Public transport accessibility and Social Participation of the Elders of Amsterdam-Noord

The Experiences of the Elders of Amsterdam-Noord regarding Public Transport Accessibility and the Effect on their Social Life

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1. Introduction

Ageing, tourism, increase of job availability, and expansion of the cities' housing market all leads to more pressure on a city that is already dealing with challenges because of its hectic city center. More people will mean more pressure on the transport system, especially those modes such as the metro, tram, and possibly the bus who are deemed to fit the green future Amsterdam is aiming for (Gemeente Amsterdam, 2020). Public transport in Amsterdam will undergo changes possibly affecting the accessibility of its residents. To avoid social exclusion of elders the city's council must undertake action for them to ensure the mobility autonomy of the elderly which can reduce quality of life because elders are excluded by transport accessibility. This means that they are deprived of the freedom to access public transport whenever they desire (Titheridge, Achuthan, Mackett & Solomon, 2009).

Worldwide the populations of many countries experience an increase of the elderly population creating a skewness in the demographic composition of countries. Currently, in 2023, the Dutch population consists of around 14% elders (individuals aged 65+) and this number is expected to rise to 20% in 2035 (CBS, 2023). Amsterdam is no exception in the ageing process with a growth expectancy from 102.174 in 2021 to 170.600 elders in 2035 (Planbureau voor de Leefomgeving, 2022). Based on demographic prognoses this will mean that the elderly population of Amsterdam will increase with roughly 20% by 2035 compared to 2021. Regarding mobility, elderly people, in general, depend more on public transport as private transport is not always available mainly because of physical and cognitive reasons. These implications are a natural result of ageing, creating a mobility gap between elderly and the rest people the healthy population ages (Shrestha, Millonig, Hounsell, & McDonald, 2017).

Adding on that, in the context of climate measures are taken by the Council of Amsterdam which would also lead to more pressure on public transport. Climate change currently is one of the most salient issues on the political agenda of Amsterdam. One of the ongoing measures is making areas of the city car free to provide its citizens with cleaner air, even though significant impacts on emissions of such zones are rarely found (Gemeente Amsterdam, 2020; Holman, Harrison & Querol, 2015). The amount of traffic flows because of this measure is not expected to decrease, so a change in mobility behavior is needed from its residents. A case study from Salarvandian, Dijst & Helbich (2017) with Teheran as its context shows that people are flexible in changing their mobility behavior under the condition that the infrastructure is sufficient for alternative modes of transport. The policy interventions in Amsterdam will target more use of bikes, walking, and public transport to fit their sustainable goals (Gemeente Amsterdam, 2020). In context of this study public transport will also undergo increases of pressure which likely has consequences for the perceived accessibility of the system by elderly.

In general, the elders make up a relatively small percentage of all the public transport users within The Netherlands, but that small share is explained by two factors: most public transport trips are taken within urban contexts and elders are not commuters anymore (Bakker & Zwaneveld, 2009). 25% of the population rarely takes public transport because of the

availability in rural areas and with most of the elderly population being retired they do not use public transport for such trips anymore (Nabielek & Hamers, 2015). With exact numbers of trips taken by elders in Amsterdam being absent it can be speculated that the number of public transport trips is higher in Amsterdam because of the context and that less elders drive a private car there because of the challenges for this mode of transport in an urban context. Also, it is a fact that increasing age leads to more trips taken in which they are dependent on others (Fatima & Mouridpour, 2019). The combination of these factors the assumption can be made that for autonomous transport in Amsterdam, the older population partly depends on public transport. Studies within other urban environments (Rotterdam and Hong Kong), especially transit-oriented environments, support the claim that elders are more dependent on public transport because of the enabling environmental elements such as extensiveness and accessibility of the system (Shrestha, Millonig, Hounsell & McDonald, 2017; Böcker, van Amen & Helbich, 2017; Wong, Szeto, Yang, Li & Wong, 2017). Amsterdam can also be regarded as a city with an extensive offer of public transport as tram, bus, metro, and boat lines are highly present.

So, it can be assumed that dependency on public transport among the elders of Amsterdam is present. For the group of elders, it is important that getting in a vehicle is safe, the driver is considerate of who is getting in, and walking support such as a walker must get in (Faber, Rook & Nieuwboer, 2021) Adding on that, some elders are dependent on certain modes of public transport, which means that to be mobile that mode of is of crucial importance. With more people expecting to be dependent on public transport in the future, there lays a challenge for Amsterdam to address the accessibility of the system. Striving for a more accessible public transport system for elderly people is important as many depend on it as the last option of autonomous mobility (Böcker, van Amen & Helbich, 2017; Wong, Szeto, Yang, Li & Wong, 2018). With all that prognosed increase of pressure on the system it is likely that accessibility will decline (Gemeente Amsterdam, 2020). More people will make use of the system which possibly affects the perceived accessibility among the elderly because, for example, it can be speculated that less seats are available, which is an important aspect in accessibility for older people (Wong, Szeto, Yang, Li & Wong, 2018). Ageing naturally comes with physical and cognitive decay meaning that elderly more often experience complaints like neck-issues and arthrosis (Shrestha et al., 2017). These constraints create inequality as others (i.e., the younger population) are less restricted physically and cognitively. This means that older people have more trouble functioning in daily life, making them a marginalized group compared to the majority of society (United Nations - Department of Economic and Social Affairs).

Although, the imbalance between older and younger groups regarding physical and cognitive capabilities is common understanding, a more nuanced display of this knowledge is needed. In both the older and younger groups plurality should be recognized. Older people indeed experience more medical issues but it must be said that there are elders with no medical issues at all. For example, it has been found that the groups of 65-74 elderly experience significantly fewer physical complaints compared to the 75+ group even though they are both considered elderly (Titheridge et al., 2009). This plurality in physical and cognitive ability is

explained by differences in lifestyle. Elders who maintain an active physical lifestyle benefit from it by slower decline of physical and cognitive abilities to stay mobility (World Health Organization, 2017). Elderly significantly experiences more travel difficulties compared to younger people (Fatima & Mouridpour, 2019). In general, elders are more constraints by their medical implications than younger ones, which means that they are more vulnerable to transport exclusion. However, elders are still a highly plural group based on medical conditions even though medical issues are more common among them compared to younger groups.

For those elders that do experience physical and cognitive problems it makes them more vulnerable for social isolation because they are less mobile. Less mobility restricts people to go out and about and fulfill their social needs. This evidently leads to elderly who are less mobile being less socially active as they are not capable to, or it just takes too much effort (Fields, Cronley, Mattingly, Murphy & Miller, 2019). This can lead to social exclusion and the outcome of that process could possibly end in mental issues (i.e., depression and loneliness) due to a lack of meaningful social engagement (Nicholson, 2012). Physical issues, thus, could be the starting point of mental issues as well, therefore it is crucial that people are able to keep socially active to prevent them from being saddled up with a combination of issues (Rijksinstituut voor Volksgezondheid en Milieu, 2018). Preventive action should be taken to avoid the negative consequences exclusion has and policy has the power to do that. Interventions who focus on complying with the needs of elderly could allow to stay socially active as the public transport system is accessible for them, so that they can fulfill their social needs autonomously (Haveman et al., 2013).

An authority as the Council of Amsterdam is responsible for its public transport network within its boundaries. Taking care of a public transport network that is accessible to all its citizens is part of that responsibility. To design it as such it is important to map out what constraints its citizens experience as an accessible public transport system can have significant benefits for its users. For elderly such a system could allow them to stay social active by acting as a service to get them to destinations (Titheridge et al., 2009; Banister & Bowling, 2004). Adding on that, the option of autonomous transport is highly important for their wellbeing as a sense of control over their life is maintained (Shrestha et al., 2017). Mapping out constraints that elders encounter in their daily life has proven to be a good way to design effective policy interventions. Research allows to lay bare these subjective needs which could be translated in to focused policy action (Lättman, Friman, & Olsson, 2016; Titheridge et al., 2009; Saif, Zefreh & Torok, 2019). It has been proven that research done in combination with the relevant group is fruitful and shows practical outcomes (Stanley & Stanley, 2017).

For that reason, extending on qualitative research regarding the topic of public transport accessibility for elderly seems supportive of this cause. This type of research provides the outcomes necessary for effective policy making considering the constraints of a marginalized groups which in this case are the elderly of Amsterdam-Noord. Past studies in different urban contexts have proven that subjective perspectives are useful as background information for policy making (Wong, Szeto, Yang, Li & Wong, 2018; van Lierop, D., Eftekhari, J., O'Hara, A., & Grinspun, 2019). Most research done on accessibility is more based on

analyzing implications with the transport system which does improve accessibility, but the specific needs of the users are not considered. Therefore, in the literature there is a call for more qualitative research to explore the needs of specific groups in different contexts (Lättman, Friman, & Olsson, 2016). This type of research is highly context sensitive, so generalization is not the aim. The goal is to provide information on accessibility in the context of Amsterdam(-Noord) for marginalized groups (i.e., elders), which could be used as background information for interventions in the system based on their needs. For the context of Amsterdam, a study of this type seems relevant as the population is ageing and private vehicles are more and more averted from the city center, increasing pressure on other modes of transport like public transport. Also, there is only one study from the Council of Amsterdam that qualitatively, through interviews, researched the needs of the marginalized public transport user (Faber, Rook & Nieuwboer, 2021). The study examined what accessibility constraints are experienced by people who are marginalized by physical or visual issues. Next to that, the research itself states that expansion is needed to people aged 75+. Therefore, it seems necessary develop that study to gain information of the needs of elderly so that policy can be designed according to that because this information is lacking. Using semi-structured interviews with elderly users of the public transport system of Amsterdam this study aims to lay bare their needs regarding transport to provide background information for policy interventions which aim to improve accessibility for the elderly of Amsterdam because there is little information available on this issue (Faber, Rook & Nieuwboer, 2021).

In addition to the scientific relevance, this study is also relevant in social terms providing insights for the improvement of the public transport system of Amsterdam according to the accessible considerations for elderly. As introduced public transport has the potential to keep elderly socially included by giving them autonomy. That autonomy significantly improves the well-being of elderly, making public transport an asset within this causal relation (Fields et al., 2019). Public transport that is deemed highly accessible by the elderly of Amsterdam can facilitate them in their social life, which can improve their wellbeing. To put it in perspective, if public transport is inaccessible to some, they are deprived of the option to autonomously transport which can lead to a discrepancy between realized and longed social contacts (Jehoel-Gijsbers & Vrooman, 2008). Depending on how the individual itself handles the discrepancy, but it has the potential to have negative outcomes of their wellbeing with loneliness being the most prevalent one among elderly (Białobrzeska, 2022).

