suggests to work together with the education sector or other trusted figures such as social workers or community centers to create a programme for empowerment. The Roots & Shoots foundation by Jane Goodall Institute (n.d.) provides a great example of how adolescents are engaged and asked to come up with a plan which would support their community's needs.

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A

Expert interviews

A.1 Professional experts individuals' mobility experiences

Expert experience

- What is your experience asking participants for their mobility needs?

Research design

- What are important focus points while constructing research that focuses on participants' mobility needs?
- How do you reach participants?
- How do you reach the people that are difficult to reach?
- How do you make sure this is a good representation of the population you are researching?

Content interviews

- What do you ask the participants?
- Are there any specific aspects you need to focus on while asking questions?
- How do you go about these focus points?

From mobility needs to mobility designs

- What frameworks do you use to transform the researched mobility needs into actual solutions?

A.2 Experience experts transport poverty related issues arising in The Hague Southwest

Expert experience

- Can you tell me something about your function as .....?

Types of equity in the Hague South-West

- What types of mobility (equity) issues do you see arising in The Hague South-West and in the area Bouwlust & Vrederust specifically?
- Which of these issues are in your opinion most urgent?
- How is the access to transport for these people?
- How is the access to important activities for these people? Are they sufficiently able to reach them?
- Is transport cheap/expensive for these people?
- To what extend do people feel supported/unsupported to reach their opportunities due to transport options?
- For what type of transport do people regularly choose? Why?

- For what type of transport do people choose little? Why?

Groups that can be distinguished

- To what extend are there certain groups of people that are affected more by transport related issues than other groups in these neighbourhoods?
- Which of these groups is most affected?
- Can this be led back to a specific sub-group (age, gender, ethnicity etc)?

Possible solutions addressing mobility equity issues

- Which possible solution pathways are considered as promising for these specific groups Bouwlust & Vrederust?

Previously conducted studies (optional)

- In the previously conducted participatory studies, how did you reach the participants in the neighbourhoods?
- How can one deal with barriers such as language in these studies?
- What are interesting aspects that are not researched yet in these studies that would be interesting for future research?
- What are points of improvement in these studies?

A.3 Behavioural research experts in-depth interviews (in context of vulnerable neighbourhoods)

Expert experience

- What is your experience conducting in-depth interviews or focus groups?
- What is your experience conducting in-depth interviews or focus groups for this specific target audience?

Research design

- What are important focus points while constructing in-depth interviews?
- How do you reach participants?
- How do you reach the people that are difficult to reach?
- How do you make sure this is a good representation of the population you are researching?
- How can one deal with barriers such as language in these studies?

Content focus groups/interviews

- What are important focus points while asking questions in an in-depth interview?
- How do you ask participants questions without making any suggestions?

A.4 Professional expert creating personas

Expert experience

- What is your experience using quantitative data gathering methods to convert them towards more general conclusions?

Research design

- How do you usually conduct these types of research?
- How do you gather your data?
- How do you reach respondents for these types of research?
- Is there a minimum to the number of respondents you need to gather to create a more general conclusion?
- What types of questions do you generally ask to create persona's?
- Are there specific focus points when conducting this type of research?

Limitations/ missing data current persona's created

- Do you feel there might be certain groups of people that are not included in these analysis?

A.5 Research and professional expert Capabilities Approach and well-being in the transport sector

Expert experience

- Could you tell me a little bit more about your current research concerning the Capabilities Approach?

Value integrating capabilities well-being in transport sector

- Why do you think we need to integrate well-being into the transport sector?
- How do you think we should do this?

Use of Capabilities Approach

- What are the different ways to create insight into the capabilities of people?
- How do you convert disaggregated individual capabilities into aggregated data?
- How do you then use this to form suitable solutions and policy interventions?
- How can we integrate the capabilities approach into traditional evaluation approach or create new evaluation approaches to evaluate the identified solution pathways?

Future steps and challenges Capabilities Approach

- What are the steps that must be taken to integrate the notion of well-being into the transport sector?
- What challenges can be identified adopting the Capabilities Approach in the transport sector?

A.6 Research expert mobility concepts in new housing estates

Expert experience

- Could you tell me a little bit more about your current research concerning mobility concepts for neighbourhoods?
- How does this relate to mobility equity?

Promising concepts countering mobility equity

- Which concepts are according to you opinion might be promising concepts in context of vulnerable neighbourhoods?
- What are the advantages/ disadvantages for these concepts?

Challenges regarding mobility concepts?

- What steps are required (during) the implementation to provide a sustainable mobility concept e.g. to make it work for a broad group of residents?

A.7 Professional expert job accessibility

Expert experience

- Can you tell me something about your function as .....?

Accessibility relevant jobs for residents the Hague Southwest

- To what extend do you feel that accessibility to relevant jobs is an issue in regard to job availability for low-income earners?
- Are relevant jobs for low-income earners in the Hague accessible?
- How do you think the accessibility towards relevant jobs could be improved for the residents in Southwest?

Transport offered

- What mode of transport do people generally use to get to their job?
- Who offers this type of transport?
- What are the advantages/ disadvantages of providing transport this way?

Solutions enhancing job accessibility

- What kind of transport solutions do you think might be suitable in enhancing the accessibility towards relevant jobs for residents in the Hague Southwest?
- Do you think some form of informal shared mobility could provide a feasilbe solution?

