AN ANALYSIS ON TRANSPORTATION EQUITY FOR PEOPLE WITH DISABILITIES IN THE NETHERLANDS AND FLANDERS: POLICIES, PRACTICES AND STAKEHOLDER PERSPECTIVES

Thesis, Master in Urban Governance

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Purpose: Almost daily, news articles about the fairness and equity of the transportation system in The Netherlands and Flanders are published. Policymakers appear uncertain about how to improve mobility for their inhabitants. This thesis provides a clear and comprehensive overview of what the best options are for policy makers within this region. Specifically, this thesis focuses on transportation equity for people with disabilities.

Methods: This study concerns a case-study research design. Additionally, this thesis employs content analysis and interviews. First, the existing policies are examined and evaluated. Next, experts on the topic, within the chosen region are interviewed for more comprehensive insights. Through both single case analysis and cross-case analysis, the drafted hypotheses are tested.

Results: The distribution of burdens and benefits influences the experienced transportation equity for people with a disability. Accessibility, mobility, availability and reliability are the most influential factors. The influence of safety is less clear in this study. While stigma from passengers occurs in the regions, there is no mention of systematic issues. Stigma from personnel can occur at times, but trainings are provided to prevent it. Moreover, existing stigma issues did not seem to affect transportation equity. There are significant differences in clarity of goals. Regions with goals that do not follow the SMART framework can be expected to have more transportation inequity. Most regions follow the same assessment standard, sufficientarianism. This will likely not be influential for the transportation equity situation.

Conclusion: Improving transportation equity for people with disabilities in the Netherlands and Flanders requires enhancing accessibility, setting clear and measurable goals, and fostering stakeholder participation. Best practices observed include Rotterdam's clear, measurable objectives and Amsterdam's innovative OV-coaches program, which effectively supports people with mental disabilities. By adopting these best practices and learning from successful policy innovations, significant strides can be made towards equitable transportation for all.

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Abbreviations

Abbreviation	Explanation
OV	Openbaar Vervoer
NMBS	Nationale Maatschappij der Belgische Spoorwegen
NS	Nederlandse Spoorwegen
GVB	Gemeentevervoerbedrijf
MRDH	Metropoolregio Rotterdam Den Haag
RET	Rotterdamse Electrische Tram N.V.
VGR	Vereniging Gehandicaptenorganisaties Rotterdam
CROW	Centrum voor Regelgeving en Onderzoek in de Grond-, Water- en Wegenbouw en de Verkeerstechniek

1. Introduction

1.1 Intro

Transportation equity has been a hot topic in the Netherlands and Flanders for a while now, with examples of the following headlines in the press: “Board warns poorly accessible ov[i] undermines rights of people with disabilities.” (van Merrienboer, 2023) and “Persons with disabilities complain inaccessible public transport to Sinksenfoor”. (Bjs, 2023). Almost every day a news article is published on transportation companies and their flaws and issues. This is the main reason the central topic of this thesis is the transportation equity for people living with a disability in the region.

Transportation equity concerns the benefits and burdens caused by the transportation system for residents within this region (Karner, 2016). Transportation equity within a region is determined by how easy all available transportation methods are to access for a resident (Karner, 2016). Studies have shown that minorities experience disparate effects from transportation policies (Ferrell., Eells, Reinke, & Schroeder, 2023). These effects are defined in the following manner: (1) predominantly borne by a minority population and/or a low-income population, or (2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population. (Ferrell et al., 2023). Furthermore, transportation and mobility play key roles in the struggle for civil rights and equal opportunity in the disabled community. Affordable and reliable transportation allows people with disabilities access to important opportunities in education, employment, health care, housing, and community life (Karner, 2016). In Europe, 27 percent of people over 16 live with some sort of disability. It can thus be stated that this is an important group to keep into account (Directorate-General for Mobility and Transport, 2024). It has been established that the more severe the disability is, the more a person experiences issues in transportation equity (Field & Jette, 2007).

1.2 Goal and research question of this thesis

This thesis aims to provide recommendations on policy level closer to what inhabitants of The Netherlands and Flanders with a disability need. This results in the following research questions.

Q: What improvements need to be made to the current transportation equity situation in The Netherlands and Flanders to better fit the needs of impaired communities?

To produce concrete answers, several sub questions were crafted. These were created to shape the separate phases of this research process.

A: According to academic literature, what are the causes and effects for transportation equity issues? (In general and for people with a disability)

B.1: Is there a situation of transportation inequity for people with a disability in the studied regions?

If so, what characterises this situation?

B.2: Which policies have been established for this situation?

C.1: How could transportation inequity for people with a disability be diminished

C.2: What are the best practices within policies when adopted? Are there significant differences between different policy innovations?

1.3 Academic and Societal Relevance

First, monitoring and adapting transportation equity in the Netherlands and Flanders is essential due to the constantly changing context, creating a knowledge gap. Continuous follow-up is necessary to complete academic theory. Previous research has been either broad or fragmented. In Flanders, a significant study on transportation gaps was published in 2015 (Fransen, Deruyter & Demaeyer), but has not been updated since. In the Netherlands, recent research has focused on cycling and affordability of mobility, leaving other aspects underexplored (Pritchard, Stępniak, & Geurs, 2019). This study aims to fill these gaps by providing updated insights into the current state of transportation equity, particularly for people with disabilities. Furthermore, this research employs a cross-case analysis of different cities, which allows for a comparative approach to understanding how various policies and practices impact transportation equity. This methodological approach can serve as a model for future studies in other regions or countries, thereby broadening the applicability and relevance of the findings.