Hence, this study will pursue to find out about accessibility constraints, what effects they have in daily life, and to what extend elders are being socially included by the public transport system of Amsterdam. The physical and cognitive issues elders deal with more than other groups put them in a marginalized position as they do not experience the same opportunity for mobility. The difference in freedom makes them a marginalized group as they function from a disadvantaged position (Jehoel-Gijsbers & Vrooman, 2008). That marginalized position makes them more vulnerable to transport exclusion because they cannot fulfill their desires through public transport, this can lead to social exclusion as a discrepancy between longed and realized social contact exists (Fields et al., 2019; Lättman, Friman, & Olsson, 2016).

First, a literature review with all relevant concepts will be described, providing a framework for study and its concepts. Following up on that, the methodology will be described by setting out how the concepts will be operationalized to answer the research question, the sample, and the recruitment of the sample. This section also includes a broad justification for the qualitative method used. Furthermore, the result section includes the relevant findings of the study to answer the research questions. Last, the overall conclusion of the study is presented with a discussion on the method, the findings, and future research on the topic.

2. Theoretical Framework

The link between (public) transport, social inclusion and well-being among elderly have been widely researched within the fields of Urban Geography, Social Sciences, Development Studies, and Political Philosophy (Titheridge et al., 2009; Fatima, Moridpour, Saghapour & De Gruyter, 2020; Robeyns, 2006; Wong et al., 2018; Wong, Szeto, Yang, Li & Wong, 2017). This extensive body of research finds that an accessible public transport system is necessary for elderly to support them in their capability to autonomously live their life and avoid transport disadvantage (Luz & Portugal, 2022). Public transport supports them to get to, for example, medical appointments, social events or go shopping (Banister & Bowling, 2004). Getting to those destinations autonomously gives elders a sense of control and with that improve the experienced quality of life. Transport by private vehicle for most elderly has become more challenging as they are struggling with physical constraints which make them incapable to drive by themselves, which shows because car ownership declines as people get older (Shrestha et al., 2017; Centraal Bureau voor de Statistiek, 2020). A public transport system that is inclusive to the needs of elderly can prevent them from being unable to autonomously transport in their daily life. Autonomous transportation also prevents elderly from social isolation and, thus, from social exclusion (Saif, Zefreh & Torok, 2019). For public transport authorities and (local) governments it is of high significance that the system is inclusive for elderly as it could significantly contribute to their quality of life (Shrestha et al., 2017).

2.1 Quality of Life from the The Capabilities Approach lens

The capability approach gained significant attention when Amartya Sen started developing the framework in the 70's of 20th century (Sen, 1979). Later, in the early 2000's, Martha Nussbaum further developed the framework turning it in to a respected framework that assesses people's wellbeing. It used to inform policy making to effectively change the well-being of people through interventions (Luz & Portugal, 2022). The capabilities approach is a theoretical framework with the fundamental principle that wellbeing should be assessed in the freedom people have to lead the life they long for (Robeyns, 2006). Within this study the capabilities approach and its basic principles will provide a theoretical lens through what the role of public transport is in the pursue of the desired life of the elderly of Amsterdam-Noord. Public

transport is treated as a capability because it can be used as a means to a functioning (Robeyns, 2023).

The framework has certain principles which make it distinct from other theoretical framework is that it sees wellbeing in the sense of freedoms and opportunities people must live the life they want (Robeyns, 2005). Other theories perceive wellbeing in terms of resources such as income or happiness. The theory has two crucial moral standpoints which it starts of from: 1) aiming for well-being is of primary importance for an individual and 2) well-being should be seen in personal capabilities and functioning's (Robeyns, I. & Byskov, 2023). Capabilities are what people can do and be and what they can do to make their lives valuable. Examples of capabilities are political liberty, being able to move around freely, or being part of a community (Robeyns, 2005; Pereira, Schwanen & Banister, 2017). Within the theory, capabilities are seen as a means to an end of well-being, meaning that capabilities give the opportunity to undertake meaningful activities, in other words: capabilities give an individual the freedom of opportunity to a, for them, meaningful life (Robeyns, 2005). Capabilities, as explained earlier, are the full set of functionings that are a result of converted resources. Functionings are, as described by Robeyns (2006), "the being and doings of an individual", which are actual ends in the pursue for what the individual deems valuable to their life. For the elders of Amsterdam-Noord this could possibly be autonomous transport, being able to autonomously do groceries, and get to gatherings by themselves (Robeyns, 2006). It is inherent to functionings that they are ends contributing to what makes quality of life high for an individual.

Within the capabilities approach to analyze well-being, four coexisting aspects stand central: resources, the conversion of resources in to functionings, functionings, and capabilities. First, resources are the commodities and good available to a person to pursue individual well-being. These resources depend on individual characteristics and function to achieve well-being. Second, it is assessed to what extend these resources can be converted in personal freedom and how these freedoms are experienced in daily life. Third, functionings are "being and doings" which provides well-being in daily life, such as autonomous transportation. Fourth, capabilities are the freedom and opportunities that individuals have to their disposal to live a meaningful life. Capabilities are a set of freedoms that individuals can choose from to pursue what makes their quality of life high (Luz & Portugal, 2022; Robeyns, I. & Byskov, 2023).

Furthermore, the capabilities approach also considers the local environment to be either restricting or enabling to exercise their capabilities (Pereira, Schwanen & Banister, 2017). The local environment consists of components of the socio-spatial context, such as the local political environment (Luz & Portugal, 2022) The focus within the framework lies on creating an enabling environment in which independence, and thus freedom, is promoted by giving individuals the capability to live the life they want. So, if an individual does not value, for example, political participation the local environment should still enable the freedom of choice to politically participate or not. In this way, the local environment enhances or deprives personal well-being by offering or not offering the choice (Robeyns, 2005; Pereira, Schwanen & Banister, 2017).

As introduced in this section the capability approach is used within this study as a framework which sees public transport as a possible capability and what functionings the elders of Amsterdam-Noord can realize with it. The study broadly consists of two parts in which the first examines to what extend the elderly experience public transport as accessible. Secondly, it is examined what extend public transport provides them the freedom to do what they long for. This could also be reformulated, to fit the framework of the capabilities approach, as to what extend do the elderly experience public transport as capability which allows them to realize their functionings. The aged population are marginalized group in the sense that, in general, their physical and cognitive health is worse than younger group (Jehoel-Gijsbers & Vrooman, 2008). This creates a gap between the older and younger groups in society because of that difference in health. For that reason, elderly also experience more constraints accessing public transport, making it less accessible for them.

The capabilities approach provides a fitting framework for a study of this sense as it recognizes plurality in individual wellbeing. What makes for a good quality of life for a person differs, so perceiving quality of life in terms of capabilities and wellbeing allows for an individual analysis of their capabilities and functionings for a quality of life (Robeyns, I. & Byskov, 2023). Within the study public transport is examined as to what extend public transport is an asset for the elderly to realize their functionings.

It can be expected that public transport is valuable to the elderly for a meaningful life because it is a means to remain their autonomy in daily life, which is found to be important to remain a high quality of life in old age. What makes an individuals' quality of life high can be approached from many directions as it is subjective to what makes the quality of life high for an individual. The concept can be used as a tool to measure well-being of individuals or groups (Fiedler, 2007). The WHO (2012) defines quality of life as followed: *"… as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns."* This definition also recognizes the interaction between the individual and the context (Pereira, Schwanen & Banister, 2017). In line with the capabilities approach this study will perceive quality of life in the sense of the opportunity and freedom to remain a high quality of life according to your own norm. What makes a good quality of life depends on many factors such as age, gender, income, and context (Lukas, 2012). For elderly it has been shown that autonomy, safety, and sense of freedom are important factors for a good life (Titheridge, et al., 2009, Shrestha et al., 2017). Being deprived of these factors, thus, has serious consequences for the quality of life of elderly. The unequal situation because of their age complications makes them a marginalized group. For that reason, it is justified to spend more resources and attention on elders to seek equality (Nussbaum, 2005). An accessible public transport system could contribute to a more equal society by giving elderly the opportunity and choice to move around freely (Lucas, 2012). There are chances for authorities to improve the quality of life of certain groups by addressing the causes of social exclusion. Public policy provides a tool for targeted interventions towards either prevention or tackling of social exclusion and improve quality of life.

2.2 Determining Accessibility of Public Transport

Accessibility of public transport is defined as followed: *"the extent 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)."* (Lättman, Friman, & Olsson, 2016). Basically, transport accessibility means the freedom and ability of people to get to a destination (Albacete, Olaru, Paül & Biermann, 2016). The conventional analysis of public transport accessibility in the literature consists of factors like frequency, reliability, travel time, affordability, and connectivity to other modes of transport (Lättman, Friman, & Olsson, 2016; Saif, Zefreh & Torok, 2019; Manaugh & El-Geneidy, 2012; Shrestha, et al., 2017). These factors measure the accessibility of a public transport within a specific context. Although, there are many variations used within different studies, these factors all consist of a partly analysis of the system (Lättman, Friman, & Olsson, 2016; Albacete, Olaru, Paül & Biermann, 2016). For instance, practical measurement of these factors consists of number of transits stops, being able to change within proximity, trains arriving on time, fare prices.

For the aged population transport accessibility is of vital importance as they use it more than younger because of reliance on out-home activities. Adding on that, elderly rely more on public transport because of private transport in many cases is not possible anymore due to physical and cognitive limitations (Fatima & Moridpour, 2019). These limitations also make that the elderly have different needs regarding public transport accessibility compared to more abled groups in society. It has been found that 39% of the age group of 75+ experience travel difficulties, where only 4% of the 65- group experiences those difficulties (Fatima & Moridpour, 2019). This proves that physical and cognitive decline significantly affects one's travel patterns (Linchuan & Xu, 2020). The main challenges for the aged are vehicle design, frequency, walking distance to stops and costs (Fatima, et al., 2020). All these factors are related to difficulties in functioning because of old age. Vehicle design can pose problems because of step-ins who are too high, no ramps to get in or no place to stall walkers. Also, frequency of arriving times is important as elderly have no mobile technology on them to check times, so they rely on, for example, the bus to come frequently and not have an unreasonable waiting time. Furthermore, it is evident that long walking distances with physical complications is undoable and frequent travel with public transport adds up the costs (Fatima, et al., 2020). Individual characteristics are important determinants in whether someone perceives public transport as accessible. Needs, preferences, and abilities differ between person, especially for elderly who experience increasing problems with hearing, seeing, and moving compared to 'normal people' (Shrestha et al., 2017). What a normal person deems a highly accessible public transport system could in the experience of an older person not be accessible at all.

Measuring public transport accessibility is useful for both public transport agencies and local authorities having the power to change accessibility issues. This, in turn, is beneficial for its users as the system improves in accessibility if done right. For authorities it is important that the cost of reaching a destination (i.e., distance, time, and monetary costs) is as low as possible to make the system as accessible as possible for its users (Albacete, Olaru, Paül & Biermann,

2016). Measuring the quality and the quantity of the service provided is measured with this method and is, indeed useful to lay bare flaws and design policy interventions for improvement.

