Utrecht University

LEIDSCHE RIJN CENTER ON WHEELS

-The experience of wheelchair accessibility in Utrecht's newest urban shopping area –

Research about how wheelchair users experience the accessibility of the newly built shopping centre in Utrecht Leidsche Rijn and how this influences their use and participation in social activities in the centre.

Master thesis

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"equal opportunity, yes, it is nice to talk equal opportunity but we are not born with equal opportunity, some have more opportunity uh, than others, as it goes, but equality does exist, as long as you give **space** for it, and as long as you treat every human being as equal" (Respondent 11)

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With this thesis, I am completing the last part of my master's degree in Urban Geography, the area of specialization within the master Human Geography at the University of Utrecht. During the process of writing this thesis I had the opportunity to delve into the topic of wheelchair accessibility, a topic that I personally wanted to become more knowledgeable about.

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I hope the municipality of Utrecht will find these findings of value for future projects and will provide them with insights about the management of accessibility in the shopping area of Leidsche Rijn.

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Summary

The purpose of this thesis is to offer perspectives on the lived experience of wheelchair accessibility at the Leidsche Rijn shopping centre. For people with impairments, such as wheelchair users, accessibility to urban places that are essential to everyday life is vital (Fänge et al. 2002 qtd in Evcil 2009). Urban spaces and districts like main shopping streets and the third places present can serve as a crucial support network, especially with the socialization of care in The Netherlands (Brummel 2017; Gehl 2011; Izenberg & Fullilove 2016; Van Eijk & Engbersen 2011). Third places are places that can be seen as a place of refuge to meet friends, colleagues, and family other than the home or workplace.

Following, this research helps to provide an answer into the research question, "How is the accessibility of the shopping centre in Utrecht Leidsche Rijn experienced by wheelchair users, and how does this influence their participation in the social activities of shopping?."

This question is answered with the help of wheel-along interviews, a qualitative phenomenological research design where the lived experience is central (Kusenbach 2003). As a result, determinants that are less obvious to planners, architects and policymakers are made visible. Hence, the general guidelines, tools, and aids to achieve accessibility can be expanded and a broader part of society is addressed (Trani et al. 2011). Hereby, we become more knowledgeable about the experience of accessibility and one step closer to universal design, the process of designing places useable by as many individuals as possible without the need for adaptations or specialized design (Kadir & Jamaludin 2013).

From the perspective of the capability approach every human being should be able to live the life they value and thus achieve their desired functioning (Sen 1985; Brummel 2017; Trani et al. 2011). The desired functioning is the state of functioning that someone finds valuable (Brummel & Jansen 2022). To achieve this conversion factors are used to enlarge the individual capability set. Conversion factors are factors that can be converted into reduction or growth of individual capabilities. These entail, the individual characteristics, resources and environment (Mitra 2006). Policy to improve accessibility should therefore focus on improving these factors.

Additionally, it is investigated whether the motive for visiting and usage is also of influence for the experience of accessibility for wheelchair users (Wunderlich 2008). Since previous research shows that discursive movement leads to more attention to the socio-spatial environment and more social interactions (Wunderlich 2008). Following, this thesis is structured along four topics. These entail the individual characteristics, the type of usage of the centre, the built environment, and the social environment. These factors are of significance to understand the individual experience of accessibility and visualized in the conceptual model (figure 6).

Determinants which limit the desired functioning in the Leidsche Rijn shopping centre are, inaccessible toilets and the inaccessible interior environment of third places, the elevators at the station which are frequently broken, the location of dropped kerbs on the Brusselplein, and a lack of activities in the centre which do not require economic resource. However, the environment also contains several enabling determinants such as a threshold aid to enter a shop which is experienced as kind and signals

social accessibility. Overall, the social accessibility is found to be particularly good in the Leidsche Rijn shopping centre. The accessible public space results in more visibility of wheelchair users. However, since third places (Mehta & Bosson 2010) are legally not obliged to provide, for example for accessible toilets, visibility in these places is low. Which results in less awareness about the needs of wheelchair users. It is recommended that although not by law obliged, awareness about accessibility in third places can be facilitated by the municipality since this signal's hospitality towards all residents of the city.

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1.Introduction

1.1. Problem indication

Accessibility to social activities outside the house is considered a crucial component of an individual's life and adds significantly to their happiness (Fänge et al. 2002 qtd in Evcil 2009). The design of the public space available in the city is known to be of foremost importance on the social life of residents (Gehl 2011; Whyte 1980). The higher the quality of the built environment the more people choose to be outside for optional activities and recreational activities which will lead to an increase of social activities (Gehl 2011). However, for people with disabilities (PWD) the social and physical environment can feel disabling instead of enabling. Space is thus of great significance for the lived experience of disability (Gleeson 2000). The problem is that due to inadequate design and architectural barriers a large group of the population with mobility restrictions and other functional limitations is often denied accessibility to parts of the city (Fänge et al. 2002). Inaccessibility due to physical obstruction turns the public space in 'no-go areas' and can create isolation from social aspects of importance to daily life (Evcil 2009). Social inclusion is a societal concern that should be tackled with customization of policy provided for individual citizens with support needs. The neighbourhood, village or urban district is part of the support that forms the base of this social inclusion (Delespaul et al. 2016 qtd in Brummel 2017).

It has been acknowledged that several social, physical, and psychological benefits are experienced with participation in leisure activities (Stumbo et al. 2011). One example is shopping experiences. Retail shopping is according to the National Centre for Health Care statistics an instrumental activity of daily living (Carroll & Kincade 2007) and considered an important part of social life (Izenberg & Fullilove 2016; el Hedli 2013). Previous research argues that shopping can help increase an individual's happiness in essential life domains, "consumer, social, leisure, and community life" (el Hedli 2013 qtd in B. Swaine et al. 2014, p. 219). Moreover, the shopping street is considered a valuable public space to generate "light social interactions" (Van Eijk & Enbersen 2011).

Third places, such as coffee shops, are also found to be of immense importance for social interactions (Mehta & Bosson 2010). However, accessibility levels are stated to be lower in smaller scale facilities, smaller shops and restaurants are often less accessible due to physical but also social barriers (Meijer et al. 2019). Unfortunately, precisely these smaller shops are considered "vital for the social and economic health of society" as research shows that closure of community shops leads to less social contacts (Clarke & Banga 2010). Accessibility the urban shopping centre, including shops and third places is therefore a key factor towards inclusion in the city.

About 1.85% of the world-wide population is currently dependent on a wheelchair to be mobile (2019). Previous research shows that 61 percent of the wheelchair users feel disabled by the spatial design of the city while shopping (Bromley et al. 2007). It is likely that the group who use wheelchairs for shopping in the city centre will rise in the upcoming years due to a growing population with ambulatory and breathing issues and elderly (Bromley et al. 2007). Some improvements in the urban environment in Europe have been made due to legislation such as the Equality Act in the UK in 2010 from which protects from discrimination (Rashid et al. 2019). Leisure activities, such as tourist facilities and restaurants are stated to become more accessible with accessible car parks and public transport (Evcil et al. 2017).

However, it is apparent that in performing routine activities individuals with mobility impairments experience significant obstacles (Rashid et al. 2019). While the physical environment might be improved, daily shopping activities are frequently a barrier for people in a wheelchair since in practice the products are out of reach from their seating position (Rashid et al. 2019). Additionally, the Netherlands only ratified the UN, Convention on the Rights of Persons with a Disability (CRPD) in 2016. In this document it is stated that governments should make policies, plans and programs to provide equal opportunities for people with disabilities (United Nations, 2006, art. 18). Research on the Netherlands specifically is thus needed to provide insights into the experience of accessibility, after the implementation of the CRPD.

1.2. Practical accessibility

The Convention on the Rights of People with Disabilities is based on the social model of disability. This model explains that interactions with society cause disability. For example, inadequate design, such as stairs, which creates barriers for people with a mobility impairment. From this theoretical perspective improvement in the build environment is key to enable participation in daily activities in society such as shopping.

Moreover, inadequate design can be disabling to all, for example, when carrying a heavy bag of groceries, pushing a baby stroller or for senior citizens with a walking scooter. Consequently, improving the built environment and accessibility is beneficial to the whole of society. However, accessibility asks for expertise and experience which is often lacking by planners and architects. According to the Dutch Accessibility Institute, most planners build from an ableist perspective and forget to assess the practical accessibility by disabled users of buildings and the environment (Janmaat, 2018). To avoid ableism, qualitative research where the individual experience (voice) of wheelchair users is prominent is best suited (Scuro 2017).

Examples of ableist perspectives in international and Dutch studies are toilets which are labelled as 'disabled toilets' but do not suffice at all. The reason behind this is a lack of practical testing (rma 2020; Janmaat, 2018; Kitchin & Law 2001). The complexity of providing accessible toilets in practice is emphasized in a study by the Amsterdam Court of Audit on Accessible toilets (RMA 2020 qtd in Vermeij & Hamelink 2021). Another example is buildings that contain ramps to provide wheelchair accessibility, but are considered too steep, narrow, or have inadequate landing areas with a risk of tipping over (Evcil 2009). Following, research about the practical experience of the accessibility is thus of value for future construction plans. The most suitable method for this is qualitative research, with interviews on-sight, in which the experience of accessibility is central (Kusenbach 2003).

To make a valid assessment of the accessibility in the city it is important to note that every individual has a different practical experience of the accessibility of the same street and public space. What is considered accessible by one individual in a wheelchair can be considered inaccessible for another. Therefore, a suitable theory to assess accessibility and practical experience is the capability approach (Vecchio & Martens 2021). The capability approach (CA) recognizes diversity, and every individual has a different individual capability to access public space. Capabilities describe not how people function but, "rather what they have the opportunity to do" (Fainstein 2011, p. 55).

1.3. The Dutch case study

Next to the ratification of the UN CRPD in 2016, the Dutch government has also been working on the implementation and practical effect of this with the "Unhindered Participation!" act. The base of this act is, "participation on society on equal terms" (Vermeij & Hamelink, 2021, p.2). Alongside this, in 2017 the city of Utrecht adopted the "Utrecht Accessible by Default" (2017). This document entails that, in the buildings of Utrecht, everyone should be able to do what they come to do according to the destination (2017). This means that at the start of the construction process an agreement with future user groups should be discussed, during the build the accessibility measurements should be checked and followed by the handbook of accessibility. Furthermore, does the municipality define in the UST document that, a building is not accessible if someone needs to be lifted up a stair or the opening of a door requires aid. The municipality holds several buildings in their possessions and the municipal ground covers many public spaces. During the build and renovation of these places accessibility is being strived for, but in practice previous results led to inaccessible spaces due to insufficient execution (2017).

The newly built shopping centre in Utrecht Leidsche Rijn was completed in 2018, after the ratification of the CRPD, and adoption of the UST in Utrecht in 2017. However, the construction process started earlier, and thus not all buildings fall under the new policy of UST. Nevertheless, the assessment of the experienced accessibility is still of significance since it is planned that in 2030 Leidsche Rijn will have five thousand houses in total (Utrecht 2022). For future inhabitants, insights into the practical experience of accessibility are valuable. It is valuable for the municipality to see whether there are points of improvement that need to be solved to provide potentially new, and present residents the opportunity of participation in the social activities of shopping. Furthermore, insights into the experienced accessibility are of interest for future development projects and shopping centres in general.

Literature on wheelchair accessibility of urban shopping areas in the Netherlands is limited. Reports by the Dutch Social and Cultural Plan Office provide an overview of the current state accessibility of Dutch cities (Vermeij & Hamelink 2021). This report concluded that most Dutch cities were not accessible hence the title, “Accessible?: not by a long shot” (Vermeij & Hamelink 2021). However, this report was conducted during the midst of the COVID-19 pandemic and thirty-eight interviews were conducted online, which means that accessibility was analysed by respondents from memory about places distributed all over the Netherlands. Moreover, changes in everyday routines in post-pandemic cities, in shops, third places and public space should be considered. Together with the rise of delivery services and online shopping (Ecker & Strüver 2022). Further research is needed to provide a more in-depth image of the practical experience of accessibility in Utrecht, after the implementation of the UN CRPD in 2016 and UST in the city of Utrecht in 2017.

1.4. Research aims and question

General guidelines for universal design are proven to be insufficient and lack practical testing (Poldma et al. 2014; Evcil 2009; Vermeij & Hamelink 2021). The aim of this research is to gain more insight into the practical accessibility of wheelchair users in the shopping streets in the city of Utrecht. The focus will therefore be on the experience of accessibility. The aim is to give insights in the specific determinants in the environment, enabling or limiting, of accessibility per individual wheelchair users. As a result, wheelchair users are given a voice. In Utrecht, the shopping centre in Leidsche Rijn will be chosen as a case study.

Following, the central research question will be, “How is the accessibility of the shopping centre in Utrecht Leidsche Rijn experienced by wheelchair users, and how does this influence their participation in the social activities of shopping?”

The research question will be answered by means of six sub questions.

1. How does the individual characteristic of various types of wheelchairs influence the experience of wheelchair accessibility?
2. How does the individual characteristic of economic resources influence wheelchair users' experience of accessibility?
3. How does the difference in type of usage of the shopping centre influence the experience of wheelchair accessibility?
4. How do different environmental determinants of the built environment in the Leidsche Rijn shopping centre influence wheelchair users' experience of accessibility?
5. How do different environmental determinants of the social environment in the Leidsche Rijn shopping centre influence wheelchair users' experience of accessibility?
6. How can the general accessibility policy, rules, and tools be improved while considering various individual wheelchair users' capability sets who visit the Leidsche Rijn shopping centre?

This research question is answered with qualitative research, whereby wheelchair users are interviewed while moving through the research area, 'wheel-along' interviews. The city of Utrecht, with the newly built area of Leidsche Rijn centrum is a case study to provide further insights into the scientific debate on accessibility after the ratification of the UN CRPD in the Netherlands. Furthermore, these insights add knowledge about the practical shopping experience which is valuable for future redevelopment plans by the municipality of Utrecht and the built and development of future urban shopping areas.

2.Theoretical Framework

This chapter describes the relevant literature available about the core concepts of the main research question. It starts with defining disability, since this is a powerful tool for policy. As an illustration, policy defined through the perspective of the social model of disability puts emphasis on changing the environment while the medical model puts emphasis on the individual. Next, the concept of universal design is explained and the gap between policy makers and practical experience of individual users in accessibility.

Then, the concept of accessibility in disability studies is elaborated and the capability approach is introduced. The individual experience is central to overcome the possible knowledge gap between practical experience and general guideline execution. The capabilities approach (CA) is therefore explained as an accessibility theory to assess the accessibility of the shopping centre per individual. Thereafter, a conceptual model for policy based on the CA by Trani et al. (2011) is presented. By means of the CA, individual determinants that influence the accessibility are stated. These include the economic resources and type of wheelchair. Then, another important individual factor is discussed, which is the motive for visiting and type of usage according to the theory of Wunderlich (2008).

Following, the important contextual determinants are stated. Starting with determinants located in the built environment that are disabling and enabling to wheelchair users will be presented from previous research. Then, social environmental determinants of inner-city shopping streets, shops and third places and their influence on daily social life are stated. Lastly, a conceptual model based on the complete literature is presented.

2.1. Defining disability

In disability studies there are different models known, the medical model and the social model and the human right model.

Arguably, the most dominant perspective in academic discourse of geography and leisure studies has been the medical perspective (Aitchison 2003; Aitchison 2009). From this perspective there is a focus of “the problem of disability within the individual” (Bromley et al. 2007). Hereby, disability is the result of individual physical impairments and functional limitations. From this perspective disabled people are seen as a minority group that is excluded from mainstream society due to their impairments. However, the social model of disability provides a different perspective and sees it as a socially constructed system (Hofmann et al. 2020). Within this model, society is the main cause of disabling physically impaired people. Contrary to the medical model, not individual limitation but environmental, social, and attitudinal determinants result in experience of disability (Beauchamp-Pryor 2004). Within policy and legislation this means that instead of laying the focus on individual change and adaptation, the focus should be on dismantling societal barriers in society which prevent people with disabilities from participating in mainstream activities.

As a researcher with a (temporarily) abled perspective it is of significance to note and take care in the words and definitions chosen in this research to exclude ableist perspectives. Ableism is an under-determined bias. It is a system that values social constructed norms of individuals bodies and minds based on intellect, production, and normality (Hofmann 2020). The definitions of disability are of powerful influence for policy implications.

A policy discourse that views people with disabilities based on a medical social model that is based on the individual inabilities will refrain from finding solutions in the physical environment. Barriers in the spatial environment that are viewed as permanent without solutions leads to little change and exclusion from communities (Stumbo et al. 2005).

Working towards change and social inclusion, a discourse which addresses barriers and finds solutions, so PWD have the same opportunities as other people is apparent. This discourse is created by using language from the social model of disability and to challenge the power relations (Beauchamp- Pryor 2004). Altering the definition can thus have far-reaching effects on the social inclusion of PWD.

One example of this can be seen in the Netherlands, were there has been a long-standing process of change that started in the sixties. As a welfare state the Netherlands was able to put people with disabilities in large scale institutions far from the civilized world, from the sixties on it became less obvious to continue this and inclusion in society due to the "socialization of care" (Brummel 2017, p.13). This change in perspective signifies a change from a medical disability model towards a social model of disability. Where in the seventies people were seen as civilians' part of society. An example of structural change due to this shift is the implementation of a new law which focuses on participation in society. In 2015 this law was adapted and a large part of financial support for people with disabilities was transferred from the General Law on Special **Medical** Expenses (Algemene Wet Bijzondere Ziektekosten/ AWBZ) to Law on **Societal** Support (*Wet Maatschappelijke Ondersteuning/ WMO*). In the definition of the new law a change from a medical model towards a social model is visible in the language used. Moreover, the change in financial resource signifies a structural change, while the transformation also stands for cultural change (Brummel 2017). This is one example which shows the interactions between societal context and policy.

To summarize, in the urban environment this means that, were before people were expected to take part in separate activities, it is now expected to participate in regular activities. These activities entail participation in community centres or in the public space such as the daily activity of shopping. Due to the socialization of care, informal care of civilians is expected to contribute to participation (Brummel 2017). The support from social networks is hereby of great significance. The ability to meet others is important, hence accessibility of meeting spaces in the public space or semi-public space is significant. Social networks in the urban environment contribute to the feeling and sense of belonging and play a significant role in informal support. The municipality is responsible for creating informal care in the neighbourhood. It is even stated that the change towards the 'participation society' can be seen as a transformation towards a "welfare city" (verzorgingsstad) (Putters 2013 qtd in Brummel 2017, p. 19).

The ratification of the United Nations Convention on the Rights of People with Disabilities (CRPD) is another example whereby policy can work towards a change in society which will lead to social inclusion. This treaty has as goal to make people with disabilities fully participate in society. The CRPD seeks to ensure moral principles and values as a foundation for disability studies.

An addition to the social model of disability is the human rights model of disability, which focuses on the inherent dignity of human beings. Instead of seeing disability just as a social construct, the human right model also recognizes human diversity and dignity. The social model has been criticized by neglecting the experience of impairment in how it forms identity (Degener 2014). Moreover, “while environmental barriers and social attitudes are a crucial part of our experience of disability – and do indeed disable us – to suggest that this is all there is, is to deny the personal experience of physical or intellectual restrictions'' (Morris 1999 qtd in Degener 2014). Since the goal of this research is to gain insights into the practical experience of accessibility the theoretical framework uses the human rights model as an extension of the social model and focus on individual experiences of accessibility.

Furthermore, the main objective in disability studies “nothing about us without us” (Charlton 2000 qtd in Scuro 2017) is applied. This mantra may be the “most useful and is one of the original tests for the bias against those with disabilities for identifying ableism in its most basic operation— one that continues to be foundational to real disability advocacy” (Scuro 2017).

2.2. Defining universal design

Architectural design is an embodiment of the architects’ line of thought. This means that the physical space, the “materialization of an architectural design, thus carries a whole ideological background” (Baumers & Heylighen 2015, p.13). The design of the inner-city shopping street is therefore a physical representation of the social and political processes of the city and often contains, “ableist practices and assumptions that are written in the landscape” (Bromley 2007, p. 240). A built environment that works for everyone can as a result encourage social relationships and participation in communities and prohibit exclusion. This is the principle of universal design, “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptations or specialized design” (NCSU, 1997 qtd in Kadir & Jamaludin 2013, p. 182). Furthermore, contrary to just barrier-free planning this approach compasses a broader scope in the population and is thus most cost-effective (Figure 1). Although many planners have well-meant intentions to achieve inclusive design in practice there is a need to research “the disabled voice more strongly if their life circumstances are to be improved” (Imrie 2000 qtd in Bromley et al. 2007, p. 230).

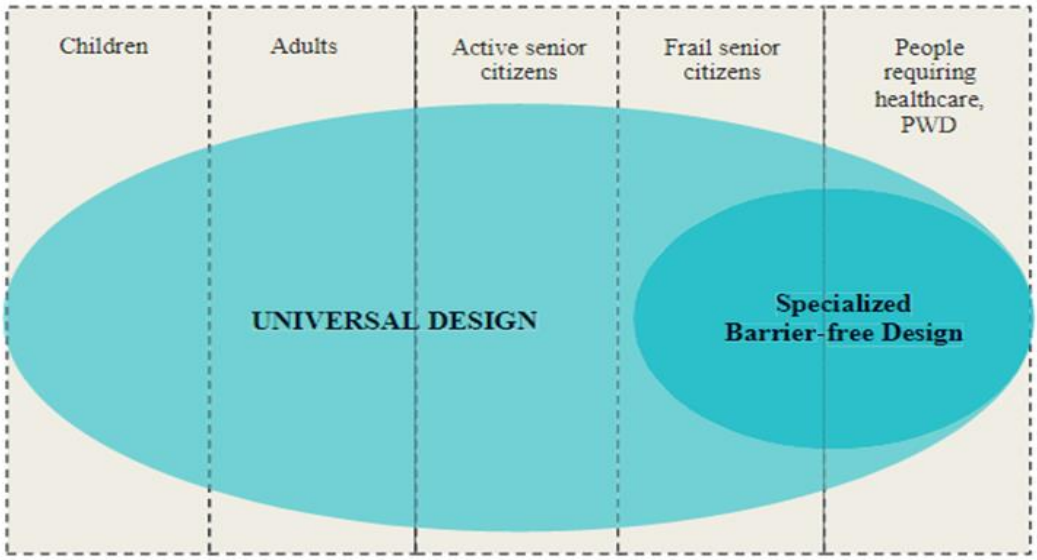

Figure 1. The principle for universal design. Source; (Harrison 2011 qtd in Kadir & Jamaludin 2013).