Second, transportation equity evaluations within a region are usually broader or focused on people with lower incomes. However, less attention has gone to people with disabilities. It is needed to specifically assess what efforts have already been done for this group. Furthermore, latest news articles teach us that, even though, efforts have been made to help these groups, it is not nearly enough. Accessibility and reliability seem to be heavily lacking (Bjs, 2023; van Merrienboer, 2023). Additionally, policies change frequently and impact the entire region. Up-

to-date knowledge on transportation equity ensures better help and support for those most affected by policy imperfections.

Lastly, by shedding light on the current state of transportation equity for people with disabilities, this research advocates for more inclusive and equitable transportation systems. It highlights the necessity for ongoing assessment and improvement in transportation policies to ensure that all individuals, regardless of their physical or mental abilities, have equal access to mobility (Martens, Ciommo & Papanikolaou, 2014). This is crucial for fostering an inclusive society where everyone can participate fully in economic, social, and cultural activities (Karner, London, Rowangould, and Manaugh, 2020).

1.4 Outline of the paper

Throughout several chapters the issue of transportation equity will be addressed. First, a brief summary of the relevant academic literature is presented in the theoretical framework. Several authors' viewpoints on the topic will be discussed as a base for my own qualitative research design. Afterwards, the used methods for this research are discussed. The used method is called case studies. Four cases were featured: Ghent, Limburg, Amsterdam and Rotterdam. These cases are analysed through content analysis and interviews. This is followed by the results of the content analysis and the interviews. This is followed by a brief discussion. Here, conclusions are made, and recommendations for policy makers, academics and future research.

2. Theoretical Framework

This theoretical framework outlines key terms and models crucial for understanding transportation equity for disabled people. Focusing on models and measures, proposed by academics will form the baseline to evaluate the current situation.

2.1 Transportation Equity and Transportation Justice

When addressing a change in transportation systems that benefits certain groups of society disproportionately, several concepts are crucial. Two of these concepts are transportation equity and transportation justice. It is important to note that these are similar on some fields, but also very distinct on other aspects (Karner et al., 2020)

Transportation equity is defined by how the benefits and burdens of transportation are divided within a population (Karner, 2016). An important aspect in this is that it aims to provide equitable access to affordable and reliable transportation modes (Program, n.d.). Transportation equity is a goal usually pursued by the state. Achieving this equity can be important for multiple reasons. For instance, a lack of resources or general access to mobility opportunities can make the difference between finding a job or remaining unemployed or between receiving help when you are sick and not getting any help (Karner, 2016).

Transportation justice as a term is derived from environmental justice. It is a term more commonly used by activists (Karner et al., 2020). Transportation justice refers to the standard[2] a society should strive for and involves transforming existing structures. Transportation justice refers to the situation in which no group or person is disadvantaged by a lack of access to the opportunities they need to lead a meaningful and dignified life. To achieve this, current structures should be transformed (Karner et al., 2020) Historical decisions and processes that still influence today should be addressed, even though this might be hard or unpopular. For this transition, it is important that residents can actively participate in decision-making and can provide own insights (Karner et al., 2020).

In this paper, the term transportation equity will be used. This is because this term is more extensively defined in literature and more appropriate for academic usage. Concrete, Pereira and Karner (2021) definition will be used.

" Transportation equity is a way to frame distributive justice concerns in relation to how social, economic, and government institutions shape the distribution of transportation benefits

and burdens in society. It focuses on the evaluative standards used to judge the outcomes of policies and plans, asking who benefits from and is burdened by them and to what extent."

2.2 Transportation equity and social equity for people with impairments

2.2.1 Understanding Social Equity

Bullard (1994) states there are three major kinds when speaking of equity. These are called procedural[ii], geographic[iii] and social equity. This thesis is mainly concerned with social equity. Social equity refers to the distribution across groups in society, in this case disabled communities.

2.2.2 Addressing Historical Oppression and Stigma

Throughout recent years, several groupings have committed to creating equal rights for people with both visible and invisible disabilities (Asch, 2017). This is to counteract the history of systematic oppression, resulting from the assumption that people with a disability are less able to contribute to society. Therefore, policies should be adapted in their favour, instead of discriminating them (Asch, 2017).

The importance of taking the needs of people with a disability into account is furthermore emphasized by believers of the *social model of disability* (Shakespeare, 2006). This model explains that physically disabled people do not only experience issues because of their limited mobility, but also because of stigma and social exclusion. UPIAS (Union of the Physically Impaired Against Segregation) (1975) describes this in the following manner:

> "The disadvantage or restriction of activity caused by a contemporary social organisation which takes little or no account of people who have physical impairments and thus excludes them from participation in the mainstream of social activities."

Here, it is important that disability is created by the relationship between people with an impairment and a disabling society. Concrete and correct policy making is needed to adequately solve these complex issues (Shakespeare, 2006).