However, within the literature a consensus exists in which the objective measure falls short in improving accessibility for certain groups. The measure does not consider subjective experience of public transport users meaning that personal needs and constraints are not considered. Therefore, marginalized groups are not considered while they do need more specified measures to make public transport more accessible for them (Lättman, Friman, & Olsson, 2016; Titheridge et al., 2009; Saif, Zefreh & Torok, 2019). The suggestion is that the measurement public transport accessibility should be expanded to a more qualitative approach. Not only does the objective measure do not consider personal needs, it also is more focused on the analysis of the system itself rather than the people using the system. Knowing the problems with the system from your customers allows for a more specified approach to accessibility constraints. It has been proven that including the targeted group for a specific policy leads to more effective policy interventions (Saif, Zefreh & Torok, 2019; Stanley & Stanley, 2017). In the literature there is a call for a more person-based analysis expanding to perceived accessibility in which persons can indicate to what extend public transport is satisfactory for them personally (Lättman, Friman, & Olsson, 2016; Saif, Zefreh & Torok, 2019). As introduced public transport has a significant impact on one's quality of life as it grants independence to move around (Fatima et al., 2020). A more person-based analysis of a public transport has the value that it collects insights in constraints the users run in to. Especially for socially deprived groups like elderly qualitative insights into their needs for a more accessible public transport system are fruitful (Titheridge et al., 2009).

2.3 The Elderly Population, Social Exclusion, and its Effects

To start off it is important to conceptualize social exclusion, what it factors consist of and what influences it. Social exclusion is a process in which groups are marginalized from participating in political, and/or social life (Jehoel-Gijsbers & Vrooman, 2008). So, social exclusion is a consequence of unequal opportunity for social participation which could be rooted in many causes. Some groups are more vulnerable than others when it comes to exclusion. Due to limitations caused by, for example, income, education level or physical mobility may withhold people from full participation and if an individual feels so, socially exclude them. Determining whether an individual is socially excluded is complicated as some people may seem because of the indicators but they themselves do not feel excluded (Jehoel-Gijsbers & Vrooman, 2008). The subjectiveness of the concept makes it hard to determine whether someone is socially excluded or not. Social exclusion is more seen as a process and a concept than an actual mental state. The concept should more be seen as a mediator between risk factors and ends who are considered mental states, such as loneliness, low self-esteem, and social anxiety (Leary, 1990). It is within human nature to seek out selected groups from which individuals want to be part of and if this need is not met one could be deemed socially excluded with all the consequences mentioned earlier (Leary, 1990). Risk-factors for social exclusion, more specifically for elderly,

could be the loss of a spouse, being less mobile, and decline of physical and/or cognitive health (Fields et al., 2019; Lättman, Friman, & Olsson, 2016). These examples of risk-factors are more common under elderly compared to other groups making them unequally vulnerable to social exclusion. Social exclusion is not an entity in itself but more a mediator between risk-factor(s) and negative outcomes for quality of life (Fields et al., 2019).

Whether someone perceives themselves as socially excluded all depends on what they expect from social relations. If a discrepancy between the expected and actual social relationships exists, this may lead to one feeling excluded. It also important for an individual that social bonds exist within groups one wants to be part of, meaning that people are selective of the people meaningful bonds could exist with (Leary, 1990). When these feelings of social longing are not met, it is likely that an individual can be considered excluded and experience negative consequences. However, there is, thus, a difference between individuals whether they feel excluded. This all depends on what a person's norm is, which are activities deemed 'normal' (Titheridge et al., 2009). For a person going out every day to social gatherings could be the norm. Objectively it could be said that the first person is not socially excluded but whenever the norm is not reached, he or she may subjectively feel as though they are excluded. For example, elders have lower standards compared to less disadvantaged groups because they are aware of their weaknesses.

The elderly being marginalized is the result of the natural ageing process. The physical and cognitive decline limit them in daily functioning making full social participation more challenging. Decline of vision, hearing, physical and cognitive capabilities are impairments more regular at old age (Shrestha et al., 2017). The occurrence of these complications for elderly makes them unequally vulnerable to transport exclusion. Adding on that, the elders are more depended on public transport as private transport is often not possible due to medical implications. This is especially true for the group of 75+ as medical issues drastically grow around this age (Titheridge, Achuthan, Mackett & Solomon, 2009). Being deprived of private transport, public transport often is the only alternative for autonomous transport. Public transport, thus, plays an important part in the social inclusion/exclusion of elders.

As a result of this vulnerability to transport exclusion there is a higher occurrence found within the group of elderly in mental issues, such as loneliness, social anxiety, depression, and low self-esteem. There is no clear causal direction found within the literature as social anxious persons tend to be more lonely, socially excluded individuals tend to be more depressed, and so on (Leary, 1999; Svendsen, 2017). All these factors have serious impact on the well-being and quality of life of elderly. For that reason, it is important to address social exclusion for better understanding of the concept which provides clearer insights in the causes. For older people the ability to autonomously get to social gatherings, medical appointments and grocery is important for a high quality of life (Rosenbloom 1988). For elders it provides a sense of independence to maintain social connections and engage in meaningful activities (Titheridge, et al., 2009). Public transport potentially plays a big part in this autonomy as it is their only option for mobility. Getting about autonomously is mainly used for maintaining social bonds and prevent social exclusion. Public transport, therefore, has an important function in

maintaining autonomy and sense of control and, therefore, it is of significant important to maintain a high quality of life (Fiedler, 2007).

2.4 Policy of the Council of Amsterdam on Public Transport Accessibility

Transport related social exclusion of marginalized groups such as elders needs more recognition from the policy makers of Amsterdam because only one study exists till this day (Faber, Rook & Nieuwboer, 2021). It is recognized but attention on the topic is minimal in major policy documents of the council (Faber, Rook en Nieuwboer, 2021; Kuik, Beuckens, Van Hees & Van der Veur, 2013; Gemeente Amsterdam, 2020). The common way of intervening is through accessibility planning, which means that interventions are directed towards making the transport system more accessible and, therefore, more inclusive. In general, policy action is more geared towards a universal improvement of accessibility rather than targeted interventions for marginalized groups, which has been found valuable in other contexts (Lucas, 2012; Stanley & Stanley, 2017). The municipality of Amsterdam also has a more universal approach in accessibility planning with very few studies on the needs of marginalized groups (Faber, Rook en Nieuwboer, 2021). The municipality does recognize that demand for public transport is going to grow in the near future. The prognose now is that the population will grow, tourism will be extending even further, and there will be more jobs available within the city. The population growth in combination with policy that targets the use of other modes than the car is expected to create increased pressure on the system as more people will you use it daily because car trips are being replaced by public transport trips (Gemeente Amsterdam, 2020). Car rides have decreased over the past thirty years mostly replaced by bike trips. This is possibly due to the bicycle-oriented policy handled over the past years by the municipality of Amsterdam. Parking costs, emission tax, and planned emission free zones are examples of policy interventions causing this mode of transport shift. With the car being heavily restricted by the local authority, public transport offers a good replacement for leisure, work-home, and tourist trips (Gemeente Amsterdam, 2020).

Although, the municipality of Amsterdam does recognize that this increase in demand calls for policy action to increase the accessibility of the public transport network of the city as the infrastructure should be adjusted to the increase of users. Currently, the planned interventions of the Council of Amsterdam are more geared towards system-based improvements (Faber, Rook en Nieuwboer, 2021; Kuik, Beuckens, Van Hees & Van der Veur, 2013; Gemeente Amsterdam, 2020). As discussed earlier the call in the literature is more towards a person-based approach as more focused policy interventions could be done (Saif, Zefreh & Torok, 2019; Stanley & Stanley, 2017). The policy documents lack the goal of including marginalized groups in many of its policy documents. There is little mention of such groups in the policy and research documents while their needs are important to be acknowledged (Kuik et al., 2013). In the vision on mobility document published by the Kuik et al (2013) the future of mobility until 2030 is described. While the increase of demand and mode shift are acknowledged and goals are oriented towards it, marginalized groups as handicapped or

elderly are not mentioned specifically. Goals are mainly focused on improving the transport system itself rather than complying it with the needs of its users. While the improvement will make the transport system more accessible for its users, the existing problems with accessibility for marginalized groups are not dealt with. In the open research department of the municipality there is only one study on vulnerable users' needs. This study by Faber, Rook & Nieuwboer (2021) seeks insight in the needs of vulnerable groups like elderly and physically disabled, done through the proposed subjective measure (Saif, Zefreh & Torok, 2019; Stanley & Stanley, 2017). The study clearly laid bare the problems restricting accessibility, such as non-working elevators, unsafe waiting spots, and unfriendly staff but active policy action on these findings is thin (Faber, Rook en Nieuwboer, 2021; Kuik, Beuckens, Van Hees & Van der Veur, 2013; Gemeente Amsterdam, 2020). Improving the system based on these findings not only will make it more accessible for the marginalized groups but also for its other users, improving the systems accessibility in its whole. For the municipality it would be fruitful to collect more information from studies exerting the subjective needs of its users to improve the accessibility of public transport within the city. It will contribute to dealing with the increased demand and create an accessible public transport system that includes all its citizens.

2.5 Research questions

The discussed approaches and context suggest that elderly potentially could suffer or being in a marginalized position within the society in mobility terms leading to a vulnerable situation in which the quality of life could be at risk. An accessible public transport has the potential to socially include them because they can get to appointments and social events and other activities which is an important part, especially for elderly, for a high quality of life. Therefore, it is important to find out what constraints the elderly of Amsterdam-Noord experience in accessing the public transport system because it lays bare flaws of the system. The main question regarding the study is as followed: *do the elderly of Amsterdam-Noord experience any consequences for their quality of life due to inaccessible public transport?* The question consists of public transport accessibility part and an additional part of possible consequences of inaccessible public transport. The first part will be addressed with the following sub-question: *what accessibility constraints do the elderly people of Amsterdam-Noord experience in accessing public transport?* Adding on this question it is important to find out how depended the elders are on maintaining a high quality of life through public transport use. This will be done based on the following sub-question: *do the elderly of Amsterdam-Noord consider public transport as a valuable means in the prevention of social exclusion and maintain a high quality of life?*

3. Methodology

The relevant concepts posed in the research question will be examined following a qualitative method. Gathering data to provide a sufficient answer on the research question has been done through semi-structured interviews with a small sample of elderly who all long-term residents of Amsterdam-Noord were. Most of the elderly were above the age of 75 (82.3%) which is an important detail to mention for the study because they tend to have more physical and cognitive issues compared to their elderly peers within the age range of 65 to 74 (Stanley & Stanley, 2017).