The physical environment is thus of foremost importance in the participation of the social environment (Brummel 2017). Research about social inclusion should thus look at specific neighbourhood characteristics that play a role in the social inclusion. Besides this, universal design is seen as a tool to create social sustainability (Kadir & Jamaludin 2013). Urban sustainability is divided into three categories, more well-known are environmental and economic sustainability. Social sustainability combines the physical area with the social world, for example the built of public space for social amenities. Within the built environment social sustainability is explained as, design that satisfies current requirements without compromising the capacity of future generation's needs (Kadir & Jamaludin 2013). A practical example of this is equity to access of public buildings. Hereby, universal design generates urban areas that provide a better life quality and opportunity to participate in all aspects of life (Bashiti & Rahim 2015). To summarize, smart design and planning of inclusive public spaces and living spaces creates social sustainability (Kadir & Jamaludin 2013).

The principle of universal design changed over the past from a medical model towards the social model (Bashiti & Rahim 2015). With this a change in the language in universal design happened, signs of a change in the discourse and disability model perspective. For example, the word 'accessibility' became, 'inclusion' and from 'barriers' became 'sustainability,' and 'politics/ regulation' became 'innovation' (Kadir & Jamaludin 2013, p.181). Hence, taking the social model perspective, research about the accessibility in the shopping centre is not just about physical accessibility but also about the social inclusion. Therefore, beside the basic principle of universal design, that design should be usable by all people, more subjective subjects are emerging in the social sustainability framework. These subjects include happiness, participation, sense of place, social mixing and cohesion, health and safety, demographic change, social capital (Kadir & Jamaludin 2013). These factors are of significance for an assessment of universal design in the research areas as well.

2.2.1. Implementation of universal design

Previous research has stated that there is a gap between what is implemented and what is necessary and experienced in practice (Evcil 2009; Janmaat 2018; Vermeij & Hamelink 2021). Other examples can be found in transport for example in the public transit system (Park et al. 2020). Research by Park et al. (2020) states that there is a gap between the policymakers' priorities and the users' needs in planning. Despite regulations, the guidelines for inclusive design are inflexible and lack sufficient direction for planners, particularly in complicated or unusual situations. Moreover, policy makers prioritize due to budgetary constraints and therefore exclude certain groups or prioritize impairments (Park et al. 2020). Co-existence of multiple disabilities is often contradictory. There is no "quick fix" because of the conflicting needs of different disabilities who use the same space (Payne et al. 2021).

Determinants that are enabling or disabling are thus mostly stated from the consumers' perspective and limited knowledge is transferred to urban planners and policy makers (Park et al. 2020). Previous research by Bromley et al. (2007) contained a research population from which only 26% had ever spoken to authority about barriers they experienced in accessibility. While stakeholder participation is useful towards the development towards social sustainable urban areas (Fernandez Milan 2015). Labbé et al. (2020) examined the impact of mobilization strategies to inform policy makers on the (in)accessibility. Hereby they recommend that the individual experience-based viewpoint of PWD should be an essential part of the dialogue on urban accessibility. They do this with "videos, a photo exhibit and an interactive game" (p.1560). Including the 'disabled voice' and the embodied experience in the accessibility discussion will bring positive implications. Including emotions and individual experiences gives a 'human touch' to accessibility data and includes important nuances in the experiences (Van Lierop et al. 2019). Moreover, experiences give insights into subjective factors such as feelings of safety, happiness and sense of belonging, participation and access, all factors important to inclusive design and key sustainability themes (Kadir & Jamaludin 2013).

2.3. Accessibility, disability, and capability

2.3.1. Disability studies and accessibility studies

Accessibility is a concept that can be looked upon from different disciplines. Several physical and social enablers and limitations experienced by wheelchair users in the shopping street are identified in previous research in accessibility studies (Bromley et al. 2007; Evcil 2017). However, in accessibility studies moments exists where disability is misunderstood, and is expected as 'clearly defined impairment' (Hoffman et al. 2020). While for example the group of wheelchair users is diverse in their capabilities and abilities. Within accessibility studies the focus is inclined to go to the technology related to impairment. Stating that an urban area such as the shopping centre in Leidsche Rijn is 'wheelchair accessible' is an example of this. On the contrary, disability studies tend to focus on "understanding disability and advocating against ableist systems" (Hofmann et al. 2020). They are interwoven fields which both focus on building an inclusive world by understanding the experience of people with disabilities. However, the viewpoint of disability studies foregrounds the lived experiences of people (Hofmann et al. 2020).

Hence for this research and to achieve the ideal of universal design, research that understands the diverse variety of users is needed to develop "tools and techniques for inclusion" (Baumers & Heylighen 2015, p. 13). While foregrounding the lived experience of 'wheelchair users' this diversity in experience is addressed. As Baumers & Heylighen state, "in assembling new perspectives for inclusive design, we want to gain a more accurate insight into the diversity of people's interaction with the designed environment" (2015 p. 13). The group of wheelchair users is diverse, including the lived experience of individuals instead of solely the technology related to the impairment is therefore valuable to work towards truly inclusive design. To summarize, the individual capability in interaction with the environmental context is key for accessibility research, this is further explained in the next paragraphs on the capability approach.

2.3.2. The capabilities approach (CA)

The capability approach, every individual is able to: "Live the life they reasonably find of value," and "is able to do what you want to do and be who you want to be."

***Capabilities**: individual and environmental capabilities for functioning. Freedoms or realistic possibilities to be able to reasonably live the life that you find worthwhile.*

***Functioning's:** States of functioning that someone finds valuable, the life one has reason to value. Who do you want to be and what do you want to do?* (Brummel & Jansen 2022).

The capability approach is a suitable theory to assess the accessibility of the urban environment. It combines the individual perspective with the contextual perspective (figure 2). Within this approach the individual and the valued, being, doing and freedom is central. Originated from Sen (1985) this model was originally made to assess economic well-being and inequality. According to the CA, poverty reduction for example, "should be to expand the freedom that deprived people have to enjoy 'valuable beings and doings'" (Alkire 2005, p. 116). In this approach the resources necessary to achieve this should be accessible to deprived people to then be free to make choices that are important to them. The desired functioning's are of importance. The focus is on what an individual is able to do, "practical opportunity," instead of their real income, their "ability" (Mitra 2006).

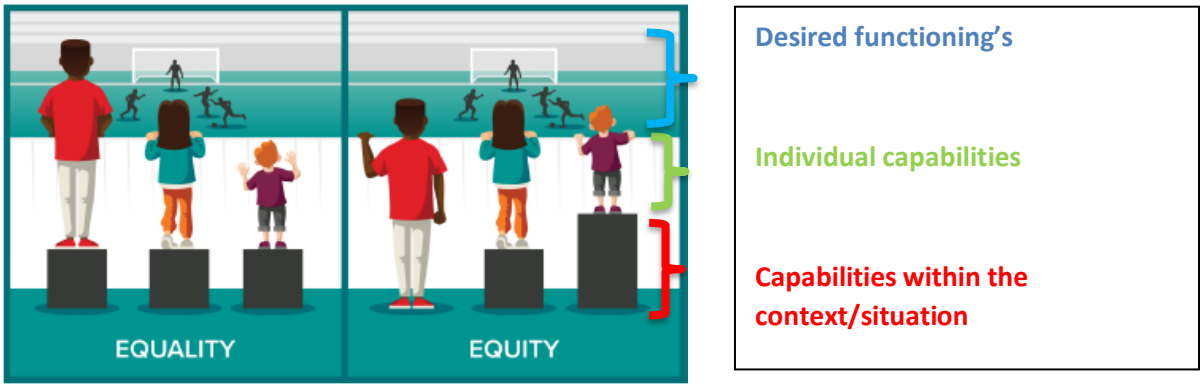

Figure 2. Desired functioning's and capabilities. Source: (Brummel & Jansen 2022)

2.3.3. The capability approach as a disability model

Within the CA, disability is explained as a limitation of capabilities and functioning due to interaction of factors. To clarify, using this approach as a disabilities model Mitra (2006) explains that disability can be caused by three sorts of factors that form the individual capability set. The factors being, individual characteristics (e.g., impairment/ type of wheelchair), individual resources (e.g., economic resources) and the individual environment (e.g., the built and social environment) (Mitra 2006). For example, a person with a disability can have enough economic resources but is due to the personal characteristic of impairment in relation to the present built environment unable to achieve the desired being and doing of shopping. The inability to achieve the desired functioning is an experience of actual disability.

A municipality or policymaker should thus focus on the improvements of these factors such as the built environment to enlarge the capability sets of individuals. Additionally, disability is known to influence the cost of achieving a desired functioning and certain commodities are necessary to enlarge the individual capability such as a wheelchair. This in turn influences the economic resources. Moreover, disabilities are prone to limit income resources and turning income into capabilities can become an issue. The CA model includes this economic dimension of disability. In terms of policy, specific economic needs come into play. Especially in research on the accessibility of the consumption space of a shopping centre, economic accessibility is also of significant influence (Mitra 2006).

To conclude, a definition of disability within the CA is, when an individual is denied the freedom to live the life they want (capability) because of an impairment. This deprivation is caused by the interaction of a person's resources, personal traits (such as handicap, age, and gender), and the environment. Actual disability occurs when an individual is unable to perform the desired function. The desired functioning researched with the accessibility of inner-city shopping street is the participation in the activity of shopping and the social activities in the shopping centre which leads to social inclusion.

2.3.4. Accessibility as a capability

Before continuing it is importance to state a definition of accessibility and put it in perspective within this research using the CA. Namely, accessibility can be also obtained through online virtual participation or using mobility of another person such as delivery services. While delivery services have risen during the COVID-19 pandemic, this might be a large factor influencing the decision process to participate in shopping in the city (Ecker & Strüver 2022). However, actual participation is of key importance and in line with UN goals. Therefore, accessibility as a capability is defined as, “capability understood as persons’ possibility of engaging in a variety of out-of-home activities” (Vecchio & Martens 2021, p. 840). Accessibility is crucial to participate in society. There is a spatial dimension to opportunities since they are dispersed over space and time. The mobility of an individual is crucial to accessing these opportunities. However, mobility is considered a means, and accessibility refers to a person’s ability to participate in the desired functioning’s (Vecchio & Martens 2021). In this case, this entails participation in shopping and the social activities adjacent to it. This in line with what the recent report of the Dutch Social and Cultural Plan Office states, “accessible places are places that people not only can get into, but that they also would like to get into, just like everyone else” (Vermeij & Hamelink 2021, p.159).

Holloway & Tyler (2013) explain that research that is focused on a micro-level, such as the London underground network (Velho et al. 2016), the capability approach can be used to measure the accessibility. They explain that this method puts emphasis on the measurement of the **provided** capabilities needed per person and compares these to the **required** capabilities of the task (Holloway & Tyler 2013 qtd in Velho et al. 2016). Consequently, for investigating the accessibility of a specific urban shopping centre, such as in Utrecht Leidsche Rijn, this method is also suited.

2.4. A framework for disability policy

It is apparent that disabled individuals may need particular types of capability inputs (infrastructure, policies, resources) to reach the same level of accessibility as the non-disabled (Sen 1999, 2009 qtd in Trani et al. 2011). Trani et al. (2011) has developed a framework for disability policy based on the CA (figure 3). This framework is introduced to bridge the gap between research and policy implementation. The framework considers individuals and specific situations and avoids labelling a group just by impairments only. Since generalization of a group leads to general guidelines and implementations of services and policies. This leads to general tools and aid which are not adequate for the whole of society, especially people with disabilities. It is therefore of significance to take a broader perspective of society to enlarge the individual capability set (Robeyns 2005 qtd in Brummel & Jansen 2022). To conclude, policies based on this framework are expected to expand freedoms and choices of individuals with disabilities.

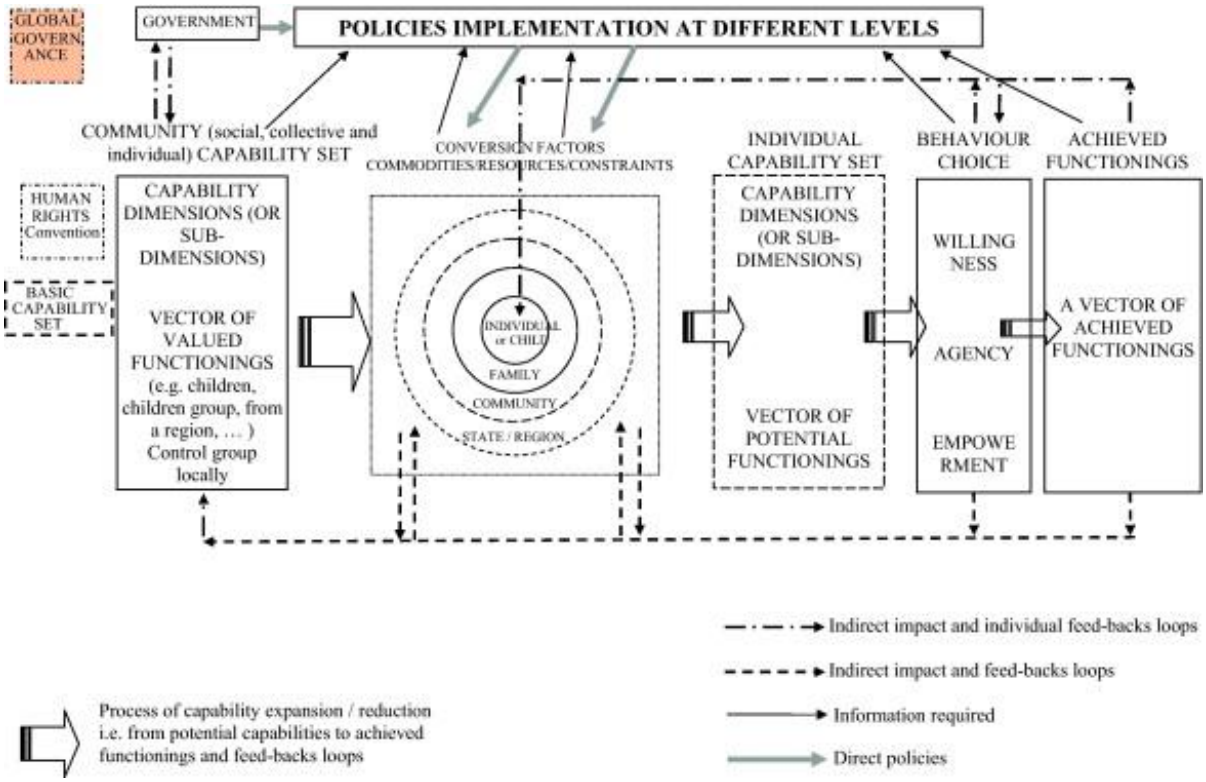

Figure 3. A conceptual model of disability through the lens of the CA. Source: Trani et al. (2011).

The diagram in figure 3 starts with a community capabilities set. According to Trani et al. (2011) this set is defined values established by a community (societal norms) and thus should be available to all members of a community and thus evaluated for policy implementation. Next, the arrow points to the conversion factors, "conversion of resources into freedoms" (Sen 1992 qtd in Vecchio & Martens 2021, p.3). Then, the conversion factors lead to the individual capability set, "beings and doings available" (Vecchio & Martens 2021, p. 3). Following, from this capability set a decision is made. Which results in the achieved functioning (previously names desired functioning's), "what people actually achieve, what a person is and does" (Vecchio & Martens 2021, p.3).

Trani et al. (2011) recognizes that for disabilities the caregiver's assistance is also crucial and should be included in the capability approach. The so-called "external capabilities," capabilities that depend on the capabilities of another person (p.145). An example of external capabilities is the social and built environment. Together with 'internal capabilities,' which are individual traits and resources (e.g., economic), they are conversion factors. Conversion factors are factors that can be converted into reduction or growth of individual capabilities (figure 3). In this case, the individual capability is 'accessibility' (Vecchio & Martens 2021). The conversion factors are thus factors that directly influence accessibility.

These individual capabilities in turn influence behavioural choice and thus the participation in achieved functioning (desired functioning) like shopping in an inner-city street. In the same way that a wheelchair enhances the provided capability set (internal conversion factor), a bus ramp or dropped kerb (external conversion factor) can do the same and hereby increase accessibility (Holloway & Tyler 2013 qtd in Velho et al. 2015). Policy to enhance the individual capabilities should thus be directed at these conversion factors, internal and external (figure 3).

2.5. Motives and type of usage of the space

Before diving into the influence of contextual determinants (internal and external conversion factors) in the environment on accessibility, it is important to note the internal motives for visiting the shopping centre are also of influence for the experience of space and thus the accessibility. Within spatial design, walking is mostly discussed as a means of transportation. However, it is also a crucial way to experience the urban environment (Wunderlich 2008). It is influential on the haptic sense. The "contact between the body and it's environment" (Rodaway 1994 qtd in Wunderlich 2008, p.137). Moving through the environment is a way to create a 'global touch,' "to situate and passively feel our body in a particular setting without actually having to be touched or touch" (Wunderlich 2008, p.137). The global touch is the bodies overall contact with the external environment which entails the physical and socio-spatial environment and creates a notion and sense of place. Key factors for social inclusion and social sustainability (Kadir & Jamaludin 2013).

Wunderlich (2008) categorizes three type of 'walking' methods. However, movement can also be defined as 'rolling' while moving in a wheelchair, the haptic sense is also present then. Moreover, Gehl defines wheelchair users as "pedestrians on wheels" (TEA & Gehl 2011). There are, purposive walking, which is "performed while aiming for a destination" (Gehl 1987, p.135 qtd in Wunderlich 2008). It is focused on arriving for destination and therefore usually in a rapid pace. A characteristic of purposive walking is bodily disengagement, exemplified by walking while eating or talking on the phone (Wunderlich 2008). Then, there is discursive walking, "the journey is more important than the destination" (Rendell 2003, p. 231 qtd in Wunderlich 2008). Contrary to purposive walking this is a spontaneous way of moving through the environment and attention is paid to other external factors such as the pace of others and other temporalities (Wunderlich 2008). Walking discursively, we are operating the global touch and fully aware of the external environment.

The motive for visiting influences the experience of the urban shopping centre in many ways. For example, the duration of the stay, with purposive walking when the goal is to get one item and immediately return home, other amenities such as the public space and restaurants are paid less attention to. While for a discursive walking practice to the shopping centre more attention is paid to the social and built environment. Additionally, discursive walking is known to encourage interactions and thus important for the development of the socio-spatial climate in the urban shopping centre (Wunderlich 2008).

Lastly, there is conceptual walking, this is a reflective mode, a way to gather information and build awareness of the environment. Urban designers and planners need to understand the socio-spatial environment comprehensively. Conceptual walking is a method which provides insights into the theory and practicality of place design, such as the topic of accessibility. Research about the accessibility of an urban area thus benefits from this type of research if it is viewed from the perspective of wheelchair users.

It follows then, that Wunderlich promotes to integrate walking in spatial design. The need to make spatial design for discursive and conceptual walking is admitted and to not just design for purposive walking practices (2008). As a result, spatial encounters and thus social inclusion will be promoted.

2.6. Contextual perspective: environmental determinants of accessibility in the urban shopping centre

The CA combines the individual perspective with the contextual perspective of the individual environment. The contextual perspective entails the social and built environment (Mitra 2006). In this chapter both environmental determinants present in the city are presented as found in the literature.

2.6.1. Determinants of the built environment

2.6.1.1. Determinants in the interior environment in the semi-public space

Factors which are mostly assessed in studies about accessibility of public buildings are, “parking, routes, ramps, entrances, restrooms, phones, water fountains and elevators” (Welage & Lui 2011). Other studies mention that in the shops, difficulties are, “opening doors, and using elevators, or difficulties taking merchandise from shelves” (Fänge et al. 2002, p. 322). Both the spatial design of the public space and the semi-public spaces contain disabling and enabling environmental determinants.

2.6.1.2. Determinants of the exterior environment in the public space

Studies that focus the city centre shopping accessibility specifically, state that the most problematic factors were “getting into shops, and the lack of dropped kerbs” (Bromley et al. 2007). Additionally, to this are “high kerbs, steps, and uneven surfaces (including the deliberately planned cobbled areas)” (Bromley 2007, p.235) problematic.

Overall, while looking at the spatial design of the city, the pedestrianized city centre was found to be best accessible (Bromley et al. 2007). Building well for pedestrians, a walkable city, is beneficial to all. Ramps and a different level in the walking route are a disturbance both for pedestrian traffic as well as the wheel traffic. The main rule, “if it becomes necessary to direct pedestrians up and down, then ramps, not stairs, should be used” (Gehl 2011, p. 145). However, the execution of ramps is of significance and not just the mere presence (Eisenberg et al. 2017; Evcil 2009). It is therefore of significance to not just look whether the spatial design feature (sidewalk or ramp) is present but also at its quality and condition. Or the quality of accessible public toilets (Kitchin & Law 2001; rma 2020).

Research by Bashiti & Rahim (2015) defines a list of determinants of importance to assess the accessibility in shopping malls and created a legend for environments (table 1). Together with the previously mentioned factors of the interior and exterior environment these are combined in the topic list in appendix C.

Table 1

Overview built environment determinants of accessibility

Exterior environment	Interior environment
1. Accessible parking 2. Pathways/pedestrian zone 3. Bus and taxi stop 4. Dropped kerb/Curb cuts 5. Buildings signage 6. Ramps 7. High threshold to enter shops	1. Main entrance 2. Doors 3. Corridors and interior pathways 4. Reception and information counters 5. Stairs 6. Ramps 7. Handrail 8. Elevators/lift

	9. Toilets 10. Merchandise from the shelves 11. Staff

(Source : Bashiti & Rahim 2015, p.18; Welage & Lui 2011 ; Fänge et al. 2002)

2.6.1.3. Temporal determinants

Next to the physical determinants in the built environment such as uneven sidewalks, temporal barriers such as snow or rain are also mentioned in previous research (Eisenberg et al. 2017). Other factors are the stoplight timing or even the difference between night and day and other barriers caused by people such as cars parked on the sidewalk (Eisenberg et al. 2017). The presence of cars, litter bins, bicycles, board advertisements and mopeds on the sidewalk is experienced as frustrating among wheelchair users (Bonehill et al. 2020). It shows thoughtlessness of other residents and leads to dangerous situations and creates a feeling of unsafety (Vermeij & Hamelink 2021). It leads to situations where wheelchair users are forced to cross the road, even when signs signal not to park on the sidewalk (figure 4).

Figure 4. A car blocking the sidewalk. Source; Bonehill et al. 2020.

2.6.2. Determinants of the social environment

2.6.2.1. Social accessibility

Social determinants can be enabling, such as a willingness to provide help by other people. Additionally, the availability of personal assistance is also a factor mentioned of importance, when this is available this is an important enabler (Fänge et al. 2002). However, the social environment can also be the cause of anxiety due to nosy questions, or people pushing the wheelchair without asking (Velho et al. 2015). Poldma et al. (2014) also states that social stigma adds stress to shopping mall experiences. Social accessibility is something that thus is present in semi-public (third places) and public space.