B

Participant interviews

B.1 Interview questions

A. Woonplek

1. In welke wijk woont u?
2. Hoelang woont u hier al?
3. Hoe vindt u het om in deze wijk te wonen?

B. Activiteiten, plaatsen en mobiliteit

1. Welke activiteiten buitenshuis doet u zoal, op een dagelijkse/wekelijkse/maandelijkse of incidentele basis?
2. Hoe vaak neemt u deel in deze activiteit?
3. Waar neemt u deel in deze activiteit?
4. Hoe zou u het doel van deze activiteit omschrijven? (sociaal/vrijetijd/functioneel/educatie/werk etc.)
5. Welk vervoersmiddel gebruikt u om bij deze activiteit te komen?
6. Waarom kiest u voor dit vervoersmiddel?
7. Wat voor kennis heeft u nodig voor deze reis? (bijvoorbeeld: kennis van de route, tijdschema's etc.)?
8. Hoeveel tijd kost de reis u? Is dit veel of weinig tijd voor u?
9. Hoeveel geld kost de reis u? Is dit veel of weinig geld voor u?

C. Algemene vragen over mobiliteit en activiteiten

1. Zijn er bepaalde activiteiten die u zou willen bereiken maar dat niet lukt? (Waarom niet?)
2. Zijn er bepaalde vervoersmiddelen die u niet graag gebruikt? (Waarom niet?)
3. Heeft u een auto in uw bezit? Zo nee, heeft u op een andere manier een auto tot uw beschikking?
4. Heeft u een fiets in uw bezit? Zo nee, heeft u op een andere manier een fiets tot uw beschikking?
5. Heeft u nog andere vervoersmiddelen tot uw beschikking?
6. Is het makkelijk voor u om u te verplaatsen? Waarom wel/niet?
7. Denkt u dat het voor anderen makkelijker of moeilijker is om zich te verplaatsen? Waarom?
8. Hoe voelt u zich tijdens het reizen? (comfortabel/oncomfortabel, veilig/onveilig)
9. Wat zou er kunnen worden verbeterd in uw dagelijkse mobiliteit/verplaatsing?
10. Zijn uw totale transport kosten betaalbaar/(te) duur voor u?

D. Geïnterviewde

1. Hoe oud bent u?
2. Wat is uw beroep?
3. Woont u met anderen of alleen?

B.2 Research design

The structure adopted to create the interview questions were aimed at answering different parts of the Capabilities Approach, as described in the methodology chapter 2. An overview of the interview structure, and what questions were aimed at answering what parts of the research are shown in figure 21 beneath. The section underneath will shortly elaborate on how the parts in the figure relate to the questions asked.

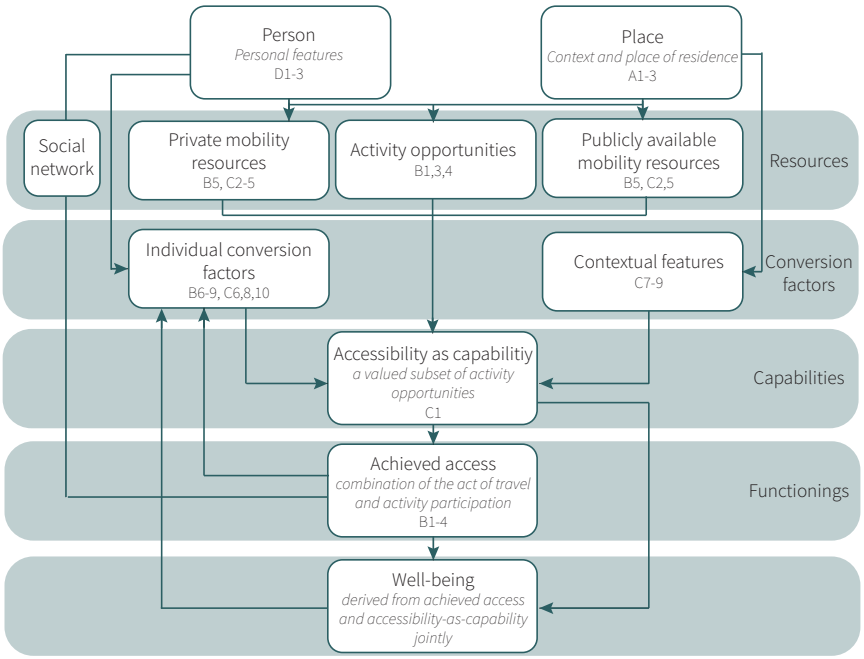

Figure 21: Interview structure based on the research setup by Vecchio (2020) and Vecchio and Martens (2021)

Section A focuses on the neighbourhood, aiming to ease the interviewee into the interview, as well as to possibly already get some interesting information on how the residents perceive the facilities in the area. This relates to the publicly available mobility resources, as well as the contextual features (what are their contextual circumstances). Then, the second section of the questions makes use of the two maps (Google streetview, and an conceptual sketch of the neighbourhood, city and regional level as explained in the methodology section). Section B focuses on: functionings (which activities do residents visit daily/weekly monthly), activity opportunities (which activities do they consider valuable and what are particular characteristics for these activities (e.g. opening hours, location etc.)), private mobility resources (how does private mobility contribute/impede to access this activity), public mobility resources (how does public mobility contribute/impede to access this activity) and individual conversion factors (which non resource related factors impede/contribute to one's ability to access valued activities). Section C primarily focuses on the capabilities by asking the question if there are certain activities which cannot be reached by participants. Furthermore, focuses more on the everyday mobility experiences, to find out if there are any crucial barriers impeding their mobility, and therewith limiting access to valued activities.