3.1 Semi-structured Interviews as a Method

Semi-structured interviews were chosen as the main source of data collection as it was deemed the best fit to answer the research question. For justification of chosen method, the book Qualitative Research Methods by Tracy (2013) was used. The book is originally designed as a guide for qualitative methods in social sciences, but the book is also relevant for this geographical study as the qualitative method used overlaps between the two sciences, the topic could both be studied in social sciences as in geosciences. The central themes of the study are the constraints the elderly of Amsterdam-Noord experience in accessing public transport and if public transport is supportive in leading the longed social life. These are all subjective experiences, which interviews are an appropriate method to identify those constraints. In the literature on the topic itself there is also a call for more qualitative research as these subjective experiences may be more helpful for development of the public transport system, rather than surveys in which people point out flaws based on their subjective experience (Lättman, Friman, & Olsson, 2016; Titheridge et al., 2009; Saif, Zefreh & Torok, 2019). The person-based analysis is considered more effective to increase awareness on the constraint's certain groups experience in their daily commutes. Interviews allow the researcher to delve deeper into the topic to find out more thoroughly about the issues regarding the topic. Interviews are a useful way to gain a more in-depth understanding of the subjective experience of the interviewee. The semi-structured interview is the appropriate method as it leaves occasion for different directions within the interviews because every interview is unique as the experience is personal (Brounéus, 2011). The goal of the interviews is to gain understanding of the experiences and opinions on the public transport system of Amsterdam(-Noord) (Tracy, 2013).

In the end, 10 semi-structured interviews and a group interview were conducted in which the elderly of Amsterdam-Noord were asked to share their experience and opinions on the accessibility of the public transport system itself and how important it is for them, personally, to maintain a high quality of life. First, they were questioned on the topic of accessibility and more specific on the problems regarding accessibility. The goal was to collect personal stories and find general topics in those stories to present as general experienced constraints. Second, the part on quality of life is indirectly assessed by questions regarding social exclusion and the role of public transport within that process. Social exclusion is seen as a process and not so

much as a concrete ending of means, which asks for measurement of its characteristics: a discrepancy in longed and realized social contact and negative experienced outcomes of that discrepancy (Jehoel-Gijsbers & Vrooman, 2008). The last part of the interview contained a part on the M52-line. Beforehand, it was assumed that the opening of the line led to changes in the public transport system, which called for made the topic interesting to include in the interviews.

All the interviews were conducted in Dutch which is the native language of both the researcher and the participant. The interviews took place within a time frame of 15 to 25 minutes which was shorter than originally planned. On multiple occasions impatience was noticed with participants. This triggered to work towards the ending of the interview as answers were getting shorter and less relevant because the participant felt, from the researcher's perspective, that everything was already said. The data gathered in the interviews did seem sufficient in the analysis and a point of saturation was reached as much of the experiences shared by the participants consisted generally of an overlapping theme. Next to the semi-structured interviews, a group interview was conducted including 10 participants. The group interview took around 40-minutes to conduct in which actual data was recorded which consisted of the same topics who were discussed in the 10 one-on-one interviews. Planning did not go further than the face-to-face interviews and just went as far as the topic introduced briefly upon recruitment. In the interview consisted of the same topics which were discussed in the face-to-face interviews.

3.2 Sample

Recruitment of participant was done by contacting several institutions who could possibly serve as a mediator between possible interview participants. To fit within the study's parameter purposeful sampling was done, meaning that only elderly (65+) from Amsterdam-
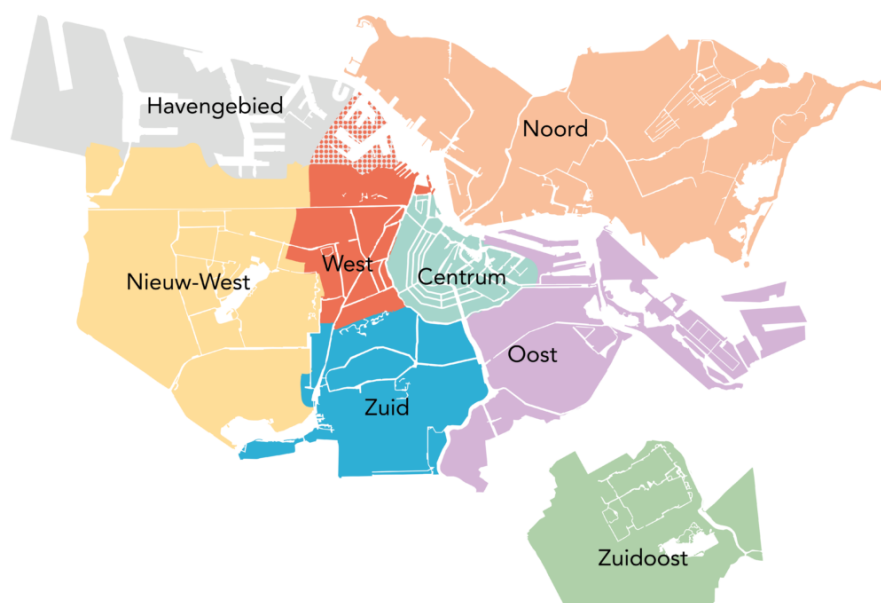

Image 1: Map of All Parts of Amsterdam. Source: Gemeente Amsterdam

Noord (Figure 1, Orange Part), who use or were users of public transport could be eligible for recruitment (Tracy, 2013). After reaching out to multiple institutions who are active within Amsterdam-Noord and have close ties to groups of elders, *Buurtteam Molenwijk* en *Buurtteam De Banne* were both helpful in the sense that they found possible participants themselves or they provided leads for me to find possible participants. The institutions were contacted because they are a central point within the community of all the five neighborhoods of Amsterdam-Noord. Both institutions provide social work done from a community center which each neighborhood of Amsterdam has one. There social network provided potential to find suitable participants and the formerly named community center proved this potential. *Buurtteam Molenwijk* recruited elderly for me whom I interviewed in the community center and linked me through to a contact person who recruited elderly for me from her apartment block. In the end, five people were interviewed in the community center and the group interview was conducted with elders who all lived in the same apartment building. The contact for the group interview was received through an employee of *Buurtteam Molenwijk*. The other five interview participants were recruited through a tip of an employee of *Buurteam De Banne*. Every Tuesday morning elders from the like eponymous named neighborhood came together for coffee. Two visits to social gatherings of the Elderly from *De Banne* were enough to recruit the remaining five interview participants. The group of all the interview participants consisted of 17 elderly who all had experience with public transport within the relevant context. In table 1 an overview of the participants is presented.

Variables	N	Percentage
Sex		
Male	1	5.9%
Female	16	94.1%
Age		
65-74	3	17.7%
75+	14	82.3%
Frequency of Use		
Used to Use	2	11.8%
Uses Now and Then	10	58.8%
Frequent Use	5	29.4%
M52 use		
Yes	7	40.2%
No	10	58.8%
	17	

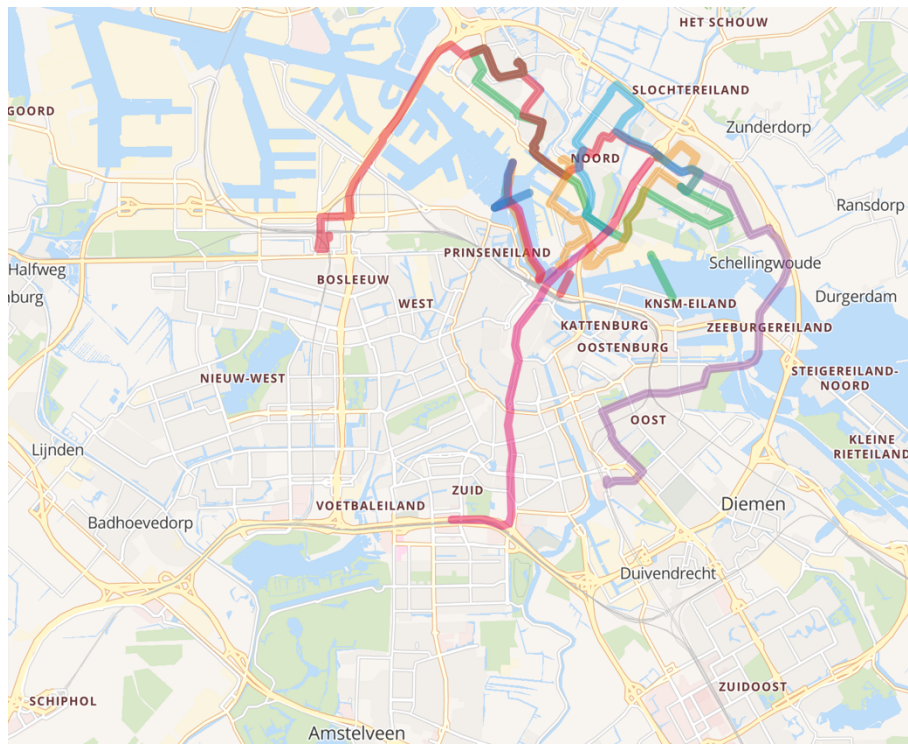*Table 1: Descriptives of Interview Participants*

Image 2: Map of All PT-Lines from and to Amsterdam-Noord. Source: Gemeente Vervoer Bedrijf, 2023

3.3 Amsterdam-Noord as a Context

The context of Amsterdam-Noord is interesting regarding public transport because it is divided with the rest of the city by the river 'T IJ. This used to be a challenge since either a pond over the river or tunnels under the river had to be taken to get to the city center and the rest of the city. But, in 2018 the metro line 52 opened and allowed users another, convenient, and fast mode of transport (*Image 2: Pink line*). To find out about the M52-line, preferably the group also consisted of a mix of users and non-users which ended up being so. Elders as a group are more challenging for recruitment because they are hard to reach online, so meeting them in person at a certain time and place is crucial. Most participants were recruited through the phenomenon of snowball sampling in which participants used their social network to bring others in contact with the researcher who fit the study's criteria (Tracy, 2013).