2.6.2.2. Third places

As established before, spatial characteristics of the environment are of influence on human behaviour (Gehl 2011; Whyte 1980). Important places that influence the social life of a shopping street are 'third places' (Mehta & Bosson 2010). These are places that can be seen as a place of refuge to meet friends, colleagues, and family other than the home or workplace. These are places that should be considered while looking at the accessibility of shopping streets. This is because the possibility to eat, drink and go to an accessible toilet is necessary for the leisure activity of shopping. In the Netherlands about half (46%) of the participants with mild disabilities regularly visit such places, like a café. Of the participants with a severe disability only about a quarter (26%) visit these (Vermeij & Hamelink 2021).

All factors working together, visual expressions, spatial quality and the social environment can create a feeling that the space is pleasant which results in physical and mental wellbeing (Gehl 2011). Additionally to this, does the social model of disability define disability as the disadvantage or restriction of activity due to a contemporary social organization, this can be both physical and social. The staff present in these third places is found to be of immense importance as well (Vermeij & Hamelink 2021).

2.6.2.3. Perceptions of crowding

A considered number of researchers have investigated the social life of streets and public space in the city. A highly influential writer, Jane Jacobs, stated that what makes cities safe and enjoyable is the presence of other people (1961). However, the crowding of people on the pavement one of the three major obstacles in shopping for wheelchair users (Bromley et al. 2007). While Gehl also explains that "generally, people attract other people" (2011, p.23) and previous research explains the presence of pedestrians also bring psychological safety to the streets (Jacobs, 1961). The perception of crowding per individual thus seems to play a role in accessibility level perception of shopping streets for wheelchair users. Coping mechanisms of wheelchair users is to go shopping in time periods when it is known to be less crowded (Bromley et al. 2007).

2.6.2.4. Quality of public space

Another example is named by William Whyte, who stated that small urban spaces are of major importance for the quality of life (1980). In his research, *The Social Life of Small Urban Spaces*, he observes the influence of the environment on human behaviour. Regarding people in a wheelchair, Whyte states in his research that, "if circulation and amenities are planned with them in mind, the place is opt to function more easily for anyone" (1980, p.33).

The quality of the built environment defines the use and the experience of the environment. Jan Gehl (2011) also emphasizes that the quality of the urban space is of significant importance for outdoor activities and thus the social life in the street. He describes it as such, there are three types of outdoor activities, necessary activities, optional activities, and social activities. Optional activities are recreational activities and only taken if the exterior environment is favourable (figure 5). These activities are thus highly influenced by the built environment. As a result of an increase in optional activities social activities increase as an externality. Social activities can be, contact at a low intensity level, a starting point for other levels or maintaining the already established contacts (Gehl 2011). Necessary activities are everyday tasks, according to Gehl (2011), independent of the environment since participants have no choice but to participate and are mostly related to walking. However, for people with disabilities necessary activities are influenced by the environment as previous research states that precisely these daily routines activities obstacles are experienced (Rashid et al. 2019).

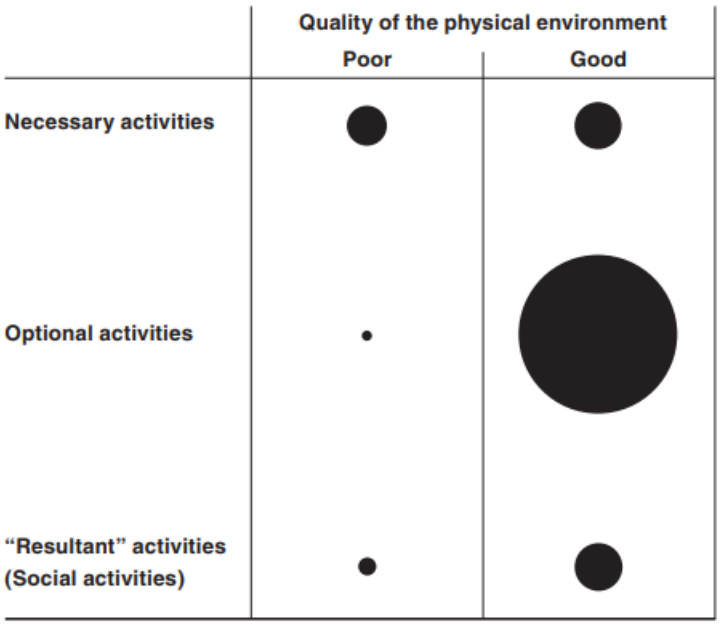

Figure 5. Graphic representation of the relationship between the quality of outdoor spaces and the rate of occurrence of outdoor activities Source: (Gehl 2011, p.11)

It is apparent that social determinants are connected to the physical environment. Izenberg & Fullilove (2016) also make this clear when they state that connections such as pedestrian infrastructure and connectivity of the roads are of importance for the sociability. Together with construction, such as the type of street wall and sizes of buildings, or with the character of area which in the case of this research is a newly build shopping mall. Lastly, the content is of importance, public spaces, and other amenities available such as shopping.

2.6.2.5. Interactions and sensory experiences

Besides the purpose of buying goods and services several studies have found that sensory stimulation is an important motive for shopping (Mehta & Bosson 2010). The shopping street is hereby a place where people create contacts outside their own circle of contacts. Sensory experiences and social encounters on our daily routes and habits create an emotional attachment and sense of belonging for specific urban areas (Wunderlich 2008). This is of significance for PWD since much attention is normally given to those who are in close contact with them (De Boer et al. 2020 qtd in Vermeij & Hamelink 2021). The shopping street can offer new contacts, experiences, and possibilities.

Izenberg & Fullilove (2016) elaborate that main shopping streets are significant for community social integration between members of separate groups. The so-called 'weak ties,' loose connections between diverse groups of people which are formed through casual interactions on the street, 'the life between buildings' (Gehl 2011). Besides participation in shopping as a leisure activity and social activity these interactions are building blocks for a collective consciousness and a foundation for health (Izenberg & Fullilove 2016).

Social activities are defined as, "being among others, seeing and hearing others, receiving impulses from others, imply positive experiences, alternatives to being alone. One is not necessarily with a specific person, but one is, nevertheless, with others" (Gehl 2011, p. 17). These social interactions are also named "light interactions" (Van Eijk & Engbersen 2011). These interactions are of extra significance in urban areas where residents do not know each other on a personal level but regular encounters create 'public familiarity' (Blokland 2003, 2006, 2008 qtd in Van Eijk & Engbersen 2011).

Collective consciousness about each other and public familiarity emerges through this visibility (Kal 2013). If the environment is physically or socially inaccessible, consciousness about individuals in a wheelchair or other technology related to mobility remains limited in the neighbourhood. This is because they are simply not visible. As a result, the social integration due to social activities also remains limited. To prevent that the public space limits people in going outside, space needs to be actively created for these people to feel at home (Kal et al. 2013). The transition from the welfare state to the participation society needs inspirational projects it is only a matter of facilitating them (Kal et al. 2013). One way of creating visibility is for example through art, "they show something of people of whom the spectator sometimes does not understand much and at the same time they put on the agenda the desire of people who are less obvious in the world" (Visker 2007 qtd in Kal et al. 2013, p.12). To participate and belong are important characteristics to indicate accessibility according to the social sustainability framework as previously mentioned in chapter 2.2. (Kadir & Jamaludin 2013).

2.7. Conceptual model of accessibility shopping centre Utrecht Leidsche Rijn

From the previous literature and theories, a conceptual model is illustrated. The conceptual model is based on the conceptual model of Trani et al. (2011) in Figure 6. For this research, the conversion factors, "resources into freedoms" are specified on the micro-level of the shopping centre of Leidsche Rijn and on the specific research group of wheelchair users. Trani et al. (2011) divides these resources into external and internal capabilities which are the conversion factors who influence the accessibility set directly. These are subdivided into the three factors explained by Mitra (2006) as the factors which form the individual capability set, which are also the factors that form the sub research questions number 1, 2 and 4, 5 and labelled light blue in the conceptual model (figure 6). The conversion factors entail, the individual characteristics, the individual resources, and the individual environment, consisting of the built and social environment.

These conversion factors influence the accessibility directly. Sub question 6, policy to enlarge the accessibility is pointed towards these factors is located on the left of the conversion factors. Together with sub question 3, the internal motives for visiting, these two factors are likewise labelled light blue. The main research question is labelled yellow.

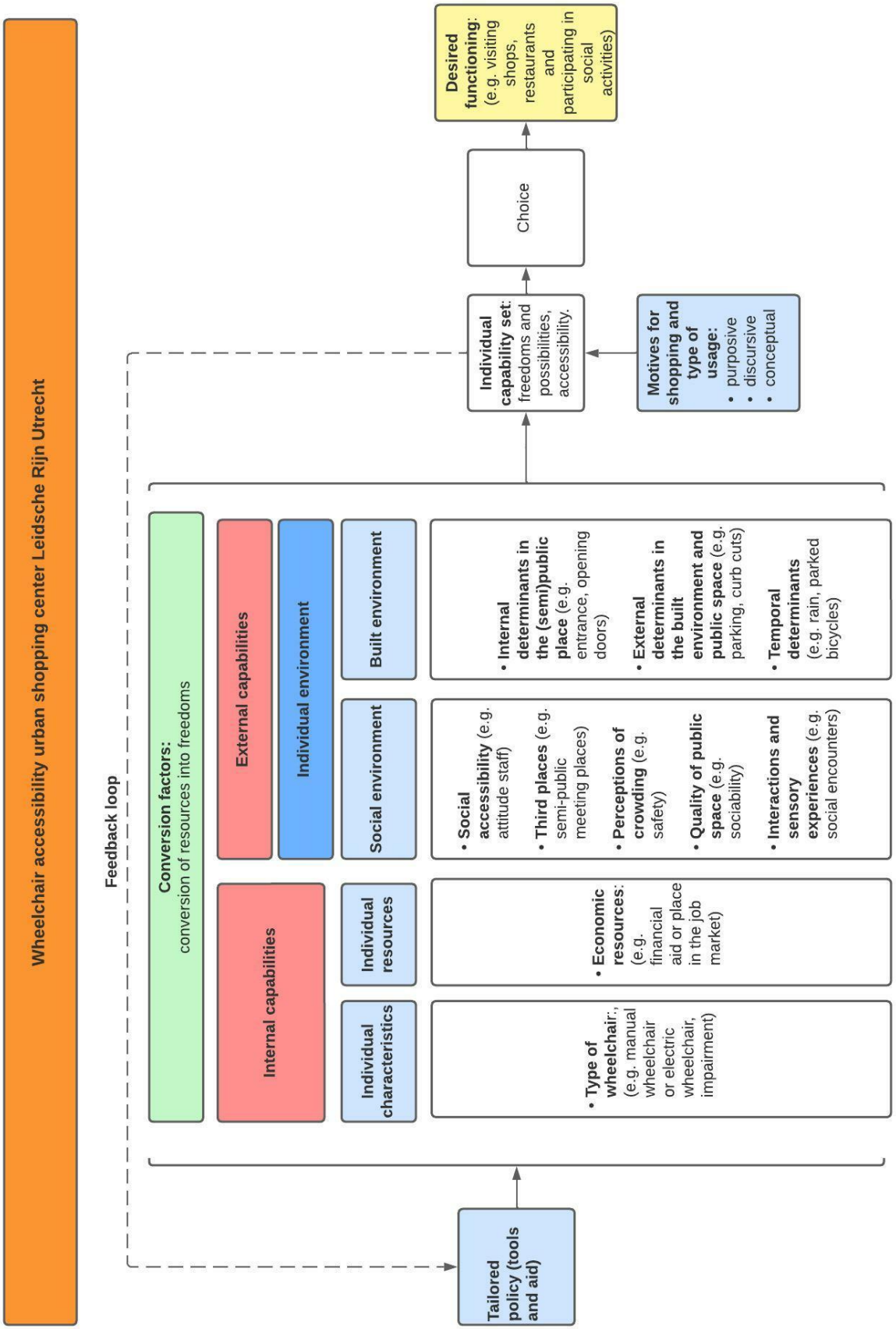

Figure 6. Conceptual model

3. Methods

3.1. Introduction

This chapter begins with an overview of the research context, the research area site and setting and the delineation of the research population. Following, an explanation and justification of the chosen research methods is presented to answer the main research question,

"How is the accessibility of the shopping centre in Utrecht Leidsche Rijn experienced by wheelchair users, and how does this influence their participation in the social activities of shopping?,"

all sub questions are answered with the help of semi-structured go-along interviews (wheel along), which were conducted with a topic list based on the previously discussed literature and theory (appendix C). Additionally, expert interviews are specifically used provide more in-depth knowledge about the environment and to answer research question 6.

Sub research questions

1. How does the individual characteristic of various types of wheelchairs influence the experience of wheelchair accessibility?
2. How does the individual characteristic of economic resources influence wheelchair users' experience of accessibility?
3. How does the difference in type of usage of the shopping centre influence the experience of wheelchair accessibility?
4. How do different environmental determinants of the built environment in the Leidsche Rijn shopping centre influence wheelchair users' experience of accessibility?
5. How do different environmental determinants of the social environment in the Leidsche Rijn shopping centre influence wheelchair users' experience of accessibility?
6. How can the general accessibility policy, rules, and tools be improved while considering various individual wheelchair users' capability sets who visit the Leidsche Rijn shopping centre?

3.2. Research context

3.2.1. Research population

This research will focus on the experience of accessibility by the specific group of wheelchair users. It is apparent that the research population of wheelchair users, electric wheelchairs and walkers will rise in the upcoming time due to the rise of ambulatory diseases (Bromley et al. 2007). Consequently, it is beneficial for the whole of society to plan barrier free and follow the guidelines of universal design (Kadir & Jamaludin 2013). Not only is planning with this in mind economically beneficial and including this population in shopping will lead to 12% more income in total (Janmaat 2018). It is also of importance for the social sustainability of the neighbourhood that people with disabilities feel included and can participate in the social life in the neighbourhood (Kadir & Jamaludin 2013).

The participants needed for this research were individuals who move through the environment with the use of a wheelchair. The individual characteristics of wheelchair users are diverse, from the perspective of the human rights model the principle is a recognition of human diversity and impairment (Degener, 2014). Therefore, it is of importance to ask questions which lead to recognition of different capabilities per individual wheelchair user, such as the type of wheelchair.

Hereby the research population also included individuals who are experienced in moving through the centre in Leidsche Rijn with a wheelchair but made use of other technology such as a tricycle (respondent Amber), and a mobility scooter (respondent Nathan) during the go-along interviews. These respondents were included since they were familiar with wheelchair use within the shopping centre and their knowledge from previous experience was also valuable. Additionally, the research population of wheelchair users is not one homogeneous group. Including use of other technology related to a mobility impairment is important to create the broadest understanding of the needed tools and aid to create accessibility and answer sub research question 6.

Additionally, diversity is met with differences between regular users of the shopping centre and first time or infrequent users of the centre. As long as the desired functioning was to take part in the activities, shopping, or leisure time, of the shopping centre.

3.2.2. Research area

Case study; shopping centre Leidsche Rijn

Previous research by Vermeij & Hamelink (2021) has shown that the accessibility in Dutch cities is low even after the adoption of the CRPD. In this research the city of Utrecht is central. The research focuses on a case study of the shopping centre in Leidsche Rijn. Case studies are often used in human geography, characteristically they research one phenomenon in depth in a certain context and place (Castree 2005). This phenomenon, an urban shopping centre, is unique in a way that it is the largest shopping centre in Utrecht Leidsche Rijn. However, the phenomenon is not singular, since urban shopping centres can be found in other places in the Netherlands as well.

Leidsche Rijn is promoted as “Utrecht’s Newest Urban Area” (*Utr**echt**’s nieuwste stadsdeel*) (Leidsche Rijn Centrum, 2022). New areas will be built in Leidsche Rijn and Utrecht, after the ratification of the CRPD and the UTS in Utrecht, insights into the experience of the accessibility in this specific case study is of significance to assess the practical reality of these policies in the city of Utrecht, in the shopping centre of Leidsche Rijn. As a result, points of improvement are made visible for the future built environment.

The location of the shopping centre in Utrecht Leidsche Rijn is in the west of the city of Utrecht, in between the neighbourhood Leidsche Rijn, Zuilen, Lombok and Oog en Al next to the highway (A2) (Figure 7).

Figure 7. Location and outline Leidsche Rijn Centrum in Utrecht. Source; (OpenStreetMap, 2022)

3.2.3. Setting

Figure 7 presents the shopping centre in Leidsche Rijn which contains 130 stores for shopping. It has a variety of restaurants and additionally contains a library, supermarket, and coffee bars (Leidsche Rijn Centrum, 2022). There is also a central square which includes a water fountain which can be used to play in for children, plenty of seating spots and a playground. Additionally, there is a lot of space for pedestrians and cars are not allowed in the shopping streets. Factors that are considered to contribute to a successful social life in public space by previous research (Whyte 1980; Bromley 2007; Gehl 2012). A detailed map of the shopping centre is presented in figure 27 in appendix A.

3.3. Research method

3.3.1. A qualitative phenomenological research design

To gain more insights into the research aim, a qualitative phenomenological research design is used. The choice of method is semi-structured go-along interviews which is further elaborated on in the next paragraph (Kusenbach 2003). A qualitative research design is suitable for several reasons. The first reason is considering of the research population. While researching minority groups, such as wheelchair users, it is advised to use qualitative research methods. This is because it helps to describe and explain how human interaction, cultural attitudes, and the social dimension of the environment are interdependent (O'Day & Kileen 2002 qtd in B. Swain et al. 2014). Additionally, the use of qualitative data is also known to be suited in disability studies considering the mantra 'nothing about us without us.' The sensitivity of applying this mantra is reflected in the use of large first-person citations of the experience of wheelchair users (Scuro 2017). This tool, an important characteristic of qualitative research, is hereby also key to prevent ableist practices in this research. An additional reason qualitative data is suited for this research project instead of quantitative research methods.

Secondly, in the context of this research, in which the 'experience' is investigated, the phenomenological method comes into force. Within phenomenological qualitative research, the embodied experience is central which is of importance to answer the research question about the diverse 'experience' of accessibility and social inclusion per individual (Hammarberg et al. 2016). As Labbé et al. (2020) states, individual embodied experiences are essential in the dialogue on urban accessibility. The usually taken for granted day to day routines are reflected on because the emphasis is really on the bodily and sensory experiences.

Lastly, the social model of disability has received critique which entails that it neglects the experience of impairment. Since the social model of disability recognizes disability as the result of social organizations and opposes the medical view, hereby, recognition of pain and impairment became a risk that "disability is really about physical limitation after all" (Hughes & Peterson 1997, p. 328). As a reaction to this dilemma of impairment/disability dichotomy, researchers Hughes and Peterson (1997) have developed a sociology of impairment based on phenomenology. This method is in line with the perspective of the human rights model of disability from which this research is viewed through as discussed in chapter 1.1. In the human rights model, a feminist perspective is used which addresses the personal experience of physical and social restrictions, pain, and fears and in "doing so give voice to the experience of both disabled men and disabled women" (Morris 1999 qtd in Degener 2014). The main research question, including the sub questions which are formed to answer the main research question are about the experience of accessibility and social inclusion in the activities adjacent to shopping.

3.3.2. The go-along method (Wheel- along)

The method of qualitative phenomenological geography can be operationalized with the study design of a go-along (Kusenbach 2003). With this method researchers follow the individual research participants in the urban environment. The base of the go-along method (wheel-along) is the lived-experience since it combines ethnographic observations and interviewing. Static interviews when researcher and subject sit face-to-face, take the interviewee out of the natural environment. Hereby does the lived experience remain invisible and a dialect takes place instead of a shared perspective with the interviewer (Kusenbach 2003). Furthermore, solely observations show an incomplete image and experiences, and perceptions often remain invisible. Kusenbach explains that field observations from a close vantage point or from a distance "fail to access the environmental perception and experience of (other) members" (2003, p. 461), what they exactly are doing or experiencing is still a mystery.

Depending on the mode of transport this method can be named a walk along (conducted while walking with the participant), ride along (conducted while driving) (Carpiano 2009). Other variations as in the case of this research while the researcher accompanies wheelchair users, a wheel-along are also possible. However, there is limited knowledge from previous research using this type of go-along. Hereby, knowledge on different transport modes such as the walk-along is valuable.

One example of this is research by Degen & Rose (2014) who state that the experience of place is a result of the individual environment. In their research they analyse this with 'walk-along' interviews and state that the experience of the environment is mediated by bodily motions and perceptual memories. Their view on perceptual memories is of significance to consider with the wheel-along. This is since people in a wheelchair often have negative experiences or a lack of experiences of participating in the shopping activities (Bromley 2007; Caroll & Kincade 2011; Fänge et al. 2002; Poldma et al. 2014).

These perceptual filters are of significance for knowledge transfers to a researcher or planner with an abled perspective who does not have to make use of a wheelchair to be mobile. As Degen & Rose (2014) mention that people have perceptual memories which influence the experience of the environment. Kusenbach elaborates that perceptual filters can be divided into "practical knowledge and tastes/values" (2003, p.466). Practical knowledge differs per person, it can constitute out of assessments of safety and accessibility. For example, knowledge of the environment by frequent users possibly makes wheelchair users feel safer. Similarly, this is the case for tastes/values, one street can be accessible but unattractive for an interviewee and thus not chosen as part of the route in the shopping centre. Certain environmental features can be detected by everyone but interpreted differently, wheel-along interviews create visibility for these features.

By accompanying interviewees during fieldwork, the interaction and experience of the interviewee while moving through the physical and social environment not only observed but also questioned with semi-structured interviews. Using a semi-structured interview design, topics can occur during the go-along which are not anticipated before by the researcher (Marquart & Schicketanz 2022).

To summarize, go-along interviews in the shopping centre in Utrecht Leidsche Rijn can therefore provide insights in the physical accessibility and the social accessibility. This gives great advantages in exploring, "the role of place in everyday lived experiences" (Kusenbach 2003, p. 459). The sub research questions are thus answered with the help of this wheel-along interview method.

3.3.3. Challenges wheel-along and ethical considerations

Nevertheless, the wheel-along method has flaws and limitations. As Bergeron et al. (2014) states, the go-along can never be truly spontaneous but always needs some organization from both the researcher and respondent. This way, the actual daily routine is not precisely registered. Also, this method needs to be conducted with sensitivity and finesse by the researcher. Especially with sensitive topics such as disability and economic resources. The respondent must feel safe to talk openly about his/her thoughts. This ethical consideration also must be considered while recruiting respondents. This pitfall is tackled by using familiar and trustworthy organizations for the respondents and making acquaintance with people through meetings of organizations such as SOLGU or acquaintances in community centres. Additionally, the respondent is informed that personal data is anonymized and will not be shared with third parties.