Transportation inequity, experienced by people with disabilities can thus often be influenced by discrimination, prejudices or stigma (Bezyak, Sabella & Gattis, 2017). The research of Bezyak et al. (2017) has shown that bus drivers often feel that people with disabilities are going to be difficult passengers and they are uncertain how to interact with them. It is also shown that people with more visible disabilities such as wheelchair users experience more discrimination.

2.2.3 Clarifying Goals

Manaugh, Badami & El-Geneidy (2015) analysed transportation policies from the past and noticed that policies from the past were mostly mobility based and less equity based. This is because local environmental issues often seem more urgent than more global social equity issues. On the topic of equity, they remarked that organisations often have goals, but lack in creating specific objectives that serve these goals. It is crucial that these objectives are measurable and evaluated over time.

Karner (2016) states clearly that transportation equity is gravely affected by political whims. This is because there is a lack of explicit performance measures, transportation planning and vague decision making. These political whims and vague decisions are gravely influenced by the differing needs and wants of important actors (Karner & Marcantonio, 2017). Creating more concrete objectives and means to evaluate these goals can make transportation equity policy less susceptible to circumstances.

2.2.4 How to measure transportation equity

One crucial step in achieving transportation equity is determining when it is achieved. (Sanchez, Stolz & Jacinta, 2004). This means proper measures need to be developed. This is quite a recent development in academic literature on the topic. Most measures are thus not yet finished (Di Ciommo & Shiftan, 2017). Another important aspect entails that most measures are used for the total transportation equity within a region. However, this thesis is only interested in measuring transportation equity for disabled people in public transportation.

Manaugh et al. (2015) focused in their study on how to integrate social equity in transportation policy. Here it is crucial that instruments measure the outcome and not necessarily the means to an end. This is to avoid measuring the same aspect twice. Martens, Bastiaanssen, and Lucas (2019) elaborated on the aspects they deemed necessary for an indicator to be adequate. According to them, a measure needs to consider three important aspects. These are the burdens and benefits of interest, the population in which they are distributed, and a clear conception on what a morally proper distribution of benefit or burden should be.

Burdens and benefits

To assess the burdens and benefits, it is important to know which dimensions deserve most attention. According to Martens et al. (2019), four dimensions are key. These dimensions are mobility and accessibility, traffic-related pollution, traffic safety and health.

According to an expert group, ordered by the European Union, transportation inclusivity is to be obtained through several key aspects (Directorate-General for Mobility and Transport, 2024). These are called availability, accessibility, affordability and acceptability. This expert group stated that the most important aspect would be to increase accessibility. This has also been confirmed by Di Ciommo and Shiftan (2017). Within accessibility, several conditions need to be met: affordable fares for everyone, physical accessibility of the network, ticketing and information and a corporate culture focusing on service excellence. Di Ciommo and Shiftan (2017) highlight that policies are usually developed for highly mobile groups. Instead of measuring accessibility through traveling time, it should be measured by the distribution of these so-called accessibility gains (Directorate-General for Mobility and Transport, 2024).

Manaugh et al. (2015) emphasize the need to concretise complex and abstract terms, so that they become operationalizable. Important aspects and indicators here are accessibility, safety, traffic noise, transportation expenditure and affordability. People with disabilities experience some important accessibility barriers. For people with disabilities concrete barriers often are inaccessible infrastructure, lack of awareness among transport staff and fellow passengers regarding their needs, fear of harassment or uncomfortable situations and fear of disruptions to accessibility due to incorrect information or equipment failure (Directorate-General for Mobility and Transport, 2024).

For those dimensions, it is crucial to measure the resources, opportunities, outcomes and wellbeing. The three first aspects are well-established. Wellbeing has only recently been introduced as being crucial for achieving transportation equity (Di Ciommo & Shiftan, 2017).

Population groups

The next step is distinguishing and defining the population groups. These groups are defined by certain crucial characteristics. These characteristics can clarify which groups or minorities or more susceptible for certain benefits or burdens. These can be based on residential location, their preferred or used transportation mode, income, age, gender, (dis)ability and ethnicity

(Martens, 2019). The population chosen within this thesis is people with a disability in the Netherlands and Flanders.

Equitable Distribution

The last step is to define the equity principles and what an equitable distribution looks like. A certain number of standards should be developed. These standards are standards for assessing the existing situation and for assessing interventions (Martens et al., 2014). The standards for assessing the current situation are called equality, proportionality, maximum gap standard, minimum standards approach and the notion of basic need. For interventions, the following standards exist principle of equality, Do no harm and equalisation. These approaches on how to achieve transportation equity are rooted in forms of broader philosophies on how policy makers believe citizens should be treated. These philosophies are called utilitarianism, sufficientarianism, prioritarianism and intuitionism (Martens et al., 2014; Pereira, Schwanen & Banister, 2016). One major difference between different approaches is whether the policy makers try to treat everyone the same or tries to tailor the solution to the person (Martens et al., 2014). Martens et al. (2014) argue that for transportation equity, utilitarianism is unsuitable, advocating for sufficiency or priority approaches, as these tailor benefits to individual needs.

2.2.6 Conclusion

This section aimed to find an answer to the question: "According to academic literature, what are the causes and effects for transportation equity issues? (In general and for people with a disability)."