Geographically speaking there are two main locations from which the participants had their outlook, those being *De Banne* and the *Molenwijk*. The two different locations provided a slightly different outlook on the accessibility of the public transport system because connectivity to the rest of the cities' system was different. On *image 3* the bus stops for the interview participants from *De Banne* are seen from which only *Statenjachtstraat* was accessible by foot. On image 4, the more extensive network in *Molenwijk* is seen, from which only the bus stop *Molenwijk* was accessible by foot. The locations also showed similarities in their relations to the public transport system. Both neighborhoods had an above average population of elderly (as noticed by researcher and mentioned by interview participant, data unavailable) and bus stops were in relatively close proximity of their residential places.
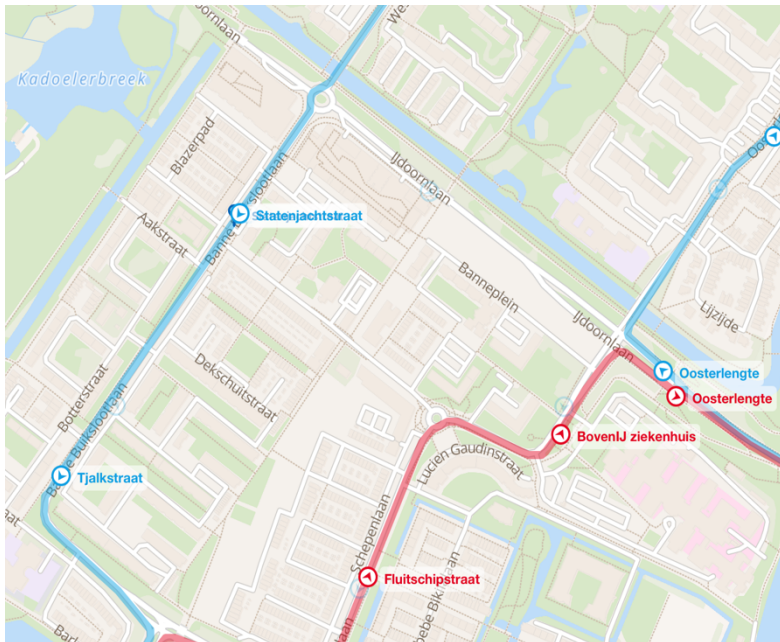
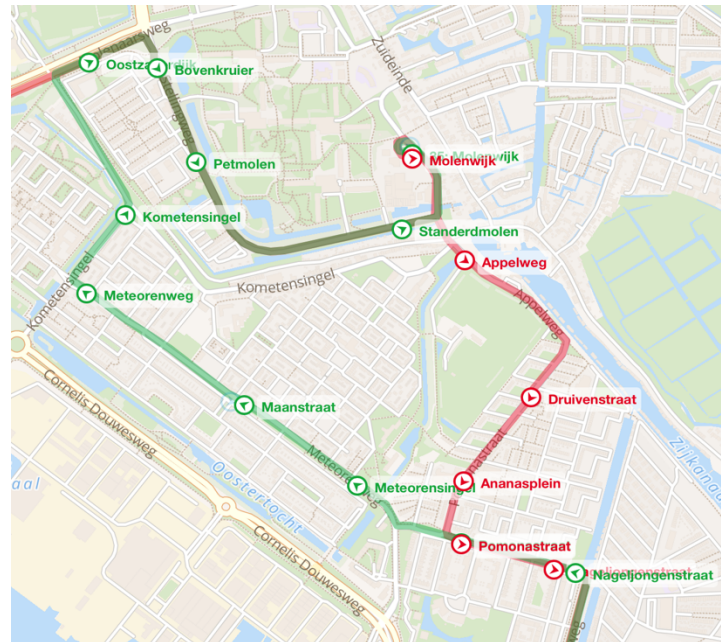*Image 3: Bus stops, De Banne. Source: Gemeente Vervoerbedrijf, 2023.*

Image 4: Bus stops, Molenwijk. Source: Gemeente Vervoerbedrijf, 2023.

Relatively is explicitly mentioned because the elderly all had below average physical capabilities meaning that walking was more challenging for them compared to younger age groups.

3.4 Concepts in the Interviews

All the interviews were built upon two main topics: public transport accessibility and social inclusion/exclusion. Beforehand a topic list was constructed to serve as guide during the interviews in which the two parts are clearly distinct. The full topic list used during the interviews is included in the appendix, which functioned as a guide during the interviews. All interviews started off with a broad question and from there on the interview questions narrowed down based on the information provided by the participant.

All the topics on the list were derived from the theoretical framework to ensure the relevant concepts were measured in the interviews and roughly consisted of three parts in which the semi-structured design allowed for detours. 1) The part on public transport accessibility mostly started with the question: do you experience any constraints in accessing public transport in Amsterdam-Noord? And from there on the interview was narrowed down touching on topics as land-design, vehicle design, connectivity, frequency, and the price of the system. As presented in the theoretical framework these are components of accessible public transport. 2) Within this topic a more specific topic was touched upon as well: the M52-line. The metro line, build in 2018, provided a new fast link to the city center, therefore it was interesting to examine how the participants viewed the line as they can provide a before and after perspective. 3) With the part on public transport accessibility done, social exclusion was examined which most of the time started with the following question: to what extend is public transport satisfactory in supporting your social life? From there on the same narrowing down principle was applied. Social exclusion and inclusion are hard to mention straight forward as it is recognized as process, not something static which can easily be said by the interviewees.

Therefore, components of the concept quality of life such as autonomy, dependency on others, and social engagement with peers were used as a proxy to social inclusion or exclusion. It was not a goal to determine whether the elderly of Amsterdam-Noord was or were not socially excluded but rather to find out the importance of public transport within the process. An accessible public transport system is seen, within this study, as a capability provided to elderly to remain a high quality of life.

3.5 Data-analysis

After all the data was recorded transcript were made from the audio recordings of the interviews. The transcripts were coded in Atlas.TI from which the codebook is built upon (Appendix). The transcripts were coded in an iterative process which meant that the coding list was changed until the last interview because new relevant codes were discovered or put under the same 'parent' code. The process of coding consisted of two levels as recommended by Tracy (2013) in chapter 9. The two-levels are recommended at it secures to remain the link between the dualistic levels, with more than two levels it is more challenging to remain the link between the first level and the levels underneath the second. The first level is more explorative and is useful for the research to find out what the data consists of. In this first round of coding, it is crucial to mention that there is no meaning assigned to the data yet. The first phase should be seen as explorative without the interpreter already interpreting, this is solely done in the second round of coding (Tracy, 2013). The second level codes are bound to interpretation and linked to the relevant concepts. From this round the code book is constructed, which functions as an overview of the codes. The result of the second level codes is the eventual product from which results regarding the research can be derived. Now the codes give actual meaning and form the basis of the story told by the participants interpreted, as objectively as possible, by the researcher (Tracy, 2013).

3.6 Ethical Consideration

To ensure that the data was gathered in an ethical way a few measures were taken before conducting the interviews. First, the goal and purpose of the study was made clear to ensure transparency for the participant to know what they are participating in. Most of the time it was noticed that the people had hope that it would lead to actual policy intervention but regarding the means available it was made clear that it would be challenging to realize that wish. It is important to avoid misleading the participant, even if it means to disappoint at some times. With this, as a researcher, you avoid deception and avoid doing harm as the participant was transparently informed. Based on the clear information, a verbal informed consent was given by the participant and before starting the recording all privacy and anonymity was ensured. It is important preliminary to the data gathering because it ensures a trustful relationship between the researcher and the participant. This relationship leads to "better" data, as it is made sure that the participants feel safer in sharing their experience because of the trust. In

the end, it is beneficial for both the researcher and the participant to consider ethics in the study.

4. Results

The process of data gathering showed the usefulness of the proposed method switch from system-based to person-based because the findings, mostly, are relevant for elderly because of the constraints they experience due to old age (Lättman, Friman, & Olsson, 2016; Titheridge et al., 2009). In this process data was gathered with the goal to come to a better understanding regarding the topic present in the research questions. The main research question consists of a part on public transport accessibility and a part on to what extend public transport is a means for a fulfilling social life. The two parts were formulated in to two sub questions in which the first examined what accessibility constraints are experienced by the elders of Amsterdam-Noord. The second, studied if public transport is a means to maintain a fulfilling social life, in other words: how important public transport is to maintain a high quality of life. For both sub questions sufficient answers were found, proving proper insights into the concept based on the experience of the elders of Amsterdam-Noord. The accessibility constraints experienced by the elderly of Amsterdam-Noord do have an impact on their quality of life because some of them long for social contact than they can realize now. Public transport for most of them is the only option for autonomous transport, which constraints them if it is not perceived as accessible for them. An extensive description of the findings regarding all three questions if presented in this section. The section starts off with sub question one which describes the perceived accessibility constraints, further on the link between public transport constraints and the impact on their quality of life will be described, last the findings of both sub-questions will be used to an all enhancing answer regarding the main research question.

4.1 Accessibility of the Public Transport system of Amsterdam-Noord

4.1.1 Accessibility Constraints in the Experience of the Elderly

Regarding accessibility constraints the elders of Amsterdam-Noord almost unanimously agreed on three constraints they experience in accessing public transport: 1) the bad connectivity of the system made public transport less accessible because it was physically challenging. 2) the combination of bad land- and vehicle design made public transport inaccessible in their experience because getting in and out of the bus was a challenge. 3) the alertness of the driver over whom gets in the bus made it highly inaccessible for the elderly because they felt unsafe.

The problems regarding connectivity arose when the M52-line, also referred to as the *Noord-Zuid lijn* (North-South line), opened in 2018. Many bus lines were rerouted to connect with the metro line leading to significant changes in the bus system of Amsterdam-Noord. The

line was built to provide a fast link from the north to the rest of the city which always had been a challenge because of the geographical divide by water of the two parts. *Image 3* shows the rerouting and how all the lines connect to the two metro stations located in Amsterdam-Noord. The vision of the Council of Amsterdam was to make the metro the main mode of transport of
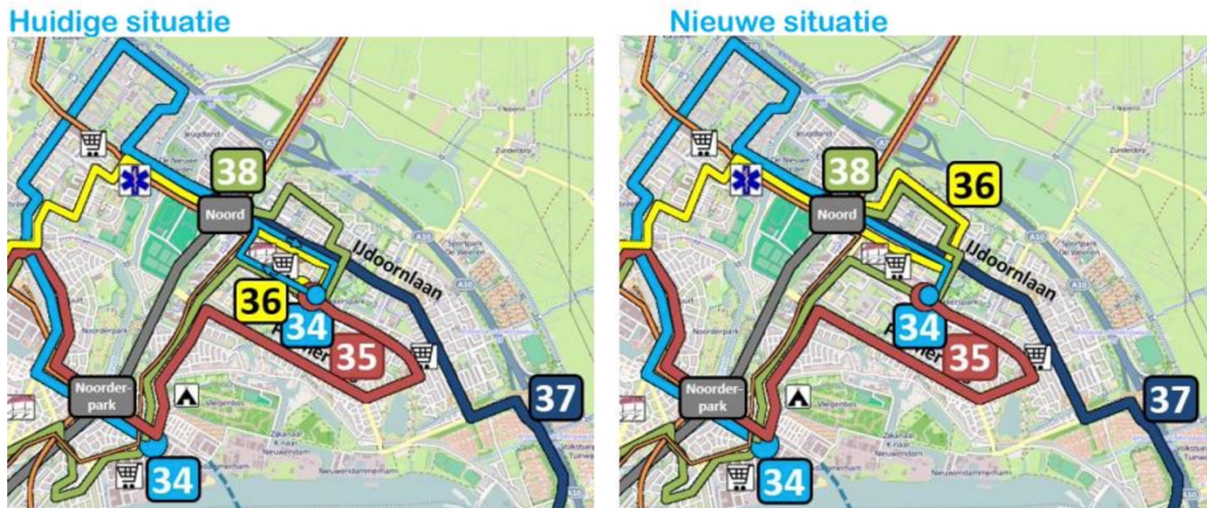
Image 3: Changes in the System of Amsterdam-Noord as of 2019. Source: Van Bers, 2019

the system and for that reason all other modes of public transport were changed to connect with the metro system (Van Bers, 2019). Even though the metro is recognized by the elders of Amsterdam-Noord as an efficient mode of transport, it did pose problems for some. The elders with physical problems reported that changing is uncomfortable and challenging because of those health issues. For those with physical issues, it was important that bus lines take them directly to the location or to a main hub to change once and then arrive at location. The changes because of the M52-line resulted in more changing from mode-to-mode making public transport less accessible in comparison to the situation before in the experience of the elders.