Another challenging factor with the wheel-along is the difference in walking and rolling pace between the wheelchair user and the walking researcher. It is challenging to simultaneous while moving making notes and pictures and asking probing questions while navigating through the environment. This requires focus and active listening skills (Kusenbach 2003). The discussion is also often interrupted by memories of the respondent but also due to factors in the environment, such as traffic and acquaintances in the environment who stop the interview to talk to the respondent.

3.3.4. Expert interviews and online fieldwork

As context for the planned environment expert interviews with the development manager of Leidsche Rijn was conducted. At first an exploratory interview was conducted at the start of the fieldwork research on July 14th, 2022. After the interviews, another interview with follow up questions was conducted on September 27th, to provide a more in depth understanding of the choices in the building process. This method was chosen to provide more in-depth knowledge of the case study and the role of accessibility in the building process. Hereby, the municipality and planning discourse was provided. This way an answer to sub question 6 can be found. Since it can be researched whether the implemented accessibility policy measures align with the necessary and experiences of accessibility in practice.

For this interview, a topic list was prepared, and probing questions were asked (Appendix D). Additionally to this, information available online through websites such as wheelmap.org was added to provide more context and knowledge beforehand both the go-along interviews and the expert interview. Hereby, probing questions such as, "what about accessible toilets?" were added to the topic list. The second follow up interview contained more detailed questions about the policies (Appendix D).

Together with the results of the semi-constructed interview during the go-along, an analysis can be done that shows insights into whether there is a gap between what the general guidelines and tools

are and what is needed to create an accessible shopping environment for the broadest variety of society (Evcil 2009; Janmaat 2018; Vermeij & Hamelink 2021). According to the universal design principle, the built environment should be useable by all and thus an inclusive environment, both social and physical is created for all.

Limitations are that the data is only based on one individual. The complete image is therefore likely not visible. Also, the respondent might not provide the whole picture and information. However, the main research aim is to gain insights into the experience of accessibility by wheelchair users, this interview is therefore solely for background information. The question, 'what would you have done differently when it was build?,' is asked to the participants anyway. The sub research question 6 can therefore also be answered by the wheel-along semi-structured interviews solely. However, this background information is useful additional information.

3.4. Data collection

3.4.1. Sampling size

A challenge of this research methodology considering this research population is that the participation to the go-along method is time consuming and energy costly, something that is not always available for wheelchair users. This has its limitations considering the amount of people able to participate and thus the size of the research population is small. In the end, the size of the research population of qualitative data consists of eleven go-along interviews.

Although the research population was difficult to find, saturation was strived for in the number of respondents. Saturation is used to define whether the size of the research population is good. This is achieved when the data fails to offer new insights and directions and is repetitive. In other words, "no new codes or concepts emerge" (Rijnsoever 2017, p.2). Validity is therefore assumed, and the amount of conducted interviews can provide an insight into the experience of accessibility by wheelchair users in Leidsche Rijn centre and the influence on the social inclusion.

External validity is measured with applicability, "when its findings can fit into contexts outside the study situation" (Hammarberg et al. 2016, p. 500). Applicability does not enlarge with sample size. There may be a trade-off between depth and breadth, or there may be too much data to analyse properly (Hammarberg et al. 2016). Hereby, a smaller research population of eleven respondents in which the data can be analysed in-depth is suitable (Alase 2017). Specifically in-depth analysis per individual wheelchair user, which is central to the research question.

3.4.2. Sampling strategy

The sampling strategy was purposeful sampling. This strategy is mostly used in qualitative research to analyse individuals who are particularly knowledgeable about the topic of interest (Palinka et al. 2013). Hereby, this method use of the limited resources available (Patton 2002 qtd in Palinkas et al. 2013). More specifically, the strategy of purposeful sampling entailed, snowball sampling and emergent sampling. The objective of snowball sampling is, "to identify cases of interest from sampling people who know people that generally have similar characteristics who, in turn know people, also with similar characteristics" (Palinka et al. 2013, p. 535).

This strategy was conducted while contacting several organizations in Utrecht and Leidsche Rijn such as community centres Dock Leidsche Rijn and the SOLGU (*Stedelijk Overleg Lichamelijk Gehandicapten*/ Urban Consult Physical Disabled). This method led to ten respondents. Additionally to this, 1 respondent was recruited while walking in the research area of Leidsche Rijn and starting a conversation with a passer-by on the street, an emergent sampling. More insights in the respondent recruitment can be seen in appendix B. The recruitment poster can be seen in appendix E.

A challenge of this sampling strategy is that the diversity and variation of the sample group is not known beforehand, and saturation will arise during the research. In this case the distribution of frequent and infrequent users of Leidsche Rijn centre is nearly equally divided with 5 frequent users (weekly) and 6 less frequent users. An overview of the respondent group is presented in table 2 in chapter 3.6.

3.4.2. Participant recruitment and data collection

This research took place from March 2022 till December 2022. The first months, literature and theories were collected to prepare for the fieldwork. The fieldwork was conducted from 30th of June till 7th of October. The data consists out of thirteen interviews. From these 13, 10 walk-along semi-constructed interviews were conducted on sight, which had a duration from a minimum of 40 minutes till a maximus of 1,5 hours. The other 3 interviews consisted out of 1 interview with a wheelchair user which was conducted online from memory while using google maps and 2 expert interviews which took place face-to-face. All interviews were recorded with a microphone with Bluetooth connection to a mobile phone. An overview of the respondent recruitment can be found in appendix B.

3.4.3. Structure topic list

A semi-structured interview is used and for this a topic list is developed to ensure all topics are addressed (Appendix C). These main topics are used for both the expert interviews and the wheel-along interviews.

The topic list consists out of four topics.

- The individual characteristics
- Type of usage
- The built environment

- The social environment

The topics are obtained from the literature and are in line with the conceptual framework (Figure 6).

At first, the topic of the individual characteristics, since that information is needed to answer the sub research questions 1, the type of wheelchair and 2, the economic resources. Which are important topics that form the individual capability set (Mitra 2006). Additionally, questions specifically about the type of usage of the shopping centre of Leidsche Rijn follow. These focus on previous experiences and motivation. Important factors that influence the experience of the environment (Wunderlich 2008). This topic is needed to answer sub research question 3.

The topic of the social environment entails questions about the social environment, specifically discussed in chapter 2.6. about the contextual determinants. Questions such as "Do you feel you can participate fully with all activities in the centre?," help to provide more insight into sub question 4. The topic of the built environment likewise focusses on the contextual determinants, but on the physically visible determinants such as the type of pavement or design of the public space. These questions are needed to answer sub research question 5. Lastly, all topics are used to answer sub question 6. However, the question, *"What would you have changed when building the centre?,"* specifically gives insights into research question 6.

3.5. Data analysis

The data is analysed by means of thematic analysis according to the method of Braun & Clark (2006). Themes are defined as "patterned response or meaning" (Braun & Clark 2006, p. 82). There is great flexibility in identifying themes by the researcher. However, they should try and pick ones that offer insights into the research question (Braun & Clark 2006 qtd in Kiger & Varpio 2020). Hence, a deductive approach were codes based on the literature and pre-existing theory are used to identify themes.

This analytic method exists out of a 6-step process. In step 1, all recordings of the wheel-along interviews were transcribed, and the data is familiarized (Kiger & Varpio 2020). Thereafter, all personal information is anonymized in the transcripts and pseudonyms are used. Then the data is imported in the qualitative data program NVivo. Step 2, initiative codes are added to the text. Thereafter, in step 3, the codes were divided in themes related to the theoretical framework. In step 4 these themes are revised and refined. In step 5 these are determined and structured, creating a definition of each theme and subthemes, these are presented in appendix F. Lastly, in step 6 the results are written down after the analysis of the data in NVivo (Kiger & Varpio 2020). The results of this analysis are discussed in the result chapter 4. A summary of the coding scheme is presented in appendix F.

3.6. Overview respondents

To gain insight into the composition of the respondent group an overview is presented in table x. The table provides a description of the respondents based on individual characteristics of age, the time of interview, where they live, type of use of the shopping centre and type of wheelchair. The respondent group consist out of 11 individuals, 5 residents of Leidsche Rijn and 5 residential elsewhere in Utrecht, with one respondent residential in Roermond.

Table 2

Overview respondent group

Name respondent, pseudonyms*	**Date interview**	**Frequency use shopping centre**	**Living in Leidsche Rijn**	**Type of wheelchair**	**Age**	**Financial resources**
1.Nathan	30.06	Weekly user	Yes, in Terwijde since about 2008.	Electric wheelchair, but mobility scooter during the wheel-along.	61	Volunteer
2.Mathilde	04.07	About once a year	No, in Lunetten	Manual wheelchair, with electric drive option, wheels with suspension	52	Welfare, volunteer
3.Riley	06.07	About once a year	No, in Maarssen	Manual wheelchair, arrival by hand bike	42	Welfare
4.Tim	08.07	Weekly user	Yes	Manual wheelchair	48	Income by job
5.Janet	11.07	Only one time before	No, living in Utrecht since 2017	Manual wheelchair, at time of interview crutches	30	Income by job
6.Jim	14.07	About 2 times a year	No, living in Lunetten	Electric wheelchair, operated by one hand	65	Income by job

7.Michael	15.07	First time user	No, living in Roermond.	Electric wheelchair, operated by head movement	18	High school student, welfare
8.Benjamin	22.07	Weekly user	Yes, since 2003	Manual wheelchair, used a hand bike during the interview	51	Income by job
9.Simon	26.07	Weekly user	Yes, since 2014	Manual wheelchair	47	Welfare
10.Henriette	27.07	About twice a year	No, living in Zuilen.	Manual wheelchair, at time of interview pushed forward by her son	74	Retired
11.Amber	07.10	Weekly user	Yes	Previous wheelchair users, at the time of the interview moved forward with a tricycle	45	Income by job

4.Results

This chapter discusses the results related to the sub-questions introduced in the introduction. The results are presented starting with the findings from the interviews and statements from the expert interview with the project manager of the municipality. Thereafter the experience of accessibility according to the wheelchair users is presented. As mentioned earlier in Chapter 3, the topic list includes four main themes. These are: the individual characteristics, the type of usage of the shopping centre, the built environment, and the social environment. These are discussed in this sequence, in order to answer the research questions linked to the topics. Lastly, the factors missing in the environment according to findings in the wheel-along are presented in order to answer sub research question 6.

4.1. Individual characteristics

4.1.1. The influence of the type of wheelchair

4.1.1.1. background information and architectural line of thought

According to the website of Leidsche Rijn the wheelchair accessibility is good, “The shopping area of Leidsche Rijn Centrum is wheelchair friendly. All stores are accessible to the disabled” (Leidsche Rijn Centrum, 2022). The information available on other digital information sources such as wheelmap.org however state a more nuanced image (Figure 8). Moreover, the website of Leidsche Rijn Centrum only comments on the accessibility of stores and not on third places which are labelled partially wheelchair accessible on the wheelmap.org website.

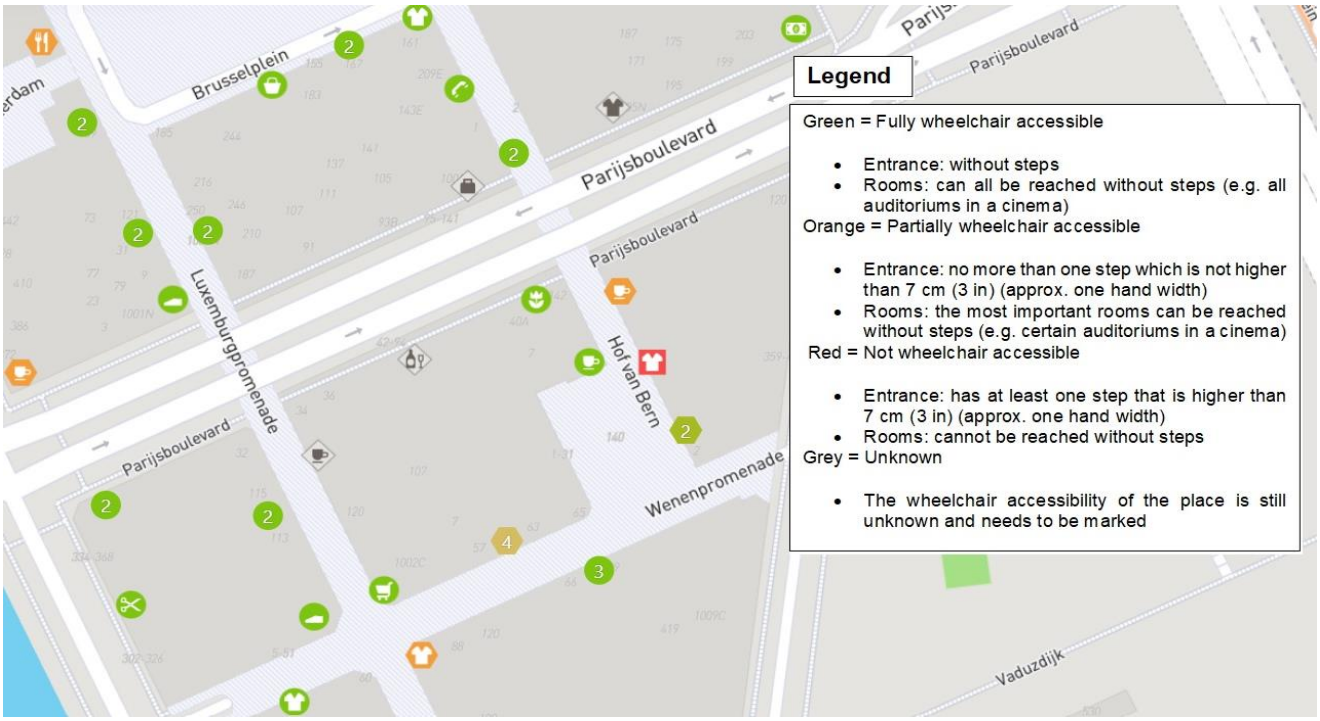

Figure 8. Accessibility of third places, shops, and restaurants in Leidsche Rijn centre. Source; (Wheelmap.org 2022).

From the expert interviews it becomes clear that there is not differentiated within the group of wheelchair users. This aligns with Hoffman et al. (2020) who states that often in accessibility studies disability is misunderstood and expected to be a clearly defined impairment. However, the guidelines are meant to work for everyone, including all differences. As the expert interview states, "there are all manuals, atlases that you have to comply with, and one of the first rules of play the first draft is that it is accessible to everyone." The planning process involves a lot of meetings and consultation with the unions and representatives of all target groups. Lastly, all plans are evaluated by these professional groups. The public space is hereby evaluated in every step of the planning process, by representatives of target groups. However, the individual embodied experienced based viewpoint is not part of the dialogue which is stated essential in the urban dialogue by Labbé et al. (2020).

The planning process for the internal built environment is different. It is explained that buildings itself have to follow legal obligations but that it is not known if this is actually executed. This is explained by this quote, "how they've actually set it up all the way inside, we don't have a clear picture of that." However, the go-along interviews were able to make certain disabling determinants visible and thus to create a clear picture of the individual experienced based viewpoint. From the go-along interviews it can be concluded that the type of wheelchair is influential on the experience of accessibility. It is an important factor in the individual capability set (Mitra 2006). Understanding this diversity is needed to develop tools for inclusion (Baumers & Heylighen 2015).

The diversity within the group of individuals who make use of a wheelchair to move around is significant. This is exemplified when respondent Riley askes the question, what or who do you consider when making things wheelchair friendly? She also reflects on accessibility apps online who inform on the wheelchair accessibility. Such as the website wheelmap.org where for example accessibility of toilets are shown, *"yes from whom does the input come, what I'm saying, one wheelchair user is not the other, one necessarily needs 2 brackets at the toilet, one needs a toilet with a changing table, and that makes a lot of fragmentation within the groups".* The website shows that plenty of shops are considered wheelchair accessible but there is no indication of the skill level, impairment, or type of wheelchair of the wheelchair user who contributed to the information in the map.

The influence of diversity in type of wheelchairs is not specified in the design process with lived experiences. Instead, guidelines and contact with a diversity of stakeholders is used to achieve accessibility.

4.1.1.2. Manual wheelchair

The research group consists out of 7 respondents who move with the help of a manual wheelchair. However, within this group of 7 there is still difference and diversity. One example of that shows the difference when the wheelchair of Janet and Tim are compared. Janet explains that her wheelchair is really basic which leads to her being less mobile in her wheelchair compared to Tim who has a very ergonomic wheelchair.

Starting with Janet, *"I think I really have the most basic wheelchair too, the one I have from the hospital also at home, and then of course because it's a temporary period for me now, everything is by hand and uh, and it's also really quite a heavy wheelchair so it's really not totally easy to drive myself."* While Tim says, "*you know I've been in a wheelchair for more than 30 years, I have several wheelchairs at home, and this wheelchair is very ergonomic, very unstable, and rolls very well, rolls lightly and because the wheels are a little further apart, I have no trouble at all with this wheelchair to get over thresholds".* This exemplifies that experience of accessibility is thus influenced by the type of wheelchair and skill level.

Another example of diversity is the possibility to attach a hand bike or a motorized drive to the manual wheelchair. This creates a larger individual capability to overcome a height difference. While taking the same route from the Grauwaartsingel through the Hof van Amsterdam to the Brusselplein this becomes clear (Figure 9). Benjamin states that because he has his hand bike attached during the wheel-along interview the height difference is not a problem. However, "*yes, well if you have to roll this then it is a bit of a challenge... no but by bike it's no problem, if you have to do this only with a wheelchair well then uh, it's pretty long huh"* (Benjamin). The same route is also a challenge for Marijke, she therefore has to use her motorized drive called SmartDrive, *"I'll try out because I have a motor on now and I'm in a wheelchair and I have a I'm a I have a drive with a SmartDrive...because it uhm for my energy limitation...that just saves energy, ah yes this is quite steep"* (Marijke). The wheelchair is in any case a conversion factor that enlarges the individual capability set to overcome barriers and thus to visit the shopping centre (Trani et al. 2014; Mitra 2006). These attachments possibilities such as the hand bike enlarge the individual capability set even more to overcome steeper height differences.

The height difference in Leidsche Rijn is stated to be a bottleneck, and *"that still sometimes keeps me from using this mall, because I just have to go up here"* (Tim), when *"my arm is just a little bit sore"* (Tim). As mentioned by Degener (2014) the experience of impairment or physical discomfort is an additional influence on the experience of accessibility which can differ per visit. Recognition of this diversity is important to assess the accessibility not just from the perspective of the social model of disability but also the human rights model of disability (Degener 2014).

Figure 9. The location of the Hof van Amsterdam. Source: (OpenStreetMap, 2022)

In terms of threshold level the variety in skills is also significant. When asked about what height of thresholds he is capable to overcome Simon states, *"uhm, well I can even go down the stairs with the chair."* Mathilde is able to go down the height difference of the Brusselplein because of her suspension wheels, "*that's the advantage of suspension wheels haha… ah someone else isn't coming off that no*." Tim also states that although he can enter the shop, someone else who is less skilled will have problems, "*I can get over them, because I'm an agile wheelchair user, but these thresholds just don't suffice*".

This shows that the skill level and experience of the individual wheelchair influence the ability to overcome height or threshold levels. The results that show the experience of accessibility are therefore not just solely on the wheelchair type but also the individual wheelchair skills with the diversity of wheelchair types. Furthermore, while more experienced wheelchair users are able to enter shops with higher threshold levels than the legally permitted 2 centimetres. It is apparent that even those skilled wheelchair users sometimes feel bodily discomfort or pain when they are not able to take on the height difference anymore. This leads to the inability to visit this shopping centre and the choice to go to another.

When the conversion factors in the built environment are not enlarging the capability set, the solutions lie with the internal conversion factors. In this case the skill level and the ability to convert financial resources into freedoms. For example, the ability to buy a hand bike or a motorized drive attachment to tackle the height difference in Leidsche Rijn. Another example is the ability to participate in wheelchair skills training to tackle the high threshold levels or gain confidence managing a wheelchair in general. The frequent users have practical knowledge about the threshold levels and know they are able to overcome them, however an infrequent users can assume that due to the fact that the centre is labelled wheelchair accessible the threshold is 2 centimetre (Kusenbach 2003).

4.1.1.3. Electric wheelchair

Both respondents with electric wheelchairs have different types as well which Michael explains further. He says, *"there's also a variation in electric wheelchairs, the biggest difference is, with my wheelchair, is that I have my fat tires in the front… and the reason for that is because I uh, I lean, uh, mostly backwards, and I don't lean forward, I can't grab anything with my hands, and usually people who can, uh, get uh, small wheels in the front, big wheels in the middle, small wheels in the back… but I'm happy with this one because I can hit things pretty hard and it's, it can handle that"* (Michael). The wheelchair of Michael is thus very impact-resistant compared to other electric wheelchairs with smaller tires in the front.

There is also a difference in the ability to overcome threshold barriers per wheelchair, the electric wheelchair from Jim can overcome "*4 till 5 centimetres"* and Michael also states to be able to overcome *"high thresholds"*. While the legal obligated height difference is 2 centimetre and in the policy guidelines, the ability of the electric wheelchairs to overcome higher threshold levels might influence the experience of accessibility in a more positive way than someone who is in a manual wheelchair unable to overcome the threshold level. This is of significance on for example the review on wheelmap.org.

4.1.1.4. Other mobility technology

Lastly, the internal accessibility of most clothing shops is found to be accessible by the electric and manual wheelchair individuals. This is also the case for the tricycle of Amber since, *"the bicycle has a width of a wheelchair."* However, for Nathan who during the wheel-along used a mobility scooter, was unable to enter the Kruidvat, *"That Kruidvat, I find it really really unfriendly"* and is starting to have difficulties with the Blokker as well. He explains this is due to the narrow pathways which are often blocked by boxes and merchandise.

4.1.2. The influence of economic resources

4.1.2.1. background information and architectural line of thought

From the perspective of the capability approach economic resources are equivalent to the ability to convert resources into freedoms (Mitra 2006). Firstly, it is influential due to the individual financial situation. For example with the ability to buy the desired wheelchair that provides the individuals with the most freedom. The factor of economic resources is also influential on the fact that visitors of the Leidsche Rijn shopping centre come there with the goal to spend money. It is known that disability is prone to limit income and thus the conversion of resources (Mitra 2006). This is also the case in Leidsche Rijn, where the environment is built mainly for shopping and less for optional activities (Gehl 2010). The shopping centre is built for the inhabitants of Leidsche Rijn. However, the intention is that people go there for shopping which is the ideological line of thought. This is exemplified by this quote of the expert interview, *"people also have to walk around with a bag [shopping bag]."*

The influence of economic resources can thus be divided in multiple causes, the individual financial situation and the characteristics of the built environment and the interaction between them. From the go along interviews it can be concluded that for some of the respondents individual economic resources are of influence in the experience of accessibility. Examples of these are presented below.