There is broad agreement that more work needs to be done to achieve transportation equity for disabled communities. Even so, the road to achieving this seems to differ depending on who you ask. That is why this framework aimed to group these different views with the goal of obtaining one single conceptual model.

In summary, this theoretical framework has provided a comprehensive foundation for examining transportation equity and justice, particularly concerning individuals with disabilities in The Netherlands and Flanders. By defining key concepts such as transportation equity and transportation justice, and distinguishing between them, the framework underscores the importance of equitable distribution of transportation benefits and burdens. It emphasizes

the need for continuous adaptation and follow-up in academic research to address the evolving challenges in transportation systems.

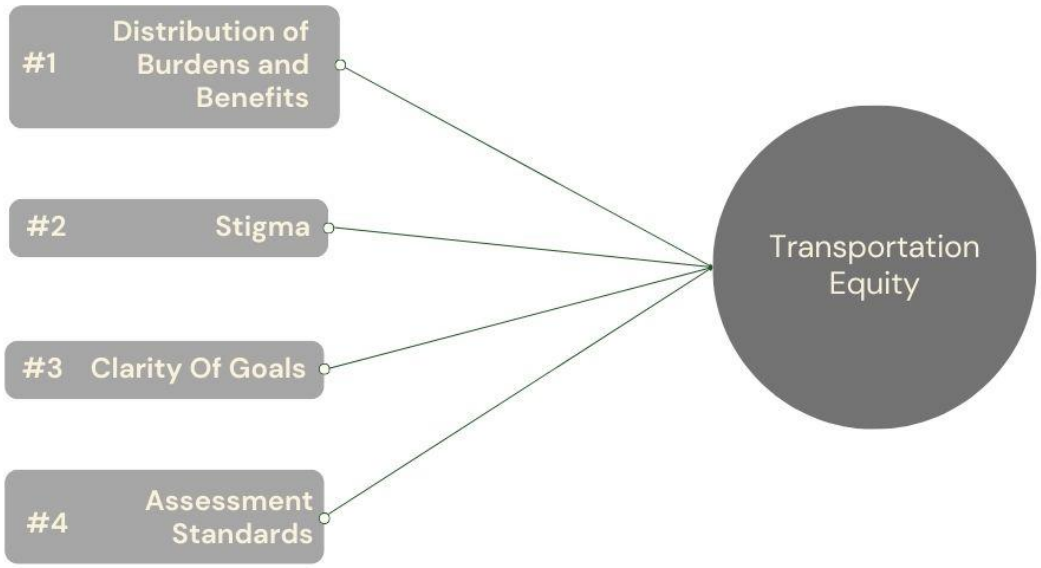
The framework has highlighted the historical context of transportation inequity and the importance of addressing stigma and discrimination (Asch, 2017). It underscores the necessity of clear, measurable goals in transportation policy, as well as the importance of precise assessment standards to evaluate transportation equity effectively (Manaugh et al., 2015; Martens et al., 2014). The inclusion of specific measures for accessibility, availability, affordability, and acceptability aligns with recommendations from expert groups and existing literature (Di Ciommo & Shiftan, 2017; Martens et al., 2014).

This theoretical foundation will guide the subsequent empirical research, offering a lens through which to evaluate policy efforts and their outcomes for disabled individuals in the selected regions.

2.3.1 Conceptual Model Transportation Equity Indicators

Based on the literature, a model is developed. This model (Chart 1) is a visual representation of the different indicators affecting transportation equity of people with a disability in The Netherlands and Flanders. These four indicators translate into the following conceptual model.

Chart 1: *Conceptual model*



The indicators and the corresponding hypothesis are:

#1 Division of Burdens and Benefits: This variable significantly influences transportation equity. Key dimensions include:

- Accessibility: Includes physical accessibility and understandability of transportation systems (Di Ciommo & Shiftan, 2017).

- Mobility: Measured by whether an individual's mobility within a region is affected by public transportation services (Manaugh et al., 2015).

- Availability and Reliability: Ensuring access to reliable transportation options (Directorate-General for Mobility and Transport, 2024).

- Safety: Both perceived physical and social safety are crucial (Manaugh et al., 2015; Martens et al., 2019).

Hypothesis 1: Higher levels of accessibility, mobility, availability, reliability, and safety lead to greater transportation equity.

#2 Stigma: Negative stigma from transportation personnel and fellow passengers lowers transportation equity by impacting the willingness of people with disabilities to use public transport (Bezyak et al. 2017).

Hypothesis 2: Reduced stigma leads to greater transportation equity.

#3 Clarity of Goals: Regions with well-defined, SMART goals should perform better in transportation equity. Clear and unambiguous goals indicate a higher level of commitment to equity (Manaugh et al., 2015).

Hypothesis 3: Clear and well-defined goals leads to greater transportation equity.

#4 Assessment Standards: Different assessment standards lead to varying results in transportation equity, as they indicate policy makers' priorities. Regions with more ambitious goals may evaluate their equity lower as they are further from achieving their targets (Martens et al., 2014)

Hypothesis 4: More stringent assessment standards leads to a lower evaluation of transportation, creating higher transportation equity.

3. Methods

3.1 Research design

3.1.1 Research Design

The research chapter of this thesis aims to answer the following questions:

- Is there a situation of transportation inequity in The Netherlands and Flanders?