"To the [central] station it is a disaster because you must catch [bus] line 34 to the Noord-Zuid lijn, it was not like that before. Everyone here misses the bus that went directly to the central station." (Participant of group interview).[1]

The differences between those interview participants who were physically capable and those who were not was reoccurring constantly during the interviews. The physically unable elders experienced significantly more constraints than those who did not have any health issues. The physically capable elders did report little constraints because their physical capability did not pose any problems for accessibility such as entering and existing a bus.

For the elders with significant physical issues, getting in and out of a bus did pose problems. This brings us to the next accessibility constraints many elders experienced which is insufficient land- and vehicle design. This constraint merely revolves around the bus, so not the

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[1] Quotes are translated from Dutch to English with the goal to provide the essential message stated by the participant.

tram and the metro. The two designs cannot be seen exclusively from each other as they can either complement or disrupt each other for accessibility. The land can be designed in such a way that it aligns with the bus entry, or the vehicle can be lowered so it aligns with the bus stop. The elders specified that it is challenging to get in the bus because this alignment from bus stop and entry is not always present. This is a challenge because their physical health makes it hard to cover a short step into the bus. Moreover, those elders who were depended on their walker to get around by foot reported that it caused another problem, next to getting themselves in the bus their walker also had to get in. Without the help of other passenger this caused serious constraints in accessing the public transport system. For some it got harder when the walker was loaded up with, for example, groceries. The extra weight meant that it was even more challenging for them to get on the bus causing major accessibility constraints.

"Empty it is no problem, but with filled up with groceries it does become a problem, then you are not strong enough" (Interview participant 6)

Many participants stated that every bus can lower which does not always align perfectly with the bus stop, but it is surely less of a challenge to get in. Many of the platforms which the bus arrives upon were not designed in a way that it aligned with the entry and when this was the case not the bus driver, regularly, did not lower which meant it got closer to the platform. Designing stops so that physically less capable elders with or without walkers can easily get it is of such importance for their perceived accessibility of the system that it becomes a matter of taking or not taking public transport. Making sure that all the stops and busses are aligned on the same height when people get in increases the accessibility of the Amsterdam's public transport system significantly.

"You know what they can do? They can lower the bus, but they won't. Put it low so that people can get off" (Participant of group interview)

The last major accessibility constraint which reoccurred a lot in the interviews was the alertness of the driver over who get in and out of the bus. Lowering the bus when an elderly person enters or exists is one side of the experienced constraints but waiting for elder to be seated before taking off was even more important for them. Getting into a bus for elderly is much more of a challenge in comparison to younger people with no physical constraints, especially for those who walk with a walker. To sketch the situation: an elderly gets into a bus, checks in, and looks for place to sit. In this process the elderly is a slow compared to younger individuals and for them it is important to sit before the driver takes off because it causes a blow which elderly cannot handle which may cause them to fall.

"To me it is very important that they pay attention to who gets in the bus." (Interview participant 1)

The quote illustrates that drivers must be alert on who gets for the system to be accessible in the experience of interviewed elders. This factor of accessibility is of such importance for some elderly that they stopped taking public transport because of feeling of (possible) unsafety. This fear comes from the fact that it may have serious consequences for their physical health if they do come to fall due to the kick they get when the driver takes off. It must be said that all the participant who had this experience also recognized that not all the bus drivers were inconsiderate of their passengers. Some were even so considerate of their elderly passengers that they ordered younger passengers to get up and give up the seat to the elderly person. Apparently, this is not a convention in the Amsterdam public transport, multiple participants called the system unsocial in comparison to the behavior of other users in neighboring villages. All the drivers being alert of those problems that arise for older people may significantly increase the accessibility in their experience.

So, regarding the sub question on public transport accessibility connectivity, land/vehicle design, and the alertness of the driver pose the major constraints for the elders of Amsterdam-Noord in accessing public transport. There was a consensus among the participants that these three were the most common constraints based on own experience or experiences of other elderly from their social network. The constraints described in this section give a clear picture of constraints for elderly in the context of Amsterdam(-Noord). Physical complications have proven to be a major pre-determinant for these accessibility constraints as those who are physically capable do not experience these constraints.

4.1.2   Additional Public Transport for Elders in Amsterdam-Noord: The RMC

Adding on the conventional modes of public transport within the city of Amsterdam, the RMC provides an additional mode of transport exclusively available for elders from the age of 75. This mode is a door-to-door mode offered by the Council of Amsterdam with a limited number of kilometers a year. The van would travel a route where it picks up and drops off people at the location of choice when the individual ordered the van. Theoretically the RMC is ideal for elders as it provides door-to-door transport for a reasonable price. The service limits walking time to almost none, travel time could be short, and the elders reported the vehicle as accessible because of help from the driver However, in practice the interviewed elderly were not completely satisfied with the way it worked but did recognize the potential it has.

"So, you got people that make use of the RMC-van. It is easy, indeed, but also a lot of times it goes wrong. Either it takes way too long, or they pick you up and, for example, they pick 18 others, and drive through the whole of Amsterdam before they drop you off at your destination." (Interview participant 11).

Getting driven from door-to-door for a low-price sound like the perfect mode for the elderly to get to a destination as walking during a trip from A to B is closed off to almost none. And indeed, it does work like this in practice, but two problems were stated by most of the

elderly that made use of the service: travel times were often way longer than necessary, and the van rarely arrived on the agreed time to meet. Those two factors made the service unpleasant to use because the elders regularly would arrive late for, for example, medical appointments. This is because the routes they were taken were not logical which caused the van either being late to pick up someone and drop off someone at its destination. The two factors led to the elders rather not making use of the service because it causes stress or insecurity about getting to the destination on time.

The existence of the additional mode of transport shows that the Council of Amsterdam is aware that older people experience constraints in accessing public transport. On the one hand, the elders commented positive on the initiative because it gives them more freedom and option for mobility. On the other hand, it also constrained them because some reported negative experiences which made them regard it as inaccessible. So, the RMC aims to solve accessibility constraints, which it does, but it also causes more constraints in the experience of the elderly users.

4.2 Importance of Accessible Public Transport for Quality of Life for Elderly

Certain groups have an unequal opportunity for social participation, as do elders because they are constraint by, for example, their physical capability for full participation. This lack of participation can end up in someone feeling as they are socially excluded which has negative personal consequences as well (Titheridge, Achuthan, Mackett & Solomon, 2009). The interconnectedness of various aspects makes it hard to determine whether an individual is socially excluded but there are determinant of the process which indicate it (Jehoel-Gijsbers & Vrooman, 2008). To get insights into the interviewee's state regarding social exclusion three aspects had to become clear: 1) longing for more social participation; the longing for more social contact, evidently, results in social exclusion because individuals feel the need for more social contact (Leary, 1990). 2) the negative emotional state; an individual must feel negative about the longing for more contact (Svendsen, 2017). In the end, it is about how the individual's response to the unequal opportunity. Within this process of social exclusion public transport is a functioning which can dissolve the unequal opportunity for full participation.

4.2.1 Discrepancy Between Longed and Realized Social Participation for the Elderly of Amsterdam-Noord

The first indicator of social exclusion is the longing for more social participation than realized. An important connotation regarding the study is that if public transport supports or neglects them from realizing the longed social participation. The elders of Amsterdam-Noord were divided on the question if they longed for more participation. Some were satisfied with their realized social contact and public transport assisted them in that process and others longed for more in which the perceived inaccessibility of public transport played a part.

The interviewed elders who did not long for more either lived close enough to places where they found desired social participation or public transport in their experience worked sufficient to get them to where they wanted too. Most of the interviewed elders lived within close range to shopping centers which fulfilled their norm for social participation. The norm of most elders was low because they were aware of their shortcomings as an aged person. Therefore, they did not long for more than the necessities in autonomous social participation such as a supermarket, a doctor, or a dentist.

"We live pretty good here. We were having parties, we were dancing, we live perfectly here. Only the bus connection is terrible. However, just a short walk and you got the dentist, the doctor, everything is in that little cube over there." (Interview participant 8).

Some elders reported that they were satisfied in their social participation because they could walk to places which made it sufficient. Adding on that, most of the elders were also satisfied because they experienced public transport as supportive in their social participation. As was the case with the interviewed elders who perceived public transport as more accessible than the others, these elders were in good physical condition. They had the capability to pursue the longed social participation through public transport because they had experienced few constraints in accessing the system. Physical capability is, thus, a crucial factor for elders to maintain the social participation they long for.

"I am fit, I am capable do anything, you know" (Interview participant 8)

There were also elders who did need more social participation than they got in the moment of the interview. There were some participants who wanted to participate more but settled in their role as an older person with bad physical health. So, their norm for satisfying social participation was lower than it used to be. For those elders who are comfortable with a lower norm of participation it cannot be stated that they are deprived in their desire, but accessible public transport could, in the experience of the elderly of Amsterdam-Noord, be a functioning for more social participation.

"That is the price you pay for being old, right. Your mind thinks you can do anything, which is annoying. I have always been the type to help people out, but I can't anymore." (Interview participant 2)

Last, a few elders clearly reported that they longed for more social participation, but their perceived inaccessibility of the public transport system deprived them in realizing it. This made for significant changes in their social participation from the moment they were depended on public transport as their only way of transport. All the elders were due to physical or cognitive decline not able to drive a private vehicle anymore, which made public transport their only option for autonomous transport. In the case of this study, cognitive constraints that were

mentioned were of loss of eyesight or dizziness which excluded them from private transport due to the dangers.

"I got position vertigo, and for that reason I intentionally let my driver's license expire, because if I turn around to quick I almost faint. I would drive somebody to death, so obviously I have not been driving. So, after letting the license expire, I am dependent on public transport" (Interview participant 5)

Some of the elders of Amsterdam-Noord do consider and others do not consider public transport as functioning to realize the desired social contact. As was the case regarding the part on public transport accessibility there was a difference between the perception of physically capable and uncapable elders. Physically capable elders experienced public transport more accessible and regarding the topic of social participation they experienced public transport as more supportive. For the elders with poor physical health, it was the other way round. Physical constraints are a crucial pre-determinant again in the perception on social participation, this is proven by the difference in perception between the two groups. Those elders reported discrepancies in their longed social participation because they considered public transport as inaccessible. For that reason, the public transport system did not prevent them for being more vulnerable to social exclusion as they had unequal chances for full participation.