4.1.2.2. Individual financial situation

There two respondents that state their accessibility to the shopping centre is restricted due to their financial resources. One example is Simon, *"well I live on benefits…and that's also one of the reasons that does kind of stop me from being able to do more things [in the shopping centre], because I just don't have the money."* Another example is Mathilde, who has this to say about her financial welfare, "*they say 70 percent of your last earned salary but that's not the case, gross, but net it's less, well I really can't live on that, that's welfare level".*

To Mathilde her wheelchair is the solution to a problem, and it brings her a lot, *"that wheelchair is the solution not the problem, so I also treat it as a solution".* In other words, her wheelchair is a resource that can be converted to freedoms. However, the cost of achieving this freedom and the desired functions becomes clear during the wheel-along. Amber states, her tricycle is a tool that gives her *"freedom of movement."* She explains that it does have a price, *"of 1100 euros, and uh, I had no idea if uh, about fees and so on…so I paid for it myself and now I'm like, very good that I did it myself, it's my property, not the municipality's, so I take it wherever I want to go".* Contrary to this Riley states, *"and it took me a year and a half to get a manual wheelchair from the municipality… because the municipality says flatly, you have a husband who can push you, right? She literally said that."* This

statement by Riley makes clear the cost of achieving the desired functioning of being able to move and for example go shopping and the role that policy (the municipality) can play in it.

4.1.2.3. External costs

Additional to the individual resources, the external environment can cause an additional barrier when the free parking spot is blocked, causing additional costs. An example which indicates the cost of the daily activity of shopping is mentioned by Tim. The disabled parking spot located at the Parijsboulevard is usually blocked by bikes. Tim says, *"this has to stay clear, it's not clear to people so, people who park their bikes here they only see the few bike racks and they don't see the handicapped parking sign"* (figure 9).

Figure 9. Bicycles parked halfway the disabled parking spot.

Tim explains that in Utrecht you are able to park your car for free at the disabled parking spot with a disabled parking card. However, when this spot is blocked by bikes he is forced to go to the multistorey car park for which he has to pay. For which he has to say, *"actually you would want that for people who are really forced to use a car and can't get around by other means, yeah then uh, it's a cost anyway if you have to pay parking everywhere, when they already have, much more expenses…so you just want for those people who are dependent on such a handicapped parking space and can't come by other means, you just don't want to tax those parking spaces either".*

This quote shows that for wheelchair users their time, income and effort is already high. The barrier in built environment, the external capability, in combination with the individual financial situation can become a barrier which prevents visits to the shopping centre.

4.2. Motivation for visits and usage space

4.2.1. Background information and architectural line of thought

The go-along interviews provided insights into the motivation of visits and the choice of movement through the built environment. It became clear that certain built environment determinants are of influence on the type of movement and behaviour through the shopping centre. Before discussing the embodied individual experience while moving through the centre the architectural line of thought behind the design choices of these determinants is presented below.

Then the motivation and usage of space of the respondents during the wheel-along according to the theory of Wunderlich (2008) is presented. Wunderlich (2008) names three types of walking methods, discursive, purposive, and conceptual walking. However, conceptual walking proved not to be a motive for visits by the respondents. This is thus not included. According to Wunderlich (2008), planning and designing for discursive movement is stated to lead to more awareness for the external social and built environment which promotes spatial encounters and social inclusion. Hence that the ideas behind the design choices are important to consider and highlighted below.

4.2.1.1. Brusselplein

From the expert interview the line of thought behind the elevation of the Brusselplein becomes clear. The reason is due to the trees present at the square, *"also under the square is a parking garage, so you can only do very little, so if you want to have trees you have to have space, the asphalt lane that's next to it that's almost on the roof [of the parking garage], that's 25 centimetres, but you need 75 centimetres to grow trees and the root package"* (project manager LR). Besides this, the square needed to be flat, this is a design choice that is explained to enlarge accessibility and stated to be comfortable for wheelchair users. The Praagpromenade is also stated to be flat because of this reason. In figure X it can be seen that because of this elevation of the square there is a threshold to enter the square. There are 2 dropped kerbs available to enter the square. However, there is no dropped kerb on one side of the square as can be seen in figure 10.

Figure 10. Picture Brusselplein taken from the Hof van Amsterdam

The line of thought behind the location of the curb cut it is said that, *"basically we always create walking lines and that's for everyone, so you create crossing points with lowered bands that always have a relationship with the facade, so the facade lines that run through and where those facades come together you can cross at Brusselplein, there you have a lowered band so everyone can cross, visually impaired, and wheelchair users".* The walking lines are thus defined by the façade lines of the buildings, it is said that these are sacred in a project and obstructions like bike clips and bins are not allowed. These walking lines should be free for everyone.

The walking lines of the respondents are visualized in figure 11. From the go-along interviews it became clear that respondents missed an additional dropped kerb this is indicated with a red circle and number 1. The lack of this was found to be a disabling factor by Mathilde, Tim, Amber, and Henriette.

Figure 11. Visualization walking routes, Source (Baetsen & Oorschot, 2022)

The reasoning behind the fact that there is no dropped kerb in number 1 is explained as such, *"because the disadvantage of making spots everywhere is that you can't keep it clear, because if you do it right across from the tapas bar [Bar Iberico] you end up right in the pizza guy's terrace, so that's why we put it outside the terraces"* (Figure 12). The obstruction in the walking line is shown in the picture in figure 12, the red arrow visualizes the walking line.

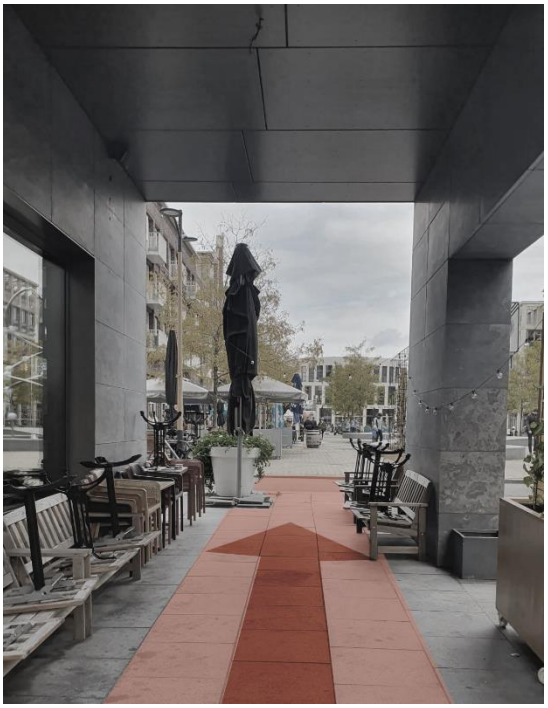

Figure 12. Walking line which follows the façade of the building

There is thus a difference between the preferred location of the dropped kerb by wheelchair users and the ideology behind the design and location of dropped kerbs. Something that became visible during the go-along interviews.

4.2.1.2. Choice of pavement

The grey type of pavement is specifically meant as a blind guideline, the tiles also include a ridge which functions as a guideline for the blind. The project manager explains that this is particularly the route of the visually handicapped, which should be free of obstacles. Additionally to this the grey tiles are made very wide, the reasoning behind this is, *"because they are also those strips when you go shopping just stand against it… the woman is shopping, and the man is waiting outside"*. The ideological line of thought (Baumers & Heylighen 2015) from the architect hereby becomes clear, when the expected movement of men who go shopping with their partner is considered in detail.

4.2.1.3. Purpose for visits

From the expert interviews it can be concluded that the built environment is thus intended for shopping and spending money. This is further explained by this statement, *"I always look around in Utrecht centre, of course it can be crowded in the centre, but people also have to walk around with a bag, and I saw that there [in Leidsche Rijn], people also buy something."* Furthermore, *"well, if you have a city centre just for walking, well, things are not working the way you want it to be."* This is contrary to statements of Wunderlich (2008) who states the environment should be built for discursive movement and not just purposive movement.

4.2.3. The influence of type of usage

4.2.3.1. Motivation for visiting

From the go-along interviews it became clear that most respondents used the space for purposive visits and thus according to the theory of Wunderlich (2008) had purposive movement. However, out of the 5 weekly users of the shopping centre, 1 state to visit the shopping centre as leisure time without the purpose of shopping or visiting a restaurant. Nathan states, *"it's a really nice area and uh, I'm actually almost never bored yes it's from time to time, everyone has problems and so do I actually but, uh, if I start to get a little bored I just go with my electric wheelchair or mobility scooter to*

Maximapark or somewhere else," the shopping centre is one of these places. He states, *"yes I definitely come here for leisure time, it is just very cheerful here"* (Nathan). This quote shows that Nathan goes to the shopping centre just to pas time and be in the environment. He states the environment as cheerful, which shows that he has eye for the built and social environment present in the centre.

Out of the infrequent visitors Michael states that he really likes shopping, to him it is a fun activity to explore the city. Although he states that online shopping is easier for him because he can do everything another person can do online. The reason to visit the shopping centre is thus motivated by the experience of shopping, the environment present. Hence the motivation is discursive. Henriette also states to just walk around for fun in the environment of the shopping centre, *"if we come here we walk from the park [Maximapark]…usually we walk a bit randomly because we are also free."* Henriette even states to walk around randomly, a characteristic of discursive walking.

However, most of the respondents state that the motivation to visit the shopping centre is purposive. The reason for visiting was the availability of specific stores which are not present in the city centre or for visiting friends. Simon states that he does not goes shopping as pastime due to his financial restrictions, his motivation to go to the shopping centre are thus, *"for errands, or when the weather is hot, I come here to go through the water [fountain]."* The public space of the water fountain is hereby also an important destination. This quote also shows that the environment is built for the purpose of shopping and that other motivations for visits are limited.

The motive for visits is also defined by personal preference. When asked for the reason for her visits Riley states, *"mostly because I do need something, I'm not a standard woman in that regard who likes shopping haha."* However, Janet and Mathilde state that they like to go shopping, but due to the difficulty of inaccessibility they prefer to go shopping online nowadays. Janet says, *"yes I really like shopping anyway, then especially because I just like it, but I think now that I'm really limited that I really do it for things that I really need, and you notice now I'm ordering a lot more online because it's easier."* The motivation to go shopping despite the barriers is for Janet when she really needs things and thus purposive.

4.2.3.2. Usage of space: type of movement and route choice

From the interviews it becomes clear that wheelchair users are always looking for the best way to move and manoeuvre through the space. Every respondent is also asked about the preferred way to move through the centre which resulted in emergence of codes of environmental characteristics. For example, the characteristic of spacious clothing stores provides the respondents with the possibility to look around and focus on the clothes and not the ground. A characteristic that is related to discursive movement. Another environmental characteristic is the type of street pavement used. Figure 13 shows the type of street pavement: in the middle the brown pavement and the grey pavement on the sides of the street.

Figure 13. Picture of the Wenenpromenade

Amber and Jim both state that the brown tiles are also extremely comfortable and that it does not matter to them. However, the other respondents state to prefer the larger grey tiles. This is exemplified by Tim, *"this is ideal, these are big stones, it rolls perfectly, there are no edges, so I don't have to pay attention, I don't have to look down I can look at you and look at the surroundings, so I don't have to look at the street for edges or ledges or holes… so it's relaxed rolling"* [grey tiles]. This quote exemplifies that due to the accessible environment the respondents are aware of their environment. However, the way the respondents move through the environment is not completely random anymore and purposive. This is because the way of movement which causes less discomfort or resistance is always chosen which in this case for most respondents the grey tiles instead of the brown tiles. The brown tiles cause vibrations in the body which are stated by respondents to be disastrous for the body. Hence that the characteristic of discursive movement according to Wunderlich (2008) cannot be assigned to this research population.

A quote by Mathilde explains this well, *"I'm constantly busy with thinking really, when I'm going through a store like, where can I go through, what are my routes, and then I also have to pay attention to what I have to buy... so because of that inaccessibility yes they throw up a barrier uhm yes that just doesn't make it easy for me".* Because of the inaccessibility Mathilde has to focus on the ground and choice of route while shopping. Hereby she is not in complete awareness of her environment and mostly focused on getting to her destination.

However, purposive walking is typically characterized by Wunderlich (2008) with bodily disengagement, for example looking at a mobile phone while walking or eating and walking. This is not the case for these individual wheelchair users. Even though the type of movement cannot be labelled discursive, the respondents are very much aware of the built environment around them and looking for the best way to move through the space.

Next to the choice of pavement, another environmental characteristic which is stated to prevent respondents from spontaneous movement is the elevated square, the Brusselplein. Amber also mentions this during the wheel-along, *"yes here I always have to figure out where to go up and where to go down [Brussels Square].. because there are only 2 places [to go down]".* She thinks there should be more dropped kerbs, *"for example here in the middle"* (figure 10). This is also stated as a problem by Tim who explain that he experiences it as an illogical route, *"if you do not know then you're looking*

for how to get into the square here, and then they made a driveway here on the side, only later on." Additionally this location is behind a rubbish bin therefore not clearly visible and usually also packed with bikes (Figure 14).

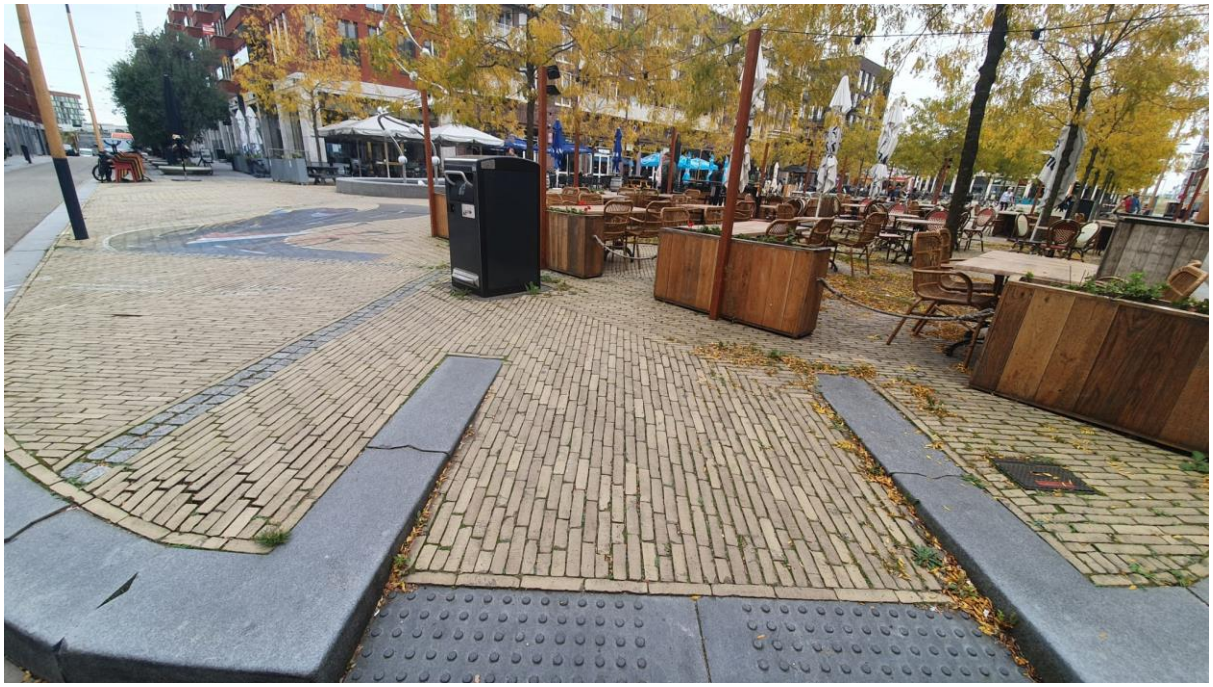

Figure 14. dropped kerb to enter the Brusselplein

In addition to this, the architectural line of thought behind the route choice is purposive, how to get a visually impaired individual from A to B. According to the project manager, there has been put a lot of thought behind the route choice, for visually impaired individuals the environment exists out of natural guidelines which are the facades of the buildings, these define the location of the dropped kerbs to enter the Brusselplein. However, this logic does not apply to the facade lines coming from the Hof van Amsterdam (Figure 15). Additionally, the logical route for wheelchair users proved to be different and the lack of dropped kerb proved to be a barrier for respondents.

Wunderlich states that spatial design needs to be built for discursive and conceptual walking methods in order to promote more social encounters (2008). However, with the elevated square, there always needs to be a walking line route which brings people with a mobility impairment from A to B, such as wheelchair users. Hence, the elevation at Brusselplein prevents discursive movement from the perspective of the respondents.

The shopping streets on the other hand, were providing more suitable environment for discursive moment due to the lack of the high curb. Mathilde even says, "*the street is here, it's really all perfect."* Many respondents think that compared to other cities in the Netherlands or the inner city of Utrecht it is found to be perfect. However, the choice of pavement is here a factor of attention. Ultimately, the logical route through the perspective of wheelchair users and thus the practical experience of accessibility is to locate smoother tiles in the middle of the street where wheelchair users automatically gravitate to due to the height difference

To conclude, some built environment design choices withhold the respondents from being aware of the socio-spatial environment but very much aware of the built environment. To conclude, specific

factors in the research area that prevent discursive movement are the choice of pavement and the elevated Brusselplein. Social encounters with other people are hereby limited. The assumption of Wunderlich that purposive walking is characterized by bodily disengagement is based on the movement and experience of abled bodied people and is not the case for these individual wheelchair users. The theory of Wunderlich (2008) is thus not precisely applicable to the research group of wheelchair users.

4.3. Built environment determinants

4.3.1. Background information: architectural line of thought

It became clear throughout the wheel-along interview that certain built environment factors might either hinder or enable the accessible experience. The most important factors prove to be toilets, entrance of shops and the elevator of the train station Leidsche Rijn. As mentioned before the internal built environment follows different regulations and policy. However, these are still included as important enabling or disabling factors. While by law change in these places is not obliged, from the interviews with respondents it becomes clear that creating awareness within the minds of entrepreneurs about the issue of accessibility is possible.

4.3.1.1. Toilets

The most important enabling or disabling factor found by the respondents was toilets. Till this day the built of accessible toilets in restaurants or other hospitality facilities is still a favour of the entrepreneur. Since the ratification of the UN CRPD in 2016, the national service for Dutch enterprises, states that entrepreneurs have a “duty” to do something about the overall accessibility and to make a reasonable accommodation for people with a disability (2022). The interior of the buildings is something the municipality states to not have sight on, it is not in the law hence not obligated to build an accessible toilet. The Utrecht Accessible by Default policy only is applicable within municipal buildings. Hence that the library however, built after the UST (Utrecht Standaard Toegankelijk), does have an accessible toilet.

The line of thought behind the reason there are no accessible toilets in the public space is explained. It is said, *“that's a choice you make and in the centre you do have a couple in Leidsche Rijn centre, because the facilities are fairly close together, the Jumbo and there's one on the outside, near the statue that sits there [Wenenpromenade].”* It is also explained that the public toilets are quite expensive, it is an obstacle that you have to clean quite a lot. As for public toilets in the public space the project manager states, *“it is not in the centre as I wouldn't know where in the centre [city centre of Utrecht] you find a toilet, yes in a parking lot, yes at Vredenburg but I wouldn't know them either.”*

The municipality of Utrecht also promotes the use of the app ‘Hoge Nood (high need).’ Figure 15 shows how the centre of Leidsche Rijn is presented in this application. From the wheel-along it followed that the toilets in De Baron and Alan & Pim’s are adapted so they are accessible for the respondents. Noticeable is that these are not indicated since they are not accessible for all. The issue with the online environment is, that is not an indication of the complete accessibility for the group of wheelchair users. The accessible toilet at RAUM is also not indicated.

Figure 15. Hoge Nood application, Source: Hoge Nood 2021

4.3.1.2. Entrance of shops

The legal threshold level is 2 centimetres. The reason for this threshold is to stop the water from entering the shops. This was according to the project manager everywhere in Leidsche Rijn. However, the municipality only has influence on the outside threshold level. The threshold aid from the outside environment to the inside environment is arranged by the municipality, the other way around that is arranged from the entrepreneur itself.

4.3.1.3. Public transport: elevator train station

From the wheel-along it followed that stairs were an important determinant in the built environment that prevented the respondents from achieving their desired functioning's. Stairs were used for the inaccessible terrace at the wine bar and the rooftop at the movie theatre and the train station. For respondents, the environment became inaccessible or a barrier for visiting the shopping centre. Fear of non-functioning elevators out of previous experiences withholds some respondents from visiting the centre (Degen & Rose 2014). The design choice for the stair at the train station is highlighted below.

The reason behind the fact that the train and bus station are located higher is due to the A2 highway underneath. The elevated train station is on the one hand considered safer because there is no railroad crossing and creates a more social accessible passage and transparent. On the other hand the issue with the broken elevators is a massive disabling factor for people with a disability. The reason there is no ramp located from the train station to the centre instead of an elevator is due to that there is no space to make a ramp. Further elaborated by, *"So if you want to create a ramp you need so uh, I*

think 200, 300 meters… you need a ramp to get down as a wheelchair user, use that 4 percent, if you want to handle that, you need so much space then the distance between the area you want to approach and the station, is too big". Hence, to create not just a ramp but also a sufficient ramp that is accessible for wheelchair users more space is needed then available. It is known that the elevators are broken a lot and acknowledged that it is a problem.

As mentioned in the literature, ramps should be used to direct people up and down (Gehl 2011). However, the literature stated that ramps are often insufficient or lack safety (Eisenberg et al. 2017; Evcil 2009). The absence of a ramp near the train station was stated to be because of the lack of space to build a sufficient ramp of good quality.

4.3.2. Internal determinants in the semi-public space

4.3.2.1. Toilets

What is found to be the most important enabling or disabling factor in the semi-public spaces are the availability of accessible toilets as discussed in the literature (Bashiti & Rahim 2015, p.18; Welage & Lui 2011). When frequent visitors want to go out to visit the restaurants in the centre, they are time and toilet bound. This is found to be a huge point of improvement and is also stated as a matter of hospitality towards them.