- Which policies have been instated to improve this situation?

- What are the best practices in policies?

This research aims to evaluate the following hypotheses regarding transportation equity:

- Hypothesis 1: Higher levels of accessibility, mobility, availability, reliability, and safety will lead to greater transportation equity.

- Hypothesis 2: Reduced stigma will lead to greater transportation equity.

- Hypothesis 3: Clear and well-defined goals will lead to greater transportation equity.

- Hypothesis 4: More stringent assessment standards will lead to a lower evaluation of transportation equity.

This thesis examines the before-mentioned research question and hypotheses through a qualitative design, in the form of a case study. The four cases, chosen in this study will be analysed in a rich and complete manner (Denzin & Lincoln, 2017). Two main methods are used throughout this process: content analysis and in-depth interviews.

3.1.2 Cases

This research plan follows a case-study strategy. Employing such strategy allows to analyse the complex interplay of actors and societal factors (Blatter, 2012). First, analyses are made per case and in the next stadium a cross-case analysis is conducted. The regions Amsterdam, Rotterdam, Ghent and Genk will be examined. These cases were picked for varying reasons. First, Amsterdam was picked for its role as forerunner. The transportation area Amsterdam has a lot of policy information available and proves to have a lot of initiatives on the topic of inclusion and transportation innovation then other transportation areas (CROW, 2024). Furthermore, the transportation area houses almost nine percent of Dutch citizens. Its' accessibility is highly influential for Dutch citizens. The second case, the metropole region Rotterdam The Hague was chosen for its comparability with Amsterdam and its proximity to

the Erasmus University. This area also houses approximately 2,7 million Dutch residents and thus provides transportation for fifteen percent of the Dutch population (Metropoolregio Rotterdam Den Haag, n.d.). Together, these areas house almost one out of four Dutch residents.

Next, Ghent was chosen as a case. Ghent is part of transportation area Ghent Within Flanders, Ghent is known to invest a lot in accessibility and inclusion. Therefore, it is interesting to observe their efforts. Ghent is also an important node for commuters working in Ghent, Brussels or Antwerp, which means a lot of people use their public transportation system (Belga, 2021; Vervoerregio Gent, 2023). Moreover, the area houses 677.000 of Flemish inhabitant or approximately ten percent (Vlaanderen, n.d.). Last, Genk, part of the transportation area Limburg was picked as a case. This area situates itself on the far edge of Flanders and houses 871.000 people or thirteen percent of the Flemish population (Vlaanderen, n.d.). Therefore, it might be interesting to analyse possible differences between a region in central Flanders and a region more remote. Moreover, it is home to Hasselt University, which teaches the study Mobility Sciences. Therefore, the assumption was made that they have a lot of knowledge on the topic.

In appendix 5, a map is included that shows the different cases on the map. Appendix 6 gives a thorough description of each case, the chosen respondents and sources.

3.1.3 Operationalisations

To assess Hypothesis 1, data on accessibility, mobility, availability, reliability, and safety will be collected through policy document analysis and in-depth interviews.

Hypothesis 2 will be examined by exploring experiences and perceptions of stigma among disabled individuals using public transportation.

Hypothesis 3 will assess the clarity and SMARTness of transportation goals through document analysis and interviews with policymakers.

Hypothesis 4 will involve evaluating the assessment standards applied in different regions.

Specific operationalisations per variable and indicator can be found in table 3 below in the Appendices.

It is important to note that it was challenging to find representative indicators for the dependent variable: transportation equity. At this time, there is still a lack of general and comparable statistics.

3.1.4 Document Analysis and Interview Analysis

Distinct types of reports are considered, ranging from news articles and official policy documents to reports from organizations focused on accessibility and equality issues. Policy documents from all involved entities are thoroughly analysed, encompassing annual reports and strategic policy objectives. Consistent document analysis is conducted across all cases using guiding questions derived from the conceptual model. These questions are aligned with the operationalizations discussed earlier, ensuring coherence and clarity in the research approach.

In the interviewing phase, the key stakeholders from every city are interviewed. This concerns semi-structured interviews. Choosing for semi-structured interviews allows the interviewer to elaborate on certain topics, while also remaining focused on finishing all the questions and covering all subjects (Jamshed, 2014). In total, 20 interviews have been conducted for this thesis. This group of people includes policy makers, urban planners within the city, transportation equity advocacy groups and employees of public transportation companies. More information on the interviews and the question guideline can be found in table 2.

More information on the who is interviewed, and which policy documents are analysed can be found in table 2 in the appendices.

3.1.5 Data Analysis

The data, retrieved from these interviews will be analysed through thematic analysis. By use of the online program atlas.ti, the transcripts were coded to identify key patterns and themes, mentioned by the interviewees. In the results section, the case study results are presented. First results for the independent variables per case are presented. Afterwards, a cross-case analysis is conducted, to make more general conclusions. For further analysis, a code tree was drafted. This tree can be found in the appendices as appendix 3.

3.2 Ethical Concerns

Throughout the analysis process, a lot of attention went into ethical concerns. The specificities can be found in appendix 4.

3.3 Reliability and Validity

Reliability and validity received attention in this research analysis. By reliability, it is meant that the obtained results are consistent and measure the same aspects in every case. Validity means that what is measured is accurate.