4.2.2 The Consequences of Unequal Social Participation due to Public Transport

To determine whether someone experiences social exclusion a negative emotional state must emerge from the discrepancy in longed and realized social contact (Svendsen, 2017). This section is exclusively on the interview participants that reported a longing for more social participation, as interviewee's who are satisfied with their social participation cannot be considered as socially excluded and, thus, it is unlikely that they experience negative consequences. In the interviews a lack of autonomy and loneliness were the negative experiences of the elderly following unequal social participation. The elders desired more social participation, but public transport did not provide them this functioning and, therefore they experienced these negative effects. These negative effects are considered determinants for a decline in quality of life.

In the literature autonomy is considered one of the crucial elements in maintaining a high quality of life for the population of elderly (Titheridge, et al., 2009, Shrestha et al., 2017). Public transport can serve as functioning in maintaining their autonomy by designing the system according to their needs. The elders who reported having a poor physical and/or cognitive health, also specified that they were depended on others for transportation as private transport was not possible anymore and public transport inaccessible in their experience. So, for those interview participants who reported poor physical and/or cognitive health public transport was the only option for autonomous transport. However, to them the public transport system was also inaccessible which meant that for transport they were dependent

on others or in exceptional cases they would take public transport, even though they rather would not.

"For example, I need to get to the shopping center and normally I cannot get there. It is not that there is so much to do there but sometimes you must go there and without public transport I am not able to get there." (Interview participant 5)

If the reported inaccessible parts of the public transport system of Amsterdam were fixed, the elders stated that they would make more use of it. Making more use of the system because it is more accessible possibly leads to more social participation and more autonomy. Fixing the accessibility issues reported by the elders of Amsterdam-Noord would be an antidote to the lack of social participation and autonomy issues.

"I would go to the *Buikslotermeerplein* more, to the big shopping center. I think, indeed, that I would make more use of it [public transport]. (Interview participant 7)

There was one participant who reported feeling lonely because of the discrepancy in social participation due to a lack of transport accessibility. The participant in particular shows how serious the consequences for quality of life can be. The problems with accessibility of the public transport system in Amsterdam led to a feeling of loneliness because she could not realize here desired needs.

"I would feel less lonely, yes. […] I like to be among people, I like that, and I still do but I still feel lonely. I know it sounds weird, to me as well." (Interview participant 5)

It is a common feeling people have when they are lonely: they have a great amount of social contact but still feel lonely, it is a common misconception about loneliness. In his book A Philosophy of Loneliness Svendsen (2017) states the essence of loneliness faultlessly: *"Loneliness as such cannot be predicted by the number of people that surround an individual, but by whether the social interactions that individual has satisfy his or her desire for connection; that is, by whether they interpret those social interactions as meaningful."* (p. 22). Thus, it is not on the quantity but on the quality of relationships (Svendsen, 2017). The participant made clear that she had regular social contact, but the non-accessible public transport led to her not being able to maintain meaningful social relations. In the interview the participant indicated that it would be easier for her to maintain satisfactory social contact if public transport was more accessible. That social contact to her is vital to prevent the negative emotional state of loneliness which leads to decline in her quality of life.

For some elders, public transport is a valuable functioning for social participation, and they logically do not feel socially excluded because of that. Those elders who did report unequal opportunity in social participation reported non-autonomy and loneliness as consequences for their quality of life. The difference was made by physical capability among the interview

participant, where the uncapable elders reported negative on public transport accessibility, less social participation, and serious effect on their lives because of public transport inaccessibility. Being old is not a pre-determinant of less social participation, physical health is, therefore the distinction between those who feel socially included and those who do not is based on physical health.

5. Discussion

Overall, the thesis was structured in two parts from which the first complements the second. The first part addressed the question to what extend the public transport of Amsterdam(-Noord) is experienced as accessible by the elders of Amsterdam-Noord. Building forward on that, the second part related to the first, with the expectation that experienced public transport inaccessibility can lead to an unfulfilling social participation which makes those more vulnerable for social exclusion. In this section the findings are discussed and a recommendation for policy is formulated.

5.1 Transport Accessibility and the Negative Experience of Social Exclusion

The first part of the study on transport accessibility regarded what constraints the elders of Amsterdam-Noord experience in accessing public transport. Connectivity, driver alertness, and vehicle/land design functioned as the three main obstacles for accessibility for interviewees. It is open for discussion if those constraints exclusively apply to the elders. The constraints were acknowledged by all the interview participant, but only for those with poor physical health it became problematic. Therefore, public transport was only experienced as inaccessible by those who had physical issues, meaning that not being old makes public transport inaccessible but having physical issues. The study has proven this by the difference in experience from those with and without physical issues. In the policy documents on mobility and transport by the Council of Amsterdam it was detected that there was little to no mention exclusively to elders (Faber, Rook en Nieuwboer, 2021; Kuik, Beuckens, Van Hees & Van der Veur, 2013; Gemeente Amsterdam, 2020). Though elders all share being part of the same age group, they still form a heterogenous group based on other factors such as physical capability. Therefore, it is understandable that they are not mentioned exclusively because it is more logical to stem them under the group of physically uncapable individuals. Improving the public transport system, as recommended, should be done in collaboration with those who experience it as inaccessible (Stanley & Stanley, 2017). For the Council of Amsterdam and all other authorities concerning the public transport system this is recommended because the people who deem it as accessible have no value for improvement based on their personal experience. The idea suggested in the literature on public transport accessibility is to improve the system based on the experience of marginalized groups such as physically incapable individuals. It is important, especially, for those who are marginalize because for them accessibility increases, where for those who are

not marginalized the system was already accessible. For elders, as found in this study inaccessible public transport could possibly have a negative impact on their realized social life.

The second part considered the role of public transport in social exclusion. The underlying idea is that public transport supports elders in leading the longed social life autonomously, which prevents the negative consequences of the longing for more social contact, and, with that, prevents a decline in quality of life. The findings regarding this part of the study, again, emphasized the distinction between physically capable and incapable individuals because those who were incapable experienced a longing for more social contact and some experienced negative consequences. That part of the sample was dependent on public transport for mobility and the accessibility issues had impact on their social life in such a way that mobility through public transport was challenging or impossible. The importance of public transport for autonomous transport became evident as the physical and/or cognitive constraints made private transport impossible. The study has shown how important public transport could possibly be for the quality of life for elders. It can assist an individual who is dependent on it to realize the longed social life and prevent the negative consequences such as a lack of a feeling of autonomy and loneliness. For future policy it is recommended that public transport accessibility becomes more of a salient issue because it is important to remain high quality of life for some groups. Improvement of the public transport system are highly present in the policy documents but these measures such more frequency and extra tram/bus lines are system-based accessibility improvements. Person-based accessibility improvements are more valuable because the constraints of those who benefit the most of accessible public transport are derived. With that information policy interventions can target certain accessibility issues and solve them to make the system accessible for those who need it the most. The policy interventions would have multiple benefits for the system's accessibility. First, it increases overall accessibility because everyone profits from interventions targeted from the experience of the elders, even though a specific constraint was not experienced as a constraint. Second, the increased accessibility hand the elder more freedom to chase the longed social life as they are not constrained by the public transport system to get to a destination. Third, as indicated by the elders in this study, more social contact will prevent or resolve the negative impacts such as loneliness inaccessible public transport has.

6. Conclusion

6.1 The Elders of Amsterdam-Noord and Accessibility Constraints

Ultimately it can be concluded that the data has shown a concrete answer to both the research questions. For each question semi-structured interviews served as the method to collect data which proved to be a fruitful method. Based on the data two general conclusions can be drawn.

First, the elders of Amsterdam do experience serious constraints in entering the public transport system whereas for some it went so far that they were not able to use public

transport anymore. The main reason for this was rooted in the fact that those elderly had experienced serious physical decline over the past years and some factors in the public transport constrained so much that they were not able to use it anymore. For them the non-alertness of the driver and the combination of vehicle- and land design constrained to such an extent that they regarded the system as inaccessible. In the experience of the elder's bad connectivity, the non-alertness of the driver, and the combination of vehicle and land design made the system inaccessible to them. First, bad connectivity was regarded as an accessibility constraint for the elders with poor physical health because getting in and out a bus is challenging. Second, some elders experienced the public transport system as inaccessible because the behavior of the driver made them feel unsafe. The blow which caused by the lift off from the bus can cause elderly people to fall if they are not seated yet. The feeling of worry caused by the possibility of this happening is experienced by the physically uncapable elderly as an accessibility constraint. Third and last, a combination of bad design in both the busses and the land made the public transport system of Amsterdam(-Noord), in the experience of the interviewed elders, inaccessible. The vehicles were not always able to lower to such an extent that the entry aligned on the same height as the platform. This made getting into a bus a challenging task, again, for those elderly who had physical complications. Those elderly who deemed themselves as physically capable did not experience any accessibility constraints regarding this topic whatsoever.

Moreover, the Council of Amsterdam realizes that the older people experience more accessibility constraints. Therefore, an additional mode of transport, the RMC, is offered to individual from the age of 75, which could potentially solve all the constraints experienced by the elders of Amsterdam-Noord. However, the experience of the elders did not align with that goal. The overall experience with the RMC was that trips took way too long for a relatively short distance, which many times resulted in arriving later than the agreed time. The route taken was not logical causing these consequences.

It can be concluded that the elders of Amsterdam-Noord do experience accessibility constraints regarding public transport. All the accessibility constraints are pre-determined by poor physical health, making these constraints not exclusive to older aged people but to all people with physical constraints. Public transport, currently, is good for those who are physically capable and less so for those who are not. Poor physical health is a pre-determinant for all the experienced accessibility constraints. Those who are physically capable do experience less constrains regarding connectivity, bad vehicle/land design, and the driver's alertness. So, whether you consider the public transport system as accessible depends on your physical capability.

6.2 Public transport and the Social Life of the Elders of Amsterdam-Noord

As for the second research question which is about the support elderly receive from public transport in autonomously maintaining their social life. This question is linked to the other research question because for some elderly public transport it is their only opportunity for

autonomous transport. So, if public transport is not accessible in their experience the logical follow up is that it also constraints them in realizing their desired social life with the possible negative consequences.

In the group of elderly people there was a clear distinction between those who desired more social contact and those who did not. That distinction is pre-determined by physical health who made them depend on public transport to maintain their social life. The group of elderly who had issues with physical health were not able to drive privately anymore, this caused constraints in attaining the desired social contact. Those who were dependent on public transport reported a discrepancy in their desired and realized social contact. The accessibility issues described under the first part of the study constrained them in leading the life they longed to the extent that it was unsatisfying.