A quote by Benjamin exemplifies this, when asked about what improvement the shopping centre needed he states, "*well then I come back to the wheelchair accessibility of the sanitary facilities, so that's not everywhere just equally suitable, and I do think that if you want to be hospitable, especially in the hospitality industry, well then that should just, just be the basics, there should at least be 1 toilet that you can get into with a wheelchair".* However, as mentioned before although not obligated by law respondents have found possibilities to create an adapted toilet. Not accessible according to official guidelines, but accessible for them. This another example that shows diversity in the research group of wheelchair users. Benjamin and Tim both participated in the building process of the toilets of their favourite restaurants, Alan & Pim's and The Baron. They went to talk to the owner and made sure that the toilet was built accessible for them. Tim explains, "*I advised to uh, to solve the problem with toilet to at least put a lock on the outside door so you can leave the inside door open, so you can still have privacy, not adapted but so created some more space in the toilet."* This was done in a few more places.

The factor accessible toilet is also of influence in the pre-trip preparations. Henriette and her son always take this into account, *"because often there is no toilet and then she really cannot go there."*

Tim states that inaccessible toilets are an important reason not to return to the restaurants, *"I look elsewhere, and all, because that pizza joint has a spacious restroom, not adapted, and not spacious enough for wheelchair users. Bar Iberico, been once, never again, no toilets."*

Riley is of opinion that when not every café or restaurant has an accessible toilet it is not too bad. However she states, *"make sure that there is a solution somewhere."* Hereby she means accessible toilets should be located in the public space. She explains, *"I also always say I never feel disabled until I get into situations where my chair bothers me [not wheelchair accessible places], because that chair allows me to go outside."* She indicates that Leidsche Rijn turned out quite well. However, she

experiences disability due to the fact that the semi-public toilet is only available when phoning a telephone number for a key (figure 17), *"the moment you have to start asking for help with normal actions,"* like going to the toilet. This quote by Riley exemplifies that these determinants in the built environment can be a disabling factor in the experience of accessibility.

After the wheel-along when Mathilde goes to the toilet in the Jumbo she has the same experience and has to ask for a key, her suggestion is that the municipality should start using the Euro Key. This is already in use in other European countries such as Germany, where wheelchair users have a universal key to open accessible public toilets.

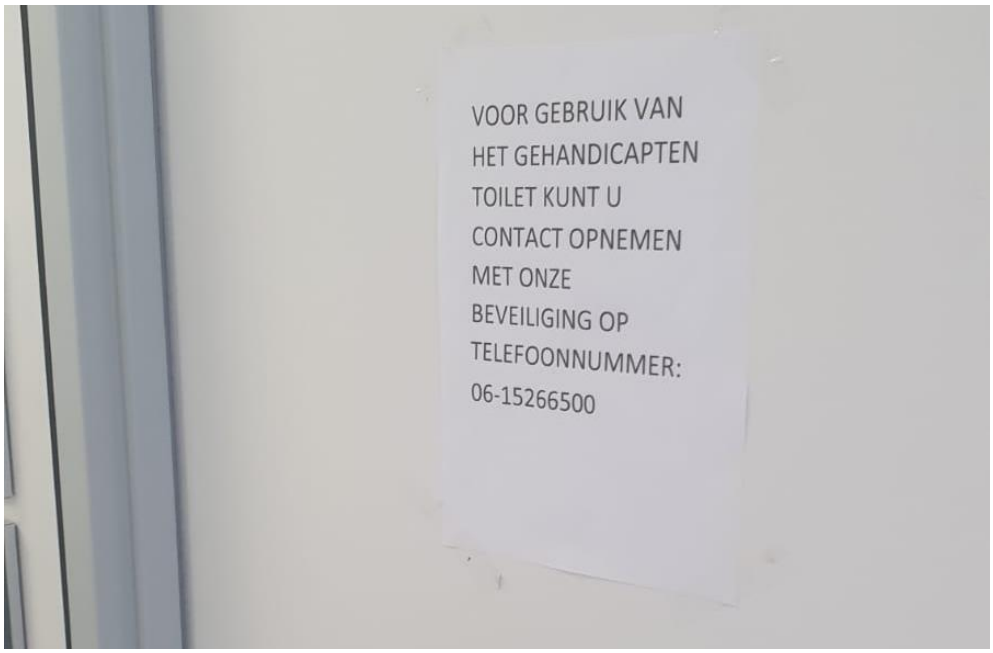

Figure 16. Text on the picture says, 'for use of the disabled toilet you can contact our security on this phone number.'

4.3.2.2. Entrance of shops

Other important factors are the entrance to shops. This as well is seen as a matter of hospitality. Threshold aids are welcoming and an enabler of accessibility. However, the high thresholds were not limiting respondents from reaching there desired functioning of shopping due to their ability and skill level. Contrary to Bromley et al. 2007 who stated entrance of shops to be of most significance in shopping environments.

From the wheel-along it follows that most of the stores were found to be *"super accessible"* (Mathilde). The entrance of shops was also found to be of importance. Some thresholds were considered high but doable this also has to do with the overall skill level of the respondents which were all able to take on higher thresholds then the legally obliged 2 centimetres. One example is the threshold at the T-Mobile and KPN, Tim states, *"too high threshold, this one is definitely too high because it's not only too high on this side, but on the other side you really have to get over it"* (figure 17).

Figure 17. Threshold store entrance T-Mobile

A store that was not accessible during the wheel-along is the Sofacompany. The entrance has stairs on the inside of the store (figure 19). We pass the store and Riley states, *"well here I'm not allowed to store you see already [threshold and steps down]."* About the stairs she has to say, "*yes and if the lady had such a thing [ramp] she would undoubtedly have got up and arrived with that thing."* This quote exemplifies that the built environment is also a clear indicator of the social accessibility. Riley states by saying this that she does not feel welcome to enter this store. As stated by Kusenbach (2003), certain factors in the environment can be detected by everyone but interpret differently which is made visible by the wheel-along. For Riley, as a wheelchair user these stairs are interpret as unwelcoming.

Figure 18. the picture shows the entrance of the Sofacompany which includes stairs.

The fact that this store is not accessible is explained by the fact that the municipality only has influence on the entrance threshold level from the outside to the inside. This is where is went wrong with the Sofacompany, where the store is 10 centimetres lower than the public space. The reason for this is the relationship between the developer, contractor, and the unions. This shows that including the individual embodied experience in the urban dialogue by representatives or target groups in essential (Labbé et al. 2020).

What was found an important enabling factor is when even though the thresholds in the shopping centre were found to be accessible, some stores had an extra threshold aid in front of their store. This was interpreted as welcoming, friendly, and comfortable. For example at the Pet's Palace (figure 19).

Figure 19. Threshold aid at the Pet's Place

Michael states this about the threshold aid, *"look they even make it easy, sweet of them."* Riley notices it as well, *"look this is also funny, there at the pets place, there is actually already no threshold, but they still have a threshold help down, I always find that very nice haha."* Michael says that he finds it very disappointing when he is not able to enter a store, he even considers bringing his own threshold aid. He states, *"yes on the one hand you know, the responsibility is actually with them, but if that responsibility is not taken then I am the victim and the only way to solve it then, is to go after it myself, and that's what I'm trying to do then."* These previous experiences influence the experience of accessibility in Leidsche Rijn as said by Degen & Rose (2014). The fact that wheelchair users often have negative experiences in shopping activities influence the experience of Leidsche Rijn centre positively.

The entrance of the Only for Men was found to be inaccessible, *"this is only for men but we're allowed to go in, look no barriers here either but this is where it stops, so you walk in and the expectation is that uh, you see symbol or icon of a wheelchair or uh, you see only online, and that's then the expectation uh, then you just go shop online"* (Amber). This store is also only on wheelmap.org stated as inaccessible. However, after the wheel-along it became clear that there was another way to enter the shop with an elevator, but this was very unclear the door next to the store towards the car parking and as Amber said, there was no clear signage to it (figure 20).

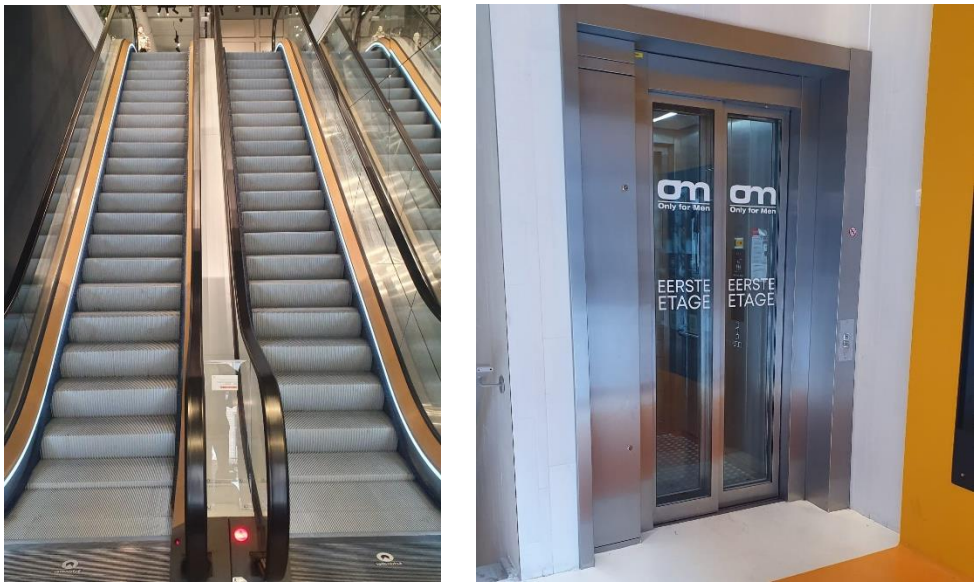

Figure 20. the entrance of the store Only For Men.

4.3.2.3. Interior environment restaurants and shops

The stores in Leidsche Rijn were overall found to be spacious and thus accessible. A store that exemplifies this is the Kruidvat, almost every respondent states to have negative experiences with this store and state to never visit it due to inaccessibility. The displays that have to stand on every part of the pathway make the passage to narrow for wheelchair users (figure 21). Mathilde expresses her frustration with the Kruidvat, *"the other day I knocked over a shampoo caddy because I was so angry, I was so done with it."* However, when the Kruidvat proved to be accessible it became an indication of the accessibility of the shopping centre, *"when even the Kruidvat is accessible haha… that is quite bizarre"* (Mathilde). Another example of previous experiences which influence the experience of accessibility in Leidsche Rijn positively (Degen & Rose 2014). During the wheel-along interviews several visits were made to the Kruidvat with different respondents. All found it to be accessible but Nathan, with his mobility scooter the Kruidvat was inaccessible.

Figure 21. The Kruidvat in Leidsche Rijn

Additionally was the placing of the checkout in the So-Low a disabling factor, the placing made it impossible to see the budget she had to pay. Riley states, *"I really think that you are a very nice store, but the checkout is really hopeless, and it feels very small because they just literally look down on you and you can pass your card, but you can't see what's on your screen and that's really bizarre".* Additionally is taking merchandise from the shelves not always in reach, but most respondents just ask staff or visitors for help.

The interior of restaurants was found to be an important disabling factor in some cases. For example, the Fries restaurant at Brusselplein. Amber explains that the reason she is not able to enter because the interior is not spacious enough and *"if you want to sit at a table with a wheelchair that is always difficult."* During the wheel-along we pass the Fries restaurant also with Mathilde who explains, *"look of those high tables is of course hopeless too."* Additionally, the terraces of the Wine Bar Most is inaccessible for wheelchair users. Tim states that he feels he is able to participate in everything except the fact that the terrace of his favourite wine bar is not accessible to him, *"and the fact that you can't sit on the terrace here I find that uh, that makes me angry."* Figure 22 shows the terrace, which is not accessible with a wheelchair due to the stairs.

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Figure 22. The terrace of the wine bar Most

Simon also mentions the fact that the rooftop of the movie theatre is inaccessible. During the wheel-along we visit the theatre and the roof, *"what I think is very strange is that you can get to the roof but not the complete rooftop.. and I think that to be quite a loss."* The picture shows that the rooftop is accessible, but to get to the viewpoint of the city of Utrecht stairs need to be taken (figure 23). Simon explains that he even talked to the developers when the theatre was built but this was not considered. This part is not wheelchair accessible. For both examples it is clear that the stairs are a disabling factor in the built environment that withheld respondents to achieve the desired functioning's and participate in the desired activities (Trani et al. 2014; Brummel & Jansen 2022).

Figure 23. The picture shows the rooftop of the Pathe. Source: ("Rooftop cinema Pathé Utrecht Leidsche Rijn vrijdagavond weer open", 2021)'.

4.3.3. Determinants in the exterior environment, the public space

4.3.3.1. Parking

An important enabling factor for respondent is the ability to park at a disabled parking spot. Only one respondent came by car, others came rolling or by public transport. An important finding was the fact that the availability of the parking spots was not stated clearly online. Before the wheel-along the interviewer had to walk around and send locations of the available parking spots. As a response Mathilde says, *"I always have to prepare for a trip."* The issue with the parking spot in Leidsche Rijn is the bicycles that are located on them. As a solution Mathilde has contacted the municipality, *"I gave this suggestion by putting a white cross on it and a white border, but they didn't like that."*

The parking for bicycles, was also of importance for the respondent who came rolling with the hand bike. The accessibility of the bicycle parking was, *"yes that was okay, and I'll get out of that later too I think"* (Riley). Which was evaluated after the wheel-along and proved possible.

4.3.3.2. Public transport

Important for researching the accessibility of the shopping centre is to research how respondents were able to arrive at the destination. The train station and the bus station are located at a higher level. The train station however does only have stairs and an elevator and no ramp (figure 24). Michael was visiting Leidsche Rijn centre from Roermond and had to take the public transport. However, the elevator was broken, hence a cab was used to arrive at the destination. Michael stated to not find it that much of a problem, *"well anyway free cab, I can sleep soundly."* However, other respondents found the broken elevator to be a major annoyance. The elevator was also broken during the wheel-along with Simon, *"the elevators there are always broken."* Janet also mentioned after the wheel-along when she was in Leidsche Rijn that the elevator was broken again, which proved to be a big challenge. During the wheel-along she states, *"I find it would also find it stressful here as well like oh*

does that elevator work, I would look it up or look in advance and I think that's already, a threshold that people think oh yeah soon that elevator won't work and then you're standing there." Contrary to what the literature states there is no insufficient ramp (Evcil 2009). However, the unreliability of the elevator proved to be a disabling factor as well.

Figure 24. Picture of the train station Leidsche Rijn.

4.3.3.3. Pedestrianized area

The fact that the shopping streets were car free was found to be comfortable as mentioned in the literature by Gehl (2011). There was therefore also not an elevated sidewalk that the respondents had to go up and down when there were barriers on the usual route of movement. Hereby, disabling factors such as street billboards on the pavement were easily overcome due to the fact that there was not height difference between the sidewalk and street, and no risk of car traffic as mentioned by Bonehill et al. 2020. Riley explains, *"yes and because it's just wide open and there's a lot of space, look here it doesn't matter that the sign [street billboard] is there because I don't have to go down the sidewalk, and I don't have to it's all pedestrian area so you don't have to worry about being run upside down either".*

4.3.3.4. Pavement

As mentioned before in chapter 4.2. the type of pavement is significant for the experience of accessibility. All respondents state that in comparison with the city centre this is all *"perfect"* (Benjamin). There was however found to be a lack of dropped kerbs at the Brusselplein.

4.3.4. Temporal determinants

Although the pavement is found to be good in general, during the wheel-along we encounter a loose tile. For which Riley states, *"If you're not paying attention and you just keep going at a speed, you'll flip out in no time."* Other important factors that emerged during the wheel-along was wrongly parked bicycles as mentioned before. An additional factor was the weather, rain proved to be a massive barrier for all respondents to go outside, *"because when it rains I no longer have a grip on my hoops, so then the street is a little dangerous,"* and therefore Riley usually does not go outside. Street billboards were also located on the street a lot. However, due to the pedestrianized area respondents could manoeuvre past them, although the grey tiles have the preferred route choice.

Figure 25. The carnival at Brusselplein

Other factors are when the carnival was at the Brusselplein (figure 25). Because of this the main route to get across the Brusselplein is not free. Tim explains wat a good route is, *"clearly visible, because you can't go down the sidewalk everywhere, so keep a main route clear."* However, other temporal determinants such as wrongly parked bikes were found to be an influential factor in experiencing inaccessibility as mentioned in the literature (Bonehill et al. 2020). Through the wheel-along it becomes visible that this is due to the fact of unclear routes.

4.4. Social environment determinants

From the wheel-along interviews it follows that the social environment is an important enabling factor in the experience of accessibility in Leidsche Rijn centre. Certain social environmental determinants which were found important during the wheel-along are highlighted below. These can also be found in the literature

4.4.1. Background information: architectural line of thought

About the lived experience of the social accessibility by wheelchair users limited is known at the municipality. It is known at the municipality that in general Leidsche Rijn scores high on the social safety and people are quite content. In the municipal survey it is stated that Leidsche Rijn has the best score in Utrecht.

The physical environment is also an indication of the social environment. Hence that threshold aid and accessible toilets are experienced as welcoming. However, as discussed in chapter X. the availability of accessible toilets is a 'duty' of the entrepreneur. The municipality does not play a role in it. Even though it is not facilitated by the municipality, entrepreneurs seem willing to change their toilets for their costumers but are just unknowing about the possibilities or their costumers needs.

About the facilitation of activities, the municipality has to say that the Berlijnplein and Brusselplein are event squares. It is possible for anyone who wants to organize an event to contact the municipality and see if it is suitable. People can apply and then, *"come into the licensing process."* It does come with a price. However, underneath the old station caps near the Berlijnplein, unofficial events can happen, such as a neighbourhood barbeque. The wheel-along however provided insight into what the target audience of wheelchair users desires and how they experienced certain social environmental determinants.

4.4.2. Social accessibility

4.4.2.1. Social accessibility staff in stores

All respondents found the staff in stores socially accessible and did not have a negative experience before. As mentioned in the literature, the social accessibility of staff present in stores or restaurants is of significance and the in Leidsche Rijn an enabling factor (Fänge et al. 2002; Vermeij & Hamelink 2021). The reactions differ from the staff is "*very friendly*" (Nathan), or "*always helpful"* (Benjamin), and "*more relax"* (Janet). Riley even notes that the staff is "*always super friendly."* However she also explains that some wheelchair users find it annoying that people ask them if they need help, and that it is important to acknowledge this individual preference. She feels that there is nothing wrong with that and that the worst thing you can do is do something without asking is start pushing her wheelchair. She states, *"I think the most irritating thing people can do I just do, that all of a sudden start pushing, so don't do that, but you know if you ask, if I see someone messing around with grabbing something underneath [the shelfs in a store], I also say, will I grab it for you? You know there is nothing wrong with that I think"* (Riley).

According to Jim everywhere it is the same, people are friendly also in the inner city, "*just ask people, they will help."* However, Nathan does not feel the same and feels that in Leidsche Rijn the people are more friendly compared to his previous neighbourhood in Overvecht. He states, "*because I just often have contact with them, just very nice people very cheerful very cheerful, yes unfortunately unfortunately I didn't have that in Overvecht" ... "just very different anyway, while that is the same city you see that the difference is very big*". This is in line in what research by the municipality states about Leidsche Rijn.

Amber also states, *"in Leidsche Rijn, they know me, so people do not treat me differently."* While she does encounter a familiar staff member at the butcher with who she had a negative experience in the shopping centre in Terwijde. Hereby, she was sent out of the store because of her tricycle, *"we pretty much had a brawl."* However, the father and son of the store got used to seeing her and they now are acquaintances, *"now if I go by without tools [tricycle/wheelchair] the father is all happy…that's how things can change."* This shows that there is awareness about technology related to a mobility impairment in the centre of Leidsche Rijn community.

4.4.2.2. Social accessibility other visitors

Previous experiences are known to influence the experience of accessibility (Degen & Rose 2014). Although respondents receive looks or questions about their wheelchair in Leidsche Rijn as well as in the centre of Utrecht, it was mentioned to be less in Leidsche Rijn. During the wheel-along interviews the respondents did talk about previous negative experiences of the social environment and the fact that any moment people could stare and start asking questions about their medical condition. Some respondents did have anxiety about the possibility of looks and questions as mentioned in the literature (Velho et al. 2015; Poldma et al. 2014). However, this was not linked to Leidsche Rijn specifically but by previous experiences in general. The coping mechanisms were different per individual respondent, some respondents noticed but stated to not let it influence their visit to the centre.

Such as Riley, "*but people ask, people on the street, people in stores are very rude, they ask you deadpan why are you sitting in that chair, and my answer is very often because I'm arse lazy haha… I've become firm enough in that by now"* (Riley). Or Benjamin, *"Yeah, I never make a big deal out of that because I know uh, that people look at you, I don't even notice it then, when people look at you"* (Benjamin). This is exemplified during the wheel-along, when several kids came standing around Benjamin and started staring to his hand bike and no attention was paid to them.

Nevertheless, Amber states that although she by now is able to let it go, *"it does take energy… because everyone is influenced by his/her environment and how others treat you".* However, in Leidsche Rijn she experiences less strange looks, *"I have more contacts in Leidsche Rijn, so they know me."* This quote exemplifies that due to the fact that there is public familiarity and visibility the social accessibility is higher (Kal et al. 2013).

Mathilde on the other hand stated that the possibility of noisy questions influenced her experience of the accessibility of the centre. "*This is super accessible then... in itself nicely done.... uhm but then you still have the movements when uhm people keep asking what is wrong with you in the store that's what I was about to say... that's really microaggression*" (Mathilde). This quote shows that in fact everything can be physically accessible for some wheelchair users the social accessibility is a bigger barrier.

4.4.3. Third places and sense of place

Out of the third places present respondents state that their favourites are due to the personal preference of food but also due to the combination of friendly staff, previous experience and most importantly, accessible toilets. The availability of toilets is not only a determinant in the built environment but also an important enabler in the social environment since is signals hospitality

towards people with a disability. In Leidsche Rijn there are hereby enough third places that are not visited by the respondents since there is no accessible toilet as mentioned before by Vermeij & Hamelink (2021). However, contact with entrepreneurs shows social accessibility towards wheelchair users is present.

Benjamin explains this, *"I find it very unrelaxed when I go somewhere to eat and I can't go to the bathroom there, so that's kind of actually something, which I always uh check and look the places I'm familiar with there I do know.'* It is a matter of hospitality and thus social accessibility if this is present. This is also exemplified by Tim, who states this about RAUM located at the Berlijnplein, *"they have neat wheelchair toilets, up there they do, and uh, that's not the only reason I sit there everything is right there…good food, good price, nice place to sit."* About the staff Tim has to say, *"great staff."*

Almost all respondents stated to feel at home in Leidsche Rijn centre, *"yes I really like coming here… also when I'm visiting with people"* (Benjamin). Others even state to feel at home almost everywhere, *"yeah sure yeah, actually everywhere"* (Henriette), or *"yes yes, but I soon feel at home somewhere hey"* (Jim).