To obtain a high reliability, It was aimed to interview actors with the same occupational functions and interests in each case. When one actor was not available, other actors with similar interests were contacted, to make sure that no perspectives were missed. With each actor, a semi-structured interview was conducted, using the same base questions. To make sure no aspects were missed. Policy documents were collected and analysed as well. To maintain reliability during the coding process, the same coding tree was used for all the interviews and documents.

To obtain validity, Triangulation was used. Both a document and interview analysis were conducted. Additionally, the first interview served as a pilot study, to make sure all questions were clear. After this first interview, several questions and introductions were changed. Furthermore, different questions were asked for each important topic or hypothesis. When the respondent was not able to give a clear answer, the question was asked differently. At some point, all questions followed the same structure, (e.g. to what extent do you feel that accessibility is up-to-standards in your region). This enhanced clarity and made sure that the interviewees understood the questions.

4. Empirical findings and Analysis

4.1 Empirical Findings

4.1.1 The Netherlands

4.1.1.1 Amsterdam

Distribution of burdens and benefits

Accessibility

When discussing accessibility, most respondents from Amsterdam expressed a nuanced view, acknowledging ongoing improvements while identifying areas needing significant enhancement due to the city's historical constraints. Currently, 27 percent of all stops in Amsterdam are fully accessible (Cliëntenbelang Amsterdam, 2023). However, it is mentioned by one interviewee that a lot of the remaining stops are mostly accessible, but lack in one aspect because of logistical issues. A major challenge cited is Amsterdam's historical architecture, which often limits the space available for necessary infrastructure elements, making it difficult to achieve required accessibility standards. Common issues include frequent malfunctions of elevators and escalators, with repairs often causing delays.

In terms of understandability and mental accessibility, Amsterdam supports initiatives like the OV-coach project, which utilizes volunteers to assist people with disabilities in navigating the transportation system independently. Another pilot project, NaviLens, focuses on wayfinding for blind or visually impaired individuals using a smartphone app that provides auditory and vibrational cues for navigation.

Despite ongoing challenges, Amsterdam is actively working to reduce accessibility barriers for residents with visual and mental impairments.

Mobility

It quickly becomes clear that public transport is very crucial for the mobility of people with additional accessibility needs. It is acknowledged by multiple actors that alternative transportation methods are often more difficult to use and often only used when necessary. People with physical limitations might experience difficulties walking or biking, are also less likely to use a car. When they are not using public transportation or *additional public transportation*, they rely on being driven around by people they know or are close to them.

While other people might rely on bikes to get around in Amsterdam, this is harder for people with a disability. Therefore, there is in general more reliance on public transport for people with disabilities. Therefore, there is an uneven distribution of burdens.

Availability and Reliability

During several interviews, it is mentioned that the public transportation system is very dense and there is a high frequency of the most popular lines. These lines are very efficient and bring you to the most popular places fast. Some destinations might be far from the nearest stop. This can be a barrier for people with physical disabilities. People who cannot rely on public transportation have the opportunity of using the additional public transportation.

Where availability of options is not an issue, reliability of options is. Several issues are known to the interviewees. Examples are bus drivers that do not help with entering their vehicle or who do not even stop because they fear they will lose too much time. Another example is broken infrastructure, needed to enter the public transport. Official numbers for both the bus and train services are not publicly available.

Concluding, when it comes to availability and reliability, there does appear to be inequality in the distribution of burdens and benefits. When the distance to the nearest stop is further, this impacts people with disabilities more.

Safety

No systematic safety issues were identified by respondents. Interviewees mentioned that Amsterdam in general has some issues with social safety. However, this is usually not per se against people with disabilities. To ensure passengers' safety in the future, there are plans to create a phone number, which passengers can text when they do not feel safe while traveling. this can increase travellers' sense of security. A comparable phone number already exists for train passengers.

Safety issues in this case do not seem to be different for people with disabilities, compared to people without disabilities. There is thus no unequal distribution of burdens and benefits.

Comfort

One of the issues, Dutch policy advisors and employees recognised is the comfort of people with a physical disability. One major improvement, mentioned, which happened in Amsterdam was the adaptation of trams. This adaptation concluded in wheelchair users to be able to travel

together. Trams now have the possibility of putting two wheelchairs next to each other. This made traveling a lot more comfortable.

In older trains, they often do not have the possibility of entering the carriages. They mostly have to sit in the corridors and not all toilets are accessible. When travelling these inconveniences can make their journey a lot more uncomfortable. However, these are things the NS is aware of and is gradually improving.

Stigma

For personnel, there is a mandated yearly training that includes accessibility training. This serves as a refresher for existing rules and an update on new rules. It also makes sure drivers do not forget to keep an eye out. However, staff shortages often occur as well, which makes it harder to enforce these trainings. This can lead to lower demands from the concession holders.

Interviewees realise that stigma from fellow passengers can form a problem at times. This is a broader occurrence in the city, that not only happens in public transportation but also in other public spaces. Therefore, the transportation area has developed a sensibilisation campaign, to inform citizens on what helping behaviour is most appropriate. This is because people often have good intentions, but do not really know what is suitable.

There is no specific issue regarding stigma towards people with disabilities in Amsterdam.