This unsatisfaction with their social life had two negative consequences for their quality of life: they were deprived in their autonomy and one interview participant claimed to feel lonely. Experiencing negative consequences is important to determine whether someone is socially excluded. For the group with physical issues, it can be concluded that they indeed experienced social exclusion to some extent because of inaccessible public transport. Experiencing a feeling of dependency on others (i.e., not being autonomous) to maintain their social life has negative impact on quality of life. In addition to that, not being able to autonomously realize one's desired social contact can lead to mental issues such as loneliness. The whole process of longing for more social contact and not realizing in it in combination with negative feelings as a result of that means that someone experiences social exclusion.

For that reason, it can be concluded that the group of interviewed elderly who had physical issues were socially excluded. Public transport was inaccessible to such an extend in their perception that it could not be considered a functioning in chasing the life they want. On the other hand, those without health issues did not experience social exclusion because of inaccessible public transport. They did experience little constraints in accessing the system, so for them it did function as a functioning to maintain their social life.

6.3 The consequences of inaccessible public transport for Quality of Life

Thus, the study has proven that public transport has an important role in the quality of life of elders. A public transport system that is compiled to the needs of physically uncapable people can either solve or prevent negative outcomes for their quality of life. Public transport potentially supports them in autonomously realizing the desired social life and with that prevent negative outcomes from social exclusion. It has been found that the elders of Amsterdam-Noord do experience consequences for their quality of life because of public transport. If public transport were to be deemed more accessible by those with physical issues it would improve their quality of life significantly. Social networks could be maintained and expanded, autonomy in their daily life would be improved, and the negative consequences of the discrepancy between longed and realized contact would dissolve.

6.4 The value of a person-based measure

The qualitative methodological approach taken in this study was proposed in the literature on public transport accessibility. The objective was to lay bare the experience of the elderly within the context of Amsterdam to provide information to make the public transport system more accessible. Those personal accessibility constraints could lead to them feeling socially excluded and it is argued that the person-based measure provides better background information for effective policy interventions solving the inaccessibility.

One benefit the qualitative measure has over other methods over the issue of public transport accessibility and social exclusion is that it can lay bare the consequences of exclusion. One very clear examples of social exclusion shown within the findings of this study was the one elder who experienced loneliness. The interview is beneficial to find out about these consequences because, again, follow up questions can lead to the participant giving this piece of sensitive information. Interviews allow to create a bond of trust between interviewer and interviewee, which was the case with this participant. Trust is a very important element to attain this kind of information from a participant which comes from patience and compassion within the relationship build up between the participant and researcher. A quantitative measure does not allow to build this kind of relationship which may result in the information being withheld while its important information which shows the effects of exclusion. Undeniably, social exclusion and its effect on people's life's can also be reliably measured quantitatively but attaining a personal story which clearly reflects the consequences is challenging because of the distance between researcher and participant.

Another benefit of the person-based measure is that it allowed to find out about how the M52-line changed the system in the northern part of the city. Again, getting in depth about the topic of accessibility with people who experience constraints is highly valuable. The elders of Amsterdam-Noord provided a lot of information which would have probably remained unheard by the Council of Amsterdam if not for this study. The information has its value in the fact that it can help to realize improvements. In this case, the elders provided before-and-after information which could help setting right what has changed for the worst. A system-based analysis which considers the whole population of Amsterdam above the river would probably have led to positive feedback because the metro is recognized as a comfortable mode of transport. Nevertheless, this study found out that the opening of the metro line also has negative consequences, especially for those who deem it a challenge to change mode of transport more than once during a trip. This comes to show that a qualitative or person-based method has its value over a quantitative or system-based analysis of public transport accessibility because it acquires specific information for improvement of the system which comes to the good of all its users.

The person-based method indeed showed its benefits within this study, and it proves that genuine compassion with the people who are being wronged is fruitful. As discussed, it is to be doubted if the value information was also obtained doing a system-based analysis. It does not only prove that creating a bond with people gets more personal information about a

specific context but also that showing compassion for, in this case, the elders of Amsterdam-Noord that they are willing to share more because that bond is created. It made their complaints feel heard for the first time which was reflected from their comments on the study. The person-based analysis allowed to present yourself as someone who genuinely cared for their problems which was pleasant for them because many of them commented to feel unheard.

7. Further research

To extend on the literature regarding person-based measures of public transport accessibility a logical consequence is to conduct similar studies like this in other contexts because of the dependence on the context for the outcomes. The context of Amsterdam-Noord had a unique character because of the division with the rest of the city by 't IJ which made reaching less convenient. Different contexts can possibly give different accessibility issues which are exclusive to the context. With extending studies of this kind, it would not only benefit serve as information which the population of that context can possibly profit from, but also other contexts can replicate the study and apply it in a different context. The idea behind this is that information can be used within assessment of the accessibility of the system in other contexts. So, the outcomes of the qualitative studies conducted on accessibility would serve as background information for others to either prevent or fix accessibility constraints in the specific context. It can be argued that the context can differ in infrastructure, build environment, and demographic composition. Especially regarding the infrastructure and build environment can primarily affect the way they experience the accessibility of public transport. However, where every context differs there undoubtedly are similarities among them in which the information contained in that context could help or give inspiration for policy interventions that solve the accessibility constraints.

Moreover, future research regarding public transport accessibility should focus on physically incapable groups, rather than elders. The study showed that not age is important for experienced public transport accessibility but physical health. Poor physical health is more common among elders but just focusing on 65+ would exclude a large group which would fit the end goal of the study, namely, to find accessibility constraints based on personal experience. The differences between physically able and unable elders were of such significance that physical health is deemed more fitting for a study of this type.

8. Literature

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9. Appendix

9.1 Topic list

The focus of the interviews with elders is to find out the constraint's they run in to when accessing public transport and if that subjective experience of accessibility socially includes or excludes them. That will be done based on the following research question: *What accessibility constraints do the elderly people of Amsterdam-Noord experience in accessing public transport?*

Sub questions
Does public transport support the elders of Amsterdam-Noord in autonomously maintaining their social life?
Does public transport improve the quality of life for the elderly of Amsterdam-Noord?

Accessibility of public transport
- Do you experience any constraints in accessing public transport in Amsterdam-Noord?
  Broad question to start off with.
- How accessible would you consider the public transport in Amsterdam-Noord?
  Suggestions for participant: walkability to stops, price, safety, seat availability, connectivity, reliability, understandability.
- Do you experience any constraints in the *land* when accessing public transport?
  Suggestions for participant: obstacles, too far to walk.
- From personal experience, do you have any anecdote where you experienced transport as inaccessible?
- How is your physical ability constraining you in accessing public transport?
- What changes in the system would make you use public transport more? (More explorative to find things out that have not been said)
  Suggestions for participant: lower prices, less obstacles, more safety, more seat availability, better connectivity, more reliable, easier to understand,

Inclusion through public transport
- To what extend is public transport satisfactory in supporting your social life?
  Suggestions for participant: social events
- To what extend does public transport give you the freedom to live your life by autonomously?
- Do you feel like public transport supports you in doing activities to live a meaningful life?
- Do you experience any restrictions accessing public transport due to personal implications?

- Ever since the M52 line opened in 2018, did it help to be better connected to the rest of the city? Possible follow up question: is it better than before the M52 line opened?

9.2 Codebook

Code	Description	Frequency
Accessibility Public Transport		**200**
Additional PT-mode	Additional modes of transport, outside the regular (bus, tram, metro) in the context.	34
Connectivity	Connectivity of the different modes of transport. Importance of connections the different modes have.	60
Driver Alertness	Alertness of the driver when elders use PT. Importance of the alertness for their perceived accessibility.	32
Frequency	Comments on how frequent the different modes of PT go.	14
Help from Others	Contribution of help from other users of PT for PT-accessibility.	3
Land-Design	Effect of land design of PT-accessibility.	19
Price	Comments regarding the price of the system.	4
Travel Time	Comments regarding travel time.	52
Vehicle design	Effect of vehicle design on PT-accessibility.	31
Amsterdam Policy		**86**
Negative attitude	Negative attitudes regarding recent policy interventions.	57
Positive attitude	Positive attitudes regarding recent policy interventions.	18
Attitude accessibility		**106**
Satisfied PT-system	Comments that show satisfaction with the PT-system in the respondents' opinion.	33
Unsatisfied PT-system	Comments that show dissatisfaction with the PT-system in the respondents' opinion.	74
Autonomy		**82**
Autonomous	Quotes which show that the respondent functions autonomously.	47
Not autonomous	Quotes which show that the respondent cannot function without the help of other people/institutions.	37
Exclusion		**24**
Daily Activities	Quotes that show that the participant is excluded from daily activities.	10
Family	Quotes that show that the participant is excluded from family visits.	7

Norm	Quotes that show that participant is excluded due to a lower norm of social inclusion.	5
Peers	Quotes that show that the participant is excluded from gatherings with peers.	6
Transport	Quotes that show that the participant is excluded due to transport not being accessible.	13
Inclusion		**53**
Cognitive Capabilities	Quotes that show social inclusion due to the cognitive capability of the participant.	4
Daily Activities	Quotes that show social inclusion due to the capability to undertake daily life activities.	24
Family	Quotes that show social inclusion because of the presence of family members.	10
Medical Appointments	Quotes that show social inclusion because the participant can easily get to medical appointments.	10
Peers	Quotes that show social inclusion because of the presence of peers.	13
Physical Capabilities	Quotes that show social inclusion because of the personal physical capability of the participant.	10
Transport	Quotes that show social inclusion because of accessible PT.	19
Insecurity		**29**
PT-system	Quotes that show personal insecurities regarding the PT-system, making it less accessible.	12
Personal Insecurity	Quotes that show personal insecurities regarding the PT-system, making it less accessible.	17
Safety	Quotes that show personal insecurities regarding the PT-system, making it less accessible.	1
M52-line		**27**
Negative Attitude	Negative comments regarding the 2018-build metro line connect Noord to the rest of the city.	4
Positive Attitude	Positive comments regarding the 2018-build metro line connect Noord to the rest of the city.	23
Personal ability		**118**
Cognitive Ability	Cognitive ability of the respondent which influences PT-accessibility for them personally.	37
Compassion	Quotes that show compassion for other actors regarding the issue.	10
Physical Capabilities		**84**
Physical Constraints	Reflects personal physical constraints of the respondent influencing PT-accessibility.	62

Physically Able	Reflects personal physical ability of the respondent influencing PT-accessibility.	25
Quality of Life		**101**
Dependent on Others	Quotes that the respondent is dependent on others for getting from A to B.	23
Importance of Good PT-system	Quotes that show that PT is important for the respondents Quality of Life.	49
Mental Issues	Quotes that show that respondents experience mental issues because of inaccessible PT.	2