However, infrequent users Janet and Mathilde state to not feel home. The main reason is *"I don't think it is very cosy"* (Janet), or *"do not find the atmosphere pleasant so…no, I don't feel at home here."*

Inhabitant and frequent visitor Simon explains that people not from Leidsche Rijn usually do not like it here, but he states that people who live in Leidsche Rijn say *"it is lovely here."* Amber states that there quite a strong community present. She states, *"yes everyone came this way pretty much at the same time, about 24 years old by now, and uh, there was a need for social contacts, and we did build friendships".*

4.4.4. Perceptions of crowding

Even though the presence of other people is stated to ensure feelings of safety by Jacobs (1960), for people with disabilities the crowding of a pavement often causes anxiety as mentioned by Bromley et al. 2007. However, this is experienced different per respondent.

Most respondents found the people present in the shopping centre pleasant. They enjoyed being among the crowd, "*I am someone that likes the hustle"* (Benjamin). Some respondents even think it was too quiet, "*I had hoped it would be busier"* (Simon).

In comparison with the inner-city centre of Utrecht the area was less crowded, this was seen as a positive characteristic by Mathilde, "*I always have to look at the ground, but I have to say it's not too bad here so it's very quiet now hey*". Riley mentions the quietness as positive as well "*it's nice and quiet here,"* she often avoids busy moments such as "*Saturdays, shopping evenings, these days I don't believe anymore [shopping evenings], but Saturdays I prefer not to go into town because, people just don't pay attention to it."* Janet also mentions that she avoids crowds for the same reason, *"well I don't really look for very big crowds now because I've also noticed that people just sometimes really don't pay attention*." This shows that the characteristic of calmness in the shopping centre in Leidsche Rijn is therefore often perceived as positive.

Mathilde and Riley are both infrequent users of the shopping centre which could mean that the time of the wheel-along was influential on the perception of crowding. However, Nathan, an inhabitant of

Leidsche Rijn and a weekly user state that in the weekends the streets are broad enough and the crowd does not cause any trouble, "*yes on weekends, yes here is a little busier but that, people like me who are dependent on a wheelchair or mobility scooter we actually don't have any trouble".* While saying this Nathan points at the street, the built environment characteristics of the spaciousness, the pedestrianized area and there being no height difference in pavement result in comfort even when there are crowds. Nathan even indicates that the crowdedness is pleasant, "*a lot of people that that's actually much nicer."* Hereby again, personal preference is important to acknowledge but also frequency of visits to the centre.

Additionally, when respondents were asked if they felt safe in the environment, many indicate that the people around them made them feel safe. Such as the response by Michael "*oh yeah sure, especially since there are a lot of people, let's start with that already*." When on the other hand the characteristic of less crowded also contributed to the feeling of safety since people were assumed to pay more attention than in the inner city such as at the Oude Gracht.

4.4.5. Quality of public space

4.4.5.1. Atmosphere

The atmosphere of the area due to the built environment is looked upon differently by respondents. On the one hand respondents name the area like other cities in Europe "*Barcelona, Istanbul, it looks a bit like that"* (Henriette) and found this "*very beautiful*" (Michael). Resident Nathan also states that he finds the environment "*very beautiful*" and "*If I get a little bored at the beginning, I just take my electric wheelchair or mobility scooter to Maximapark or somewhere else .. shopping for me is also very nice."*

On the other hand, respondents found the environment not as friendly, "*I just have to say that i find it all a bit chilling atmosphere, because it's all new construction, so i find then the centre in Utrecht has more atmosphere so on the old canal and is friendlier"* (Janet). However, these responses did not come from residents of Leidsche Rijn and weekly visitors.

4.4.5.2. Safety

The setup of the built environment was stated to be influential in the perception of safety. The fact that the area is low on traffic and has a pedestrianized zone is comfortable, "*yeah and because it's just wide open and there's a lot of space, look here it doesn't matter so much that the sign is there [commercial sign blocking the street], because I don't have to go down a sidewalk, and I don't have to, it's all pedestrian area so you don't have to worry about getting run over either*" (Riley). The low traffic and broad bicycle roads cause a feeling of safety for Amber as well, *"Leidsche Rijn it is much more pleasant to cycle with the tricycle than in the inner city, once I am in the inner city, then yes, my sense of safety is a bit affected."*

Henriette and her son also mention a feeling of safety due to the built environment, "*yes I think because of the setup, yes nice because of the yes, nice so those lamps are really nice and hip, really nice.. no corners where people can hangout."*

4.4.5.3. Meeting places

However, no corners where people can hangout does also entail no public space for the respondents to meet people. As Simon a resident of Leidsche Rijn says, "*i think there's very little for young people to do here, except for that skate park down the road, the movie theatre and uh, other than that i don't really know.*"

Optional activities (Gehl 2011) such as meeting with friends is mostly mentioned as an activity with good weather. Social contacts in the neighbourhood are not made in the centre itself. However, the third places in the centre do function as a meeting place for social contacts. Meeting places are "*De Baron*" (Benjamin), "*the wine bar and the chicken restaurant are my favourite.. the terrace at the library… and also RAUM*" (Tim). Since the content of the area is a shopping centre, a disadvantage is the need for economic resources, this is elaborated more in chapter 4.1.5.

Additionally, the weather conditions must be pleasant to meet in the environment. Both frequent and infrequent visitors state, *"well in rain and winter, then there is nothing to celebrate, in winter it is draughty again in such a gallery anyway [Parijsboulevard]* (Jim). When asked if she meets her friend in the centre Amber states, *"yes yes yes especially during the summer, then the terraces are open and then you have a completely different feeling about it, to sit in a teras in the sun."*

Izenberg and Fullilove (2016) mention that the connectivity of the roads is an important enabler for social connections and activities. The Berlijnplein is mentioned as an important social meeting place by the frequent users of the centre but not by infrequent users. Connectivity with the centre is therefore not as obvious.

4.4.6. Social integration and (light) interactions

4.4.6.1. Weak ties and light interactions

Connections between people on the street, and public familiarity are mostly stated by the respondents who frequently visit the shopping centre. A frequent user of the shopping centre Simon explains that he enjoys being among others and his favourite part of the shopping centre is the Brusselplein, *"just because it's cosy…and all those people sitting there enjoying themselves…I can enjoy that people are enjoying, and I enjoy myself there all day long*." He hereby explains that he does not know these people but enjoys being among them.

Nathan also states that his favourite route in the shopping centre is the Luxembourg promenade, the street which entail his favourite stores the HEMA and the C&A. The reason for this is that the staff in these stores know him and always start a conversation with him, "*and what it's also funny, my favourite clothing store is C&A and those some staff know me very well, so when I go in and then they ask how the granddaughter and the daughter are doing, they know exactly haha…the size haha [his clothing size]... because I just often have contact with them".*

Amber also states that she knows the people in Leidsche Rijn, and they also recognize her and do not react different to her tricycle. She also organized a photo competition with Tim which showed pictures of wheelchair users in Leidsche Rijn, *"Free Rolling in Leidsche Rijn."* Additionally, she states that *"there are more people here that use a wheelchair or mobility scooter... in the city centre you do not see them as much, because it is way less accessible as Leidsche Rijn, which is why it is more pleasant here".* This

shows that there is not only public familiarity of technology related to a mobility impairment but also a collective consciousness present. Hence 'light interactions' and 'weak ties' are formed as mentioned in the literature (Van Eijk & Engbersen 2011).

4.4.6.2. Inclusion social activities

All respondents were asked if they felt like they could participate fully in the activities present in the shopping centre, the answers were truly diverse. When the responses are divided into the infrequent and frequent visitors a division can be seen. Answers by the infrequent users mostly focused on shopping itself, not the social activities adjacent to the shopping centre. While the frequent visitors also mention other activities present in the centre.

Firstly, some respondents from the infrequent group felt like they could never fully participate anywhere, thus also not in the Leidsche Rijn shopping centre. An example of this is Mathilde, *"No I never feel like I belong to anything anymore, it could be just me, but I never feel like I belong to anything anymore"* (Mathilde). Or Janet, "*no because... if i see it's too crowded or oh it's all close together which is less in Leidsche Rijn from what I've experienced... then i would still skip that store*." However, other infrequent visitors did state that they felt like they could fully participate.

The weekly users of the shopping centre did feel like they could participate in the centre contrary to other places in the city centre like the Oude Gracht, "*These places are a no-go for me"* (Benjamin). Amber also states that due to inaccessibility of the inner city she never goes there anymore, "*it's quite unfortunate, but I very rarely go downtown, so then uh almost forget, unless I'm biking to work, I almost forget that I live in Utrecht because uh, we've actually become so villagers, residents of Leidsche Rijn*." In Leidsche Rijn she does feel like she can contribute to all activities such as the "*Harvest festival*" this October. Benjamin acknowledges that he cannot always participate in every activity in the Leidsche Rijn, but he can participate with the things he desires, "*yes that what I want to do, look there is also sometimes carnival here, but I don't desire participation in that so uh"* (figure 25).

However, respondents note that it does sting when there are activities, they desire to do which are not accessible to them. As previously mentioned in chapter 4.3.2. Tim also states that he feels he can participate in everything except the fact that the terrace of his favourite wine bar is inaccessible or the rooftop of the movie theatre as Simon says. The fact that there are no accessible toilets located in third places is a barrier for participation as well.

Additionally, Simon thinks there is little organized an example of something he would like is, *"a nice basketball day or something like that… you have a basketball court here, or just a discussion group or people who don't know what to do, who can get help from people who know more about it."* Nathan also feels like more for people with disabilities should be organized, *"occasionally can give a workshop somewhere in Utrecht for disability, for people with disabilities, or children with disabilities."*

From the wheel-along interviews it can be concluded that where the respondents are limited in achieving their desired functioning's that is in the participation of activities they desire in the centre. Activities specifically for people with disabilities. There is thus a need in a more active creation of space and inspirational projects (Kal et al. 2013).

4.5. Missing policy tools and guidelines

Following, the wheel-along gave insights into what was missing in the built and social environment. Valuable for future redevelopment plans by the municipality of Utrecht and the built and development of future urban shopping areas. Hence, sub research question 6 can be answered looking at the answers to the other sub research questions. Additionally, expert interviews are specifically used provide more in-depth knowledge about the environment and to answer research question 6.

Considering the individual capability set and thus the provided capabilities and the required needed to achieve the desired functioning according to the conceptual model of Trani et al. (2011), new perspectives emerge for inclusive design as Baumers & Heylighen state (2000). Firstly, the inclusion of the individual lived experience in the planning process is something that is missing (Hofmann et al. 2020; Labbé et al. 2020; Van Lierop et al. 2019). As respondents state that it is important to include actual experience experts. A quote by Benjamin exemplifies this, *"I would always say if you're going to design something always involve, experience experts,"* and, *"don't think from a wheelchair but just ask, to people like you are doing now, because that is just a completely different world."*

The accessibility of the interior environment of semi-public places is an important factor. The factor which is stated to be most important is to take a broader perspective of accessible toilets as a respondent explained. She asks the question who do you consider? All respondents agree that toilets are an important enabling factor. However, what is found to be an accessible toilet for one person is found to be inaccessible for another person. Some wheelchair users need changing tables as well. The fact that the accessible toilets available are only accessible with a key is also an experience of disability. Availability of toilets is thus of major significance but also the accessibility of the terraces (wine bar) and rooftops (movie theatre) for the inclusion of social activities.

The individual experienced based feedback shows that the route choice in the centre shows conflicting needs of disabilities for wheelchair users and the blind and visually impaired (Payne et al. 2021). There is no "quick fix" because of the conflicting needs of different disabilities who use the same space (Payne et al. 2021). This is exemplified by a statement of Mathilde, *"this is all nice and smooth for me, but for someone with poor eyesight there is no difference between street and pavement."* The blind and visually impaired route next to the façade of the building with the grey tiles is most comfortable for wheelchair users but the height difference leads respondents to gravitate to the middle of the road. A factor that the wheel-along made visible. The wheel-along also gave insight into the logical location of another dropped kerbs at the Brusselplein. The elevated square prohibits respondents to move spontaneously (Wunderlich 2008). The elevation of the square also proved to be a disabling factor for some.

It is clear that by law the semi-public places and third places are not obliged to provide accessible toilets in the centre or to create an accessible interior environment. However the willingness of entrepreneurs showed that more awareness should be created in the minds of entrepreneurs (Kal et al. 2013).

5. Conclusion

The aim of this research was to gain insights in how the accessibility of the shopping centre in Leidsche Rijn is experienced by wheelchair users and how this influences the participation of social activities. Moreover, the focus was on gaining insight into the specific determinants in the environment that were experienced as enabling or disabling for wheelchair users. The conclusion is presented with the help of the answers of the six sub questions based on the wheel-along interviews.

5.1. How does the individual characteristic of various types of wheelchairs influence the experience of wheelchair accessibility?

Understanding what individual wheelchair users lack in their individual capability set, can be used to improve the available tools and measurements to improve the environment and thus enlarge the individual capability set of the population of wheelchair users in general. Considering the diversity that the group of wheelchair users exists out is significant for the experience of accessibility and creating a design that is universal. From the wheel-along, it can be concluded that the experience of accessibility in Leidsche Rijn is influenced by the different type of wheelchair or other mobility technology related to impairment. Firstly, the type of wheelchair is significant for the experience of the height difference. The electric wheelchairs and does the ability to attach a hand bike and a SmartDrive, enable other respondents to overcome steep height differences as well. The wheelchair is in any case a conversion factor that enlarges the individual capability set to overcome barriers and thus to visit the shopping centre. These attachments possibilities such as the hand bike enlarge the capability set even more.

However, the experience of accessibility is also influenced by the skill level and impairment. Recognition of this diversity is important to assess the accessibility not just from the perspective of the social model of disability but also the human rights model of disability (Degener 2014). More experienced wheelchair users are able to enter shops with higher threshold levels than the legally permitted 2 centimetres. However, even those skilled wheelchair users sometimes feel bodily discomfort or pain when they are not able to take on the height difference anymore. This leads to the inability to visit this shopping centre and the choice to go to another.

Previous literature mainly focussed on the determinants in the environment (Bashiti & Rahim 2015, p.18; Welage & Lui 2011; Fänge et al. 2002), but the wheel-along made visible that the experience of these determinants can differ per day and is related to impairment and type of mobility technology. The environment is built according to the handbook of accessibility and checked by representatives all target groups. However, general guidelines prove not to be sufficient for the diverse group of wheelchair users. Or rather, the execution of the legal obligations within the building are not maintained everywhere. The focus is more on the technology related to the impairment instead on the lived experience of accessibility by individual wheelchair users (Hoffman et al. 2020). Instead of including experience experts, planners state to think as if they were in a wheelchair. Hereby the individual experienced based viewpoint is not part of the dialogue (Labbé et al. 2020) and the human touch is missing (Van Lierop et al. 2019).

5.2. How does the individual characteristic of economic resources influence wheelchair users' experience of accessibility?

The individual economic resources are of influence in the experience of accessibility. From the perspective of the capability approach these are equivalent to the ability to convert resources into freedoms (Mitra 2006). Firstly, the ability to buy the wheelchair that provides the individuals with the most freedom. It is stated to be extremely difficult to gain cooperation from the municipality. Respondents even state to buy it themselves without involvement of the municipality. However, not everyone is able to do this.

The factor of economic resources is also influential on the fact that visitors come there with the goal to spend money. It is known that disability is prone to limit income and thus the conversion of resources (Mitra 2006). This is also the case in Leidsche Rijn, where the environment is built mainly for shopping and less for optional activities (Gehl 2010). Hence, the individual economic resource can limit accessibility. Additional to the individual resources, the external environment can cause an additional barrier when the free parking spot is blocked, causing additional costs. For some respondents economic accessibility is hence a factor perhaps more influential for then the built or social environment. A factor which is discussed by Mitra (2006) but not frequently addressed in research about accessibility where environmental determinants are mainly the focus (Bromley et al. 2006; Bashiti & Rahim 2015; Welage & Lui 2011; Fänge et al. 2002).

5.3. How does the difference in type of usage of the shopping centre influence the experience of wheelchair accessibility?

The wheel-along provided new insights in the type of usage of wheelchair users according to the theory of Wunderlich (2008). For most respondents, the barriers in the environment are this influential that they withhold the respondents from complete spontaneous movement. Searching for accessible routes is high on the agenda which prevents discursive movement and thus less attention is paid to the socio-spatial environment. Specific built environment determinants that withheld spontaneous movements are the elevation of the Brusselplein and the type of pavement.

Although discursive movement is not applicable to this research group, purposive movement is also not applicable. Purposive walking is typically characterized by Wunderlich (2008) with bodily disengagement, this is not the case for these individual wheelchair users. Even though the type of movement is not discursive, the respondents are very much aware of the spatial environment around them. To conclude, the inaccessibility withholds the respondents from being aware of the socio-spatial environment but very much aware of the built environment. Social encounters with other people are hereby limited. The assumption of Wunderlich that purposive walking is characterized by bodily disengagement is based on the movement and experience of abled bodied people and is not the case for these individual wheelchair users.

In addition to this, the architectural line of thought behind the route choice is purposive, how to get a visually impaired individual from A to B. According to the project manager, there has been put a lot of thought behind the route choice, for visually impaired individuals the environment exists out of natural guidelines which are the facades of the buildings, these define the location of the dropped

kerbs to enter the Brusselplein. However, this logic does not apply to the facade lines coming from the Hof van Amsterdam (Figure 11). Ultimately, this proved to be a barrier for respondents.

Wunderlich states that spatial design needs to be built for discursive and conceptual walking methods in order to promote more social encounters (2008). However, with the elevated square, there always needs to be a walking line route which brings people with a mobility impairment from A to B, such as wheelchair users. Hence, the elevation at Brusselplein prevents discursive movement from the perspective of the respondents. The shopping streets on the other hand, were providing more suitable environment for discursive moment due to the lack of the high curb. However, the choice of pavement is here a factor of attention. Ultimately, the logical route through the perspective of wheelchair users and thus the practical experience of accessibility is to locate smoother tiles in the middle of the street where wheelchair users automatically gravitate to due to the height difference.

Lastly, conceptual walking proved not to be a motive for visits by the respondents. This is thus not included.

5.4. How do different environmental determinants of the built environment in the Leidsche Rijn shopping centre influence wheelchair users' experience of accessibility?

From the wheel-along interviews it follows that the availability of accessible toilets was found to be the most influential determinant in the experience of accessibility. This aligns with previous findings in the literature (Bashiti & Rahim 2015, p.18; Welage & Lui 2011). When respondents want to go out to visit the restaurants in the centre, they are time and toilet bound. The missing accessible toilets in several third places is found to be a huge point of improvement. Furthermore, respondents explain that availability of an accessible toilet is interpret as a matter of hospitality towards them.

Other important factors are the entrance to shops. This as well is seen as a matter of hospitality. Threshold aids are welcoming and an enabler of accessibility and thus have a positive influence on the experience of accessibility. Although in some cases the entrance contained a higher threshold then legally obliged these were not limiting respondents at the time of the wheel-along from reaching there desired functioning of shopping due to their ability and skill level. Contrary to Bromley et al. (2007) who stated entrance of shops to be of most significance in shopping environments.

Other enabling factors are the pedestrianized area as mentioned by Gehl (2011). Hereby, disabling factors such as street billboards on the pavement were easily overcome due to the fact that there was no height difference between the sidewalk and street, and no risk of car traffic as mentioned by Bonehill et al. 2020. However, other temporal determinants such as wrongly parked bikes were found to be an influential factor in experiencing inaccessibility as mentioned in the literature (Bonehill et al. 2020).

The use of stairs was an important determinant in the built environment that prevented the respondents from achieving their desired functioning's. Stairs were used for the inaccessible terrace at the wine bar and the rooftop at the movie theatre and the train station. For respondents, the environment became inaccessible or a barrier for visiting the shopping centre. Fear of non-functioning elevators out of previous experiences withholds some respondents from visiting the centre (Degen &

Rose 2014). As mentioned in the literature, ramps should be used to direct people up and down (Gehl 2011). However, the literature stated that ramps are often insufficient or lack safety (Eisenberg et al. 2017; Evcil 2009). The absence of a ramp near the train station was stated to be because of the lack of space to build a sufficient ramp of good quality.

5.5. How do different environmental determinants of the social environment in the Leidsche Rijn shopping centre influence wheelchair users' experience of accessibility?

From the wheel-along interviews it follows that the social environment is an important enabling factor in the experience of accessibility in Leidsche Rijn centre. The social accessibility is stated to be above average then the rest of the city of Utrecht. As mentioned in the literature, the social accessibility of staff present in stores or restaurants is of significance and in Leidsche Rijn this proves to be an enabling factor (Fänge et al. 2002; Vermeij & Hamelink 2021). The experience of social accessibility of other visitors was diverse. Some respondents did have anxiety about the possibility of looks and questions as mentioned in the literature (Velho et al. 2015; Poldma et al. 2014). However, this was not linked to Leidsche Rijn specifically but by previous experiences in general. Although respondents receive looks or questions about their wheelchair in Leidsche Rijn as well as in the centre, it was mentioned to be less in Leidsche Rijn due to public familiarity and visibility (Kal et al. 2013). The shopping centre is visited by more people in a wheelchair or with technology related to a mobility impairment and a community is present. Hence ‘light interactions’ and ‘weak ties’ are formed as mentioned in the literature (Van Eijk & Engbersen 2011).

Out of the third places present respondents state that their favourites are due to the personal preference of food but also due to the combination of friendly staff and most importantly, accessible toilets. The availability of toilets is not only a determinant in the built environment but also an important enabler in the social environment since it signals hospitality towards people with a disability. In Leidsche Rijn there are hereby enough third places that are not visited by the respondents since there is no accessible toilet as mentioned before by Vermeij & Hamelink (2021). However, contact with entrepreneurs shows social accessibility towards wheelchair users is present, this is a finding that was not mentioned before in the literature.

Even though the presence of other people is stated to ensure feelings of safety by Jacobs (1960), for people with disabilities the crowding of a pavement often causes anxiety as mentioned by Bromley et al. 2007. These findings are in line with what the respondents experienced in the shopping centre; the characteristic of calmness is often perceived as positive. However, frequent visitors state that in the weekends the crowding is not considered an issue because of the characteristics of the built environment. Such as, the spaciousness, the pedestrianized area and there being no height difference in pavement. It can be said that the presence of these built environment characteristics ensures a feeling of safety more for wheelchair users than other people present as stated by Jacobs (1960).

Optional activities (Gehl 2011) such as meeting with friends is mostly mentioned as an activity with good weather. Social contacts in the neighbourhood are not made in the centre itself. However, the third places in the centre do function as a meeting place for social contacts. Izenberg and Fullilove (2016) mention that the connectivity of the roads is an important enabler for social connections and

activities. The Berlijnplein is mentioned as an important social meeting place by the frequent users of the centre but not by infrequent users. Connectivity with the centre is therefore not as obvious and something to be gained.