Clarity of goals

In general, in the Netherlands 100 % of public transport by rail should be accessible by 2040 (Prorail, 2021). Additionally, the transportation area of Amsterdam has a clear vision on what mobility should entail. Everyone in the area, regardless personal characteristics should be able to travel from door to door, at every place or time. This does not mean that this should be doable with the same mode of transport every time. There should just be a way.

Amsterdam envisions a future in which people use the bike more and go on foot. However, they realise and focus on the fact that there should always be another option for people who are unable to go on foot or by bike.

These goals are measurable, achievable and relevant. The specificity and time could be optimised.

Assessment Standards

The vision of the transportation area is most in in line with the sufficientarianist approach. There should be a mode of transportation for everyone at every time, so that they can participate in society. When developing public transport, the reasoning of the transportation area is the following: if a system fits for the most vulnerable groups, it fits for the other groups as well. This is more in line with a prioritarianism approach.

Transportation Equity

In Amsterdam, 25 percent of journeys is made by public transportation (Heijnen, n.d.). Public transportation is currently used in the Amsterdam area, by both visitors and inhabitants. The train satisfaction rate in 2021 was 7,9 (CLO, 2022). For the GVB the average of their services received an 8 (Rebel, 2022). On average, every citizen has a bus, tram or metro stop available within 250 meters.

This means transportation equity in Amsterdam is quite high. Citizens in Amsterdam appear to choose to travel by public transportation and enjoy it.

4.1.1.2 Rotterdam

Distribution of burdens and benefits

Accessibility

In Rotterdam, significant strides have been made towards achieving full accessibility in public transportation, with approximately 64 percent of bus and tram stops meeting accessibility standards (Metropoolregio Rotterdam Den Haag, 2024). Tram stops surpass bus stops in meeting these standards. Moreover, all buses and metros are now accessible. One interviewee highlighted two critical areas for achieving complete accessibility: ensuring more bus stops meet accessibility criteria and aligning public spaces with transportation stops to facilitate seamless access, particularly for wheelchair users facing accessibility challenges due to infrastructure imperfections.

Regarding accessibility for individuals with mental disabilities, Rotterdam's initiative “MEE op Weg” focuses on teaching children to independently travel to school, aiming to reduce reliance on school buses or taxis. This initiative benefits children with mild mental disabilities, physical impairments, or other disorders. This is helping them navigate daily challenges and unexpected

obstacles through repeated training on specific routes. This makes public transport more mentally accessible for these groups of children.

Despite ongoing efforts, Rotterdam acknowledges there remains uneven distribution of accessibility burdens. Nevertheless, the city is steadily narrowing this gap.

Mobility

When asked about the necessity of public transportation for the mobility of people with a disability, all respondents gave the same answer. In Rotterdam public transport is a necessity for people with disabilities to come around. Together with bikes, it is the fastest growing mode of transportation (Gemeente Rotterdam, 2020). It is often the fastest and easiest option to go from A to B and also the easiest. A lot of tram, bus and metro lines run every few minutes and thus create a lot of freedom and possibility.

In general, most people rely on public transport to get around in the city centre of Rotterdam. Therefore, there is no uneven distribution of burdens when it comes to mobility.

Availability and Reliability

Most respondents reported no issues with the current availability or reliability. The metro offers trains every few minutes, while trams and buses run less frequently but still maintain a high frequency. In 2022, all modes of transport in Rotterdam had a reliability rate of 90 percent or higher and less than 1 percent of services were cancelled (Metropoolregio Rotterdam Den Haag, 2022). Most lines are very frequent and experience few delays. When there are delays, this is often due to staff shortages.

People with a disability also have the right to use other buses called “Trevvel”. These buses bring you directly to your destination. This is in contrast to public transport. Notwithstanding, these buses often have to pick up and drop off other passengers and may thus not take the fastest route. these are also subject to existing traffic conditions.

These reliability issues are the same for people with and without disabilities. However, for people without disabilities, it might be easier to search for alternatives when the infrastructure is broken than for people with disabilities. This disparate distribution of availability and reliability does impact people with disabilities disproportionately.

Safety

There were no specific issues reported for people with disabilities. It seems there is no unequal distribution of safety issues.

Comfort

One of the issues, Dutch policy advisors and employees recognised is the comfort of people with a physical disability. In older trains, they often do not have the possibility of entering the carriages. They mostly have to sit in the corridors and not all toilets are accessible. When travelling these aspects can make their journey a lot more uncomfortable. However, these are things the NS is aware of and is gradually improving.

In their journey to accessibility, the policy plan acknowledges the importance of not only physical accessibility, but also comfort when traveling.

Stigma

Respondents reported no serious issues regarding stigma from personnel. However, active providers recognise the importance of education around prevention of stigma. The metropole region plans to develop an instruction video for all drivers and other personnel on how to interact with different types of passengers and their needs. This is to make sure travellers do not become discouraged. The goal here is not to avoid negative experiences, but to encourage positive experiences.

Currently, negative experiences with other travellers have not been mentioned. There are also no concrete initiatives to diminish or avoid these negative experiences. However, the use of controllers or conductors should discourage people of behaving negative.

There is no specific issue of stigma towards people with disabilities in Rotterdam.