Lastly, where the respondents are limited in achieving their desired functioning's that is in the participation of activities they desire in the centre. Activities specifically for people with disabilities. There is thus a need in a more active creation of space and inspirational projects (Kal et al. 2013).

5.6. How can the general accessibility policy, rules, and tools be improved while considering various individual wheelchair users' capability sets who visit the Leidsche Rijn shopping centre?

From the wheel-along it became clear that there is something to gain to include experience experts for the individual lived experience of wheelchair users as mentioned in the literature (Hofmann et al. 2020; Labbé et al. 2020; Van Lierop et al. 2019). Furthermore, the most important addition to the existing policy guidelines and rules is the accessibility of the interior environment of semi-public places. Since the municipality can only impose oneself with the UST policy and not the semi-public place due to the building regulation law other solutions and opportunities present itself through the wheel-along interviews. Respondents approach entrepreneurs of the restaurants themselves and hereby make sure that the toilet is adapted so they can make use of it. The willingness of entrepreneurs showed that more awareness should be created in the minds of entrepreneurs (Kal et al. 2013).

The diversity of the group of respondents also showed that a broader perspective for what is considered an accessible toilet. What is not accessible for one respondent is accessible for the other. The other way around what is labelled accessible is not enough for some wheelchair users since they need changing tables as well. A finding not presented in the literature is the fact that the accessible toilets available are only accessible with a key is also an experience of disability. However, contrary to the previous literature the respondents do not experience wrongly labelled accessible toilets (rma 2020; Janmaat, 2018; Kitchin & Law 2001).

The wheel-along also gave insight into the logical location of another dropped kerbs at the Brusselplein. The high square makes it impossible for respondents to move spontaneously (Wunderlich 2008). The wheel-along also gave insights in the preferred way of movement through the space. Wheelchair users naturally gravitate to the lowest point in the street, it is thus logically to locate the smoothest tiles at this point in the street.

5.7. Final conclusion

The above-mentioned sub conclusions can develop an answer to the main research question. To recall, the main research question is, "How is the accessibility of the shopping centre in Utrecht Leidsche Rijn experienced by wheelchair users, and how does this influence their participation in the social activities of shopping?."

In sum, the experiences of accessibility diverse per respondent. In general, the built and social environment contains many enabling factors, especially when compared to other urban areas such as the inner city of Utrecht which is a no-go area for some respondents due to the inaccessibility. The Oude Gracht for example cannot be reached without taking the stairs. However, it can be concluded that there were desired functioning's, entering stores or participating in social activities, which could not be achieved due to inaccessible built environment in Leidsche Rijn as well. This is due to the lack of accessible toilets and inaccessible interior environments in the semi-public place and third places. Participation in these social activities located in third places is either impossible or constrained by time due to toilet visits. For example visiting the terrace of the wine bar while meeting with friends. This is in line with previous research by Vermeij & Hamelink (2021) who state that accessibility is lower in small scale facilities. However, contrary to what Vermeij & Hamelink (2021) state there are no social barriers present.

Additionally, it is acknowledged that although the respondents can overcome higher thresholds, some threshold levels do not suffice. On a bad day, due to weather or the experience of impairment (Degener 2014), these are too high to overcome and limit accessibility to the shopping centre as well as the activities adjacent to shopping. The design is thus not universally accessible for all according to Kadir & Jamaludin (2013). However, from the data it can be concluded that the threshold height is more a result of insufficient execution of guidelines then missing guidelines.

According to theory by Wunderlich (2008) discursive walking is never completely achieved by the respondents, since the built environment and route choice are always considered which prevents completely spontaneous movement. Thus, according to Wunderlich's theory the respondents have less awareness about the socio-spatial environment in the shopping centre since they are busy looking for an accessible route. This is mostly the case at the Brusselplein, due to the elevated square. However, the built environment in the shopping streets in Leidsche Rijn is experienced as comfortable and accessible. This makes it possible to look around to stores more than for example the city centre.

An accessible built environment also signals social accessibility. A threshold aid is seen as welcoming and the more accessible an environment the more collective consciousness, light interactions and public familiarity is created of the group of wheelchair users (Van Eijk & Engbersen 2011; Kal et al. 2011). Although there are barriers present in the built environment in Leidsche Rijn, respondents state that the overall social accessibility in Leidsche Rijn centre is generally experienced as good. Good social accessibility in third places is experienced due to staff and an accessible built environment. Where this is present, places are stated as favourite places and visited frequently.

However, the centre is mostly a meeting place in summer where only the water fountain is considered as a meeting place outside of the third places where economic resources are an important individual conversion factor. Although the overall environment is experienced as accessible, for some respondents it can be concluded that economic accessibility is a factor more influential than the built environment.

6. Policy recommendations

Researching the lived experience with wheel-along interviews proved to be successful in creating visibility into factors of inaccessibility which were otherwise invisible. Hence, points of improvement and recommendations are hereby provided.

- Include experience experts earlier in the development process. As the lived experience of accessibility is wildly different then trying to think from the perspective of a wheelchair user. This adds the human touch of the experience of impairment and diversity in this. Within this research this is exemplified with the choice of pavement and the development of logical 'rolling' routes. The fact that wheelchair users naturally gravitate to the lowest gravity point means that the most comfortable pavement is most logically located in the middle of the street. Additionally did the wheel-along show that there is a need for another dropped kerb at the Brusselplein.
- Design for discursive movement. Including experience experts will also help to give insights into how to design for discursive movement for the specific target group of pedestrians on wheels. Achieving this will lead to more sensory experiences while shopping and more awareness of the socio-spatial environment which is important for the social inclusion of people with disabilities. This means execution of guidelines for thresholds of the minimum 2 centimetres. Additionally, a centre built for just shopping is excluding for people with less economic resources and lead to social exclusion for this group. Actively creating more space and activities for this group is thus needed to prevent exclusion.
- Without the help of the municipality, respondents were able to create more accessible toilets for them in certain restaurants. From this it followed that entrepreneurs were simply not aware of the possibilities that would help people in a wheelchair to use their toilet. The municipality now has a very hands-off policy in the provision of disabled toilets in restaurants. However, it has been showed that entrepreneurs are willing to create accessible toilets and thus a welcoming space for their customers. The municipality could play a more facilitating role in this, connecting costumers with entrepreneurs and creating more awareness than what is written in the mandatory building regulations. Planning for accessible toilets from the start of the building process is more sustainable economically, environmentally, and socially. An accessible toilet for the broadest part of society does also include a changing table. The availability of the Euro Key is also a solution for the semi-public toilets.
- Facilitate help in organizing activities for people with disabilities. Although it is stated possible by the municipality, it is not well known by respondents that the possibility for activities is possible. This will contribute to actively creating a welcoming space.
- The frequent non-functioning elevators prove to be a serious barrier that prevents respondents from visiting the shopping centre. Respondents state that ideally a ramp instead of an elevator is desired. However, since a ramp is in the near future not a possibility, a better online communication of the state of the elevator will help prevent situation where people with a mobility impairment are stuck at the station or unable to reach the trains. Respondents offer the use of QR-codes or clear online information.
- Threshold aids were found to be extremely helpful, provision of these where the threshold is legally too high will increase accessibility in the centre. Even though this group of respondents had the skill and ability to overcome these higher thresholds. To provide this not only creates a physical comfort to wheelchair users but also a more welcoming atmosphere.

7. Discussion

General guidelines are usually used to create an accessible built environment. Research about the individual experience through the perspective of the capability approach shows that a review of the practical experience of accessibility can help to broaden the tools and aid in policy to achieve accessibility for the broadest perspective of society (Trani et al. 2011). This method proved to be a successful approach to answer the research question. Through wheel-along interviews, planning for not only purposive movement such as going from A to B but also for discursive movement is promoted and thus space for social interactions.

However, it should be noted that every respondent who was able to participate in the wheel-along was in at the same time able to overcome the physical or social barriers that others might have prevented from participation in the research. It can be said that the capability of respondents to achieve the desired functioning of accessibility to the shopping centre itself was achieved. Hereby the non-users of the shopping centre that were not able to overcome the possible barriers in height, public transport, toilets and threshold height, or energy level or physical limitations due to impairment were not considered. Although the group consist out of a diversity of impairments, this means that the research only provides an image of the wheelchair users which were able to visit the centre anyway. This is a disadvantage of the used research method of the wheel-along. A broader perspective of society can be reached by also including static interviews face to face which include an interactive aspect from the beginning of the research. For example, including technology like Google Maps, videos, or photos. Hereby, a larger research population can also be reached. During the time span of this research this option only became available at the end of the recruitment process for respondents.

Additionally, this research focusses on one group while it is known that different impairments, such as visual impaired and wheelchair users, often have contradictory needs. Hence, it should be recognized that there is no quick fix for all of society. To create an even more universal design inclusion of other impairments into the capability approach model is needed. The use of this model and qualitative research gives an insight in not only the experience of the built environment but also the effect of the built environment on the social environment of inhabitants.

As economic resources proved to be an important factor for some respondents, further research should focus on this factor more in depth. Research where the main research question concerns the influence of economic resources together with the characteristic of impairment. The questions in the go-along interviews were enough to answer the sub question but not specific enough to create an in-depth view of the influence of the economic resources.

Lastly, the interviews were conducted during a period with warm, comfortable weather without rain. As many respondents mentioned that the shopping centre mainly functioned as a meeting place in summer, further research is needed to investigate the accessibility in different weather conditions. Future research should include other seasons as well.

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Appendix A

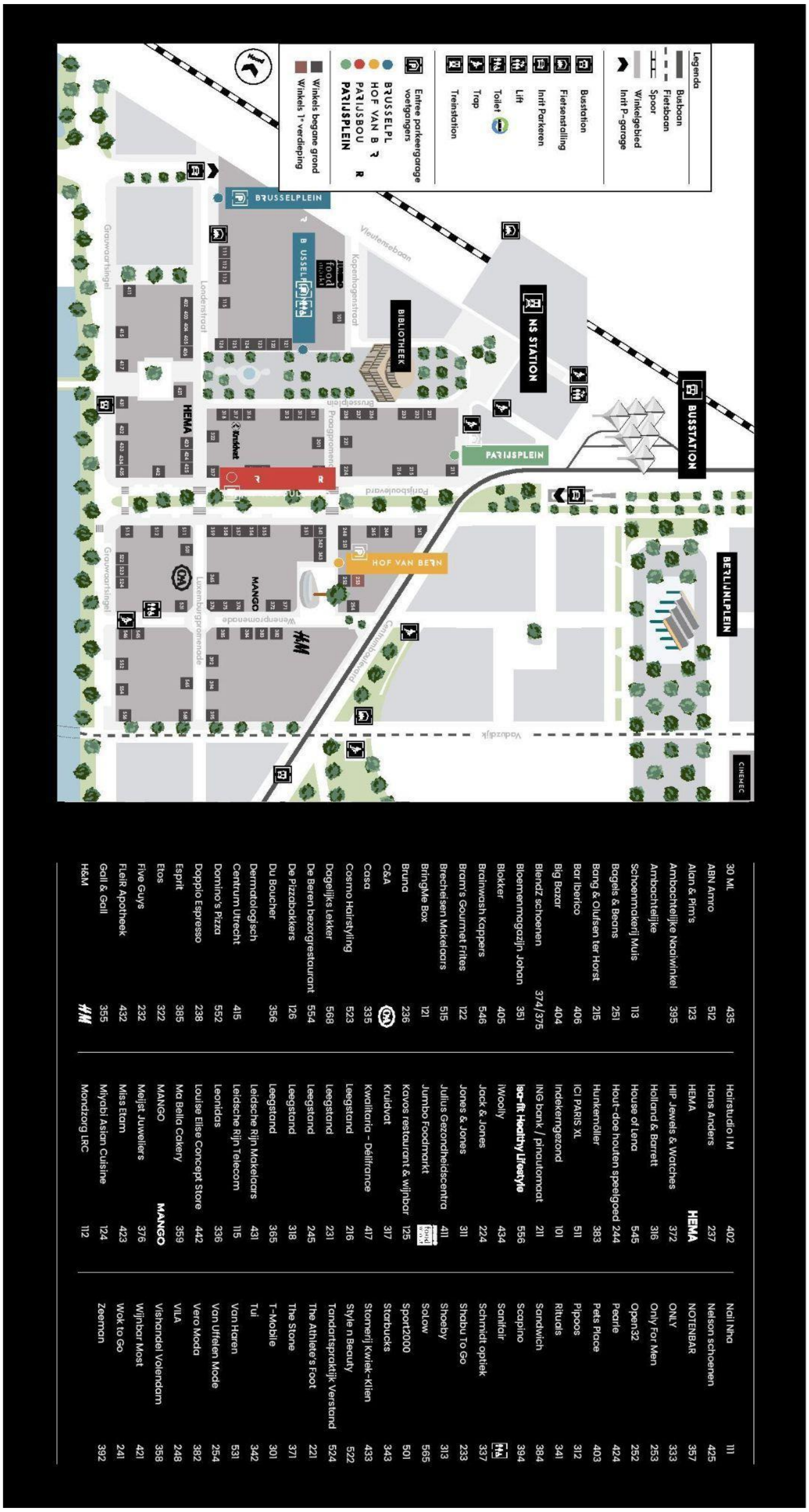

Figure 26. A detailed map about the shopping centre.

Appendix B.

Table 1. Respondent Recruitment through organizations.

Organization	**Date**	**Respondents**
SOLGU (*stedelijk overleg gehandicapten Utrecht*)	13.05.22	4
Disability Studies Netherlands	10.06.22	X
The Movement	13.05.22	X
De Hoogstraat Revalidatiecentrum	24.06.22	x
Dock Utrecht Leidsche Rijn	24.06.22	X
Dock Hogeweide	24.06.22	X
Dock Bij de Buren (Parkwijk)	24.06.22	X
Dock Het Zand	24.06.22	X
Dock Terwijde	24.06.22/28.06.22	1
Facebook "Bij ons in de buurt Leidsche Rijn e. o. community'"	24.06.22 (post removed)	x
Facebook "Rolstoelers Utrecht'"	X (not accepted in the Facebook group)	x
Facebook "Nederland toegankelijker'"	22.06.22	1
Buurtwerkkamer Leidsche Rijn	13.07.22	1
Buurtwerkkamer Top	18.07.22	1
info@leidscherijncentrum.nl (expert Interview)	05.07.22	1
Patienten Federatie Nederland	27.06.22	X
Ikzoekeenpatiënt.nl	27.06.22	X
Wheelchair Maffia	18.06.22	x
Personal contacts	21.06.22/05.07.22	2

Table 2. Respondent recruitment through emergent sampling

Date	Respondent
18.07.22	1

Appendix C.

Topic list interviews (go-along)

Explanation research: Thank the respondent for participating, the respondent is the expert and can lead the way, say whatever comes to mind and feel free to not answer to questions as well. Explain that everything will be anonymous in the thesis. Ask if it is okay to record this interview.

Topic	**Examples of questions**	**Probing**
1. Individual characteristics	1.what type of wheelchair do you have? What ability does this enable you to do? 2. Do you live in Leidsche Rijn? How long have you lived here? 3. How old are you? 4. how do you make a living?	Do you have any questions beforehand?
2.Use of shopping center Leidsche Rijn	1.What is your motivation to visit the center of Leidsche Rijn (Purposive; for errands/discursive; leisure time/conceptual; exploring the accessibility for this interview)? 2.How frequent do you visit the shopping center? What days? 3.How long do you usually spend here?	1.Why do you (not) visit the shopping center this often? (Alternatives online/ Reasons) 2. Do you go here for recreational purposes? 3.Do you like the environment and think it is enjoyable?
3.Experience of built environment determinants	1. How did you get here, by public transport, car, bike? How did you experience the accessibility? 2. How do you prepare for your trip to go shopping in Leidsche Rijn center? Do you	1.What is your least favourite area? Why? 2.What area is most attractive? Why? 3. Would you come back soon?

	look online for accessibility in the area? 3.What route do you usually take? Why? 4.What is your favourite area of the shopping center? Why? 5. What area of the street do you usually move? (Sidewalk or other) Why? 6. How do you experience the environment compared to other shopping areas such as the city center? 7. If you had built the environment what would you have added or changed or would you have done the same?	4.If you could help built a new shopping center what would you have done different?
4.Experience of the social environment/sustainability determinants	1. Do you feel like you can participate fully in shopping activities? Do you feel welcome/at home/safe here? 2. Do you enjoy living here/are you happy? 3.Do you visit the shopping center with someone or alone? 4.Do you visit the catering industry available here? Which one? Alone or together/new people or friends? 5.How do you experience the social accessibility of the staff available at the catering industry? 6.Do you check for accessibility beforehand?	1.Why don't you go to another place? 2.Would you come back soon? 3.Do you think the staff needs more training to create a more social accessible space? 4. Do you go to the area to meet new people or with friends? 5. Do you like to be around a lot of people? 6.Would you want to go to the shopping center alone? Or another shopping center?

5. Built and social environment	1.Are there any specific factors that made you choose to go to Leidsche Rijn	1.Why do you go to this shopping center and not another one in Leidsche Rijn such as Terwijde?
6.End	Closing, ask if there are still topics unresolved.	

Appendix D.

Interview 1. Exploratory interview project manager Leidsche Rijn.

Location: Municipal office Verl Hogeweidebaan

Duration: 45 minutes

Topic	Examples of questions
1. Individual characteristics	1.What is your name and what is your function in the build of Leidsche Rijn? 2. Do you live in Leidsche Rijn? How long have you lived here?
2.Use of shopping center Leidsche Rijn	1.For whom is the center build, what type of users? 2. What type of usage is intended? (Purposive; for errands/discursive; leisure time)? 3.Can you tell a bit more about the online accessibility and information available? 4.How long do you usually spend here?
3.Built environment determinants	1. Can you tell a bit more about the (public) transport options present? The bus, train, and parking facilities? 2. Can you tell a bit more about the building process and how you maintain the accessibility guidelines? 3. How does the collaboration go between the designers and the municipality? 4. Can you explain a bit more about the pedestrianized areas? 5. Can you explain why you choose the red and grey paving in the center? 6. How did you envision the walking routes? 7. Did you think about providing accessible toilets? 8. What is the reason behind the alleviation of the Brusselplein? 9.What is your favourite area of the shopping center? Why? 10. How do you experience the environment compared to other shopping areas such as the city center? 11.If you had built the environment what would you have added or changed or would you have done the same?

4.Experience of the social environment/sustainability determinants (third places)	1. How are you involved in the accessibility of the restaurants and bars? 2. Are you also working on the social accessibility? 3.How do you experience the social accessibility of the staff available at the catering industry?
6.End	Closing, ask if there are still topics unresolved.

Interview 2. Follow up interview project manager Leidsche Rijn.

Location: Municipal office Verl Hogeweidebaan

Date: 27.09.22

Duration: 41:18 min

Topic	Questions
1.Individual characteristics	1.What type of wheelchair do you take in mind while planning for a wheelchair accessible environment?
2.Use of the shopping center	1.What type of usage is intended? (Purposive; for errands/discursive; leisure time)? 2. How much time do people spend in the centre on average, is this that for which the centre was intended?
3. Built environment determinant	1. Last time it was discussed that the challenge while building Leidsche Rijn for the visually impaired is to create a good walking line and for wheelchair users to overcome the height difference. I was wondering if for the wheelchair users also 'movement routes' are envisioned for how they move through the centre. For example, in the placement of curb cuts. 2. During the time of my fieldwork the elevator was broken, why was elevators chosen at the station and not a ramp? 2. At what point in the construction process are experience residents involved? Are these multiple times?

	3. How are you involved in the accessibility of the restaurants and bars/movie theatre? Internal interior and toilets. In the interviews it came forward that two respondents who do not know each other both reached out to 2 different restaurants to make sure the toilets are accessible for them, is there a way that the municipality can play a role in facilitating this contact in the future? (Same goes for one respondent with the movie theatre) 4. it was discussed last time that the semi-public toilets are in the construction plan of the buildings, does the council have any influence on this? 5. Did the building plan also consider the shape of the thresholds? 6. Last time we talked about developing QR codes, what is the status of this?
4. Social environment determinants (third places/meeting places public space)	1. Does the municipality also organize activities in the centre, such as the fair that was in the summer, with the aim of creating more social contacts? If there is a demand from residents for more meeting places or space for activities can the municipality play a role in this?
5. Other questions or remarks	Last was discussed that the plan for Leidsche Rijn was in the public space atlas, could I look into this?

Appendix E.

Figure 27. recruitment poster.

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Appendix F.

Herby the codes used in the analysis of the qualitative data in NVivo are presented. These codes are used in the result section of this research.

Coding scheme

- Individual characteristics
  - Type of wheelchair
    - Manual wheelchair
    - Electric wheelchair
    - Other
  - Wheelchair skills
    - New user
    - Followed training
    - Experienced user
    - Threshold level
  - Individual resources
    - Financial aid
    - Income through a job
    - External economic barriers
  - Usage and motivation for visits
    - Purposive
    - Discursive
    - Conceptual
- Social environment
  - Social accessibility
    - Staff
    - Atmosphere due to other visitors
    - Previous experiences
    - Comparison with other areas in Utrecht
  - Perceptions of crowding
    - Feeling safe among the crowd
    - Uncomfortable due to lack of safety
    - Enjoyable to be among the hustle of people
    - Anxiety due to noisy questions
  - Sensory experiences
    - Ability to pay attention to the stores
    - Enjoying seeing products in stores
    - Quiet environment
  - Quality of public space
    - Atmosphere due to the built environment of the center
    - Pedestrianized zones
    - Meeting places
    - Spaciousness
    - Safety
  - Third places

        - Restaurants
        - Wine bar
        - Coffee bar
        - Bar
        - Movie theater
        - RAUM
    - Interactions and sensory experiences
        - Enjoying seeing other people happy
        - Visibility
        - Cultural diversity
        - Participation social activities
        - Sense of place
        - Social mixing
        - Social capital
- Built environment
    - Determinants in the interior environment in the semi-public space
        - Accessible toilets
        - Entrance shops
        - Accessibility fitting rooms
        - Accessible tables in restaurants
        - Availability of an elevator in store
        - Accessibility rooftop movie theater
        - Accessibility terrace wine bar
        - In store space
        - Height checkout
    - External determinants in the built environment
        - Accessible parking
        - Accessibility bike parking
        - Height difference
        - Traffic
        - Sidewalk
        - Blind guideline
        - Elevator train station
        - Dropped kerb
        - Pavement stones red/brown
        - Pavement stones grey
        - Threshold aid
    - Temporal determinants
        - Bicycles
        - Billboards
        - Glass
        - Electric scooters
        - Cold weather
        - Loose paving tiles
        - Broad terrace due to corona