Clarity of goals

In the Netherlands 100 % of public transport by rail should be accessible by 2040 (Prorail, 2021). Furthermore, the metropole region developed an implementation program, in which they described their goals and ambitions for the period 2024-2028. For every ambition, an intended result or objective has been formulated as well. This makes it quite easy to evaluate progress and measure changes in transportation equity within the region. The objectives are often not converted into specific numbers. However, most goals are measurable when it comes to change.

In establishing goals, Rotterdam pays attention to the need for the municipality, the metropole region, the government and the RET to collaborate.

These goals are specific, measurable, achievable, relevant and time-based. Concluding, they fit almost all of the aspects of the SMART goal framework.

Assessment Standards

In Rotterdam, the standard is that everyone should be able to use the public transport system. To make this happen, the infrastructure should be adapted to each person's specific needs. This strategy is most alike with sufficientarianism, in which the goal is that everyone receives enough benefits to be able to travel autonomously. For interventions, the principle of equalisation is followed. Interventions aim to improve the situation towards a more equal situation for people with all sorts of disabilities.

Transportation Equity

In Rotterdam, 10 percent of journeys is made by public transportation (Ariane, 2019). The train satisfaction rate in 2021 was 7,9 (CLO, 2022). For the RET, the average satisfaction rate was 7,9 (RET, 2020). It is mentioned that there is still some transportation inequity within the region. Traveling by public transport is often still harder or can cause more inconveniences. However, improvements have been made and travellers with disabilities should usually have as many options to reach their destination.

This means transportation equity in Rotterdam is moderately high. People enjoy traveling by public transportation, but still often choose to travel through other methods.

4.1.2 Flanders

Legal Framework

When speaking to Flemish policy advisors, almost all of them mentioned the same issue, the lack of a clear legal framework. Because of the many different involved governments it is unclear who is in charge of what. The background information on Flanders' legal framework can be found in appendix 7.

4.1.2.1 Ghent

Distribution of burdens and benefits

Accessibility

Since 2004, De Lijn, has only purchased accessible vehicles, meaning all Ghent buses and trams are now accessible (De Lijn, n.d.). The focus has shifted to making tram and bus stops accessible. In cooperation with Inter, De Lijn has developed a masterplan with six criteria for accessible stops, detailed in the endnotes (De Lijn, n.d.). Municipalities receive a €5000 subsidy per stop to meet these criteria, ensuring accessibility for people with visual impairments and motor disabilities, both with and without assistance.

Of Ghent's 426 bus and tram stops, 57% are accessible with assistance, 43.7% without, and 32.9% are accessible for visually impaired individuals. Passengers can consult an online map to check accessible stops, avoiding unexpected issues during their journeys. Only the two main train stations in Ghent are accessible, reflecting a broader issue in Flanders, where only 25% of stations are accessible.

One interviewee mentioned that Ghent's historical character makes full accessibility challenging due to restrictions on construction work. Efforts are being made to improve not only the stops but also the roads leading to them. However, some accessible stops are no longer in use due to route changes in early 2024.

Overall, people with disabilities experience different accessibility challenges compared to those without, indicating an uneven distribution of burdens and benefits in terms of accessibility.

Mobility

When creating a new mobility plan, Ghent found mobility poverty a major issue affecting the poor, disabled, and those needing extra care, limiting their transportation options (Stad Gent, 2015). To address this, Ghent is focusing on combi mobility, encouraging the use of multiple transportation methods for a single journey. They are establishing Hoppin hubs, where various transportation modes converge, such as shared car drop-off points, bike parks, and bus stops. This investment aims to enhance and expand the current transportation network, improving mobility for all.

The city of Ghent is looking for ways to improve the mobility for people with disabilities, recognising that mobility is needed for people to participate in society. This need and these

policy measures show the uneven distribution of burdens of mobility for people with a disability.

Availability and Reliability

Ghent offers several transportation alternatives for people with disabilities, including taxi cheques, volunteer transport, and wheelchair-accessible services (Stad Gent, 2015). The city's mobility plan highlights that while Ghent's historical centre boasts good public transportation options, smaller municipalities lack such infrastructure (Stad Gent, 2015). Hence, citizens moving between municipalities rely on alternative transport methods. Moreover, it is mentioned during an interview that usage of these options is limited annually. Reservations are required in advance for specific journeys like hospital visits, which are sometimes covered by health insurance. Buses and trams do not require reservations, making them essential for spontaneous travel decisions among people with disabilities.

In conclusion, disparities in availability and reliability exist in transportation services, impacting individuals with disabilities more profoundly than those without. Despite gaps affecting all commuters, the reliance of disabled individuals on accessible transport enlarges these disparities.

Safety

There are no major safety issues and thus no disproportionate safety burdens for people with a disability.

Stigma

Stigma from fellow passengers does not seem to be an issue in or around Ghent, as mostly positive experiences are mentioned.

Stigma from personnel seems to vary. There have been some issues with bus drivers not picking up wheelchair users, but according to De Lijn there is no systematic issue. They also mention that they have instated a mandatory course on accessibility and inclusion. In a couple of years, every driver working for them should have followed the course.

Concluding, stigma in Ghent does not seem to be a systematic issue.

Clarity of goals

In Flanders, autonomous travel should be possible for 90 percent of travellers by 2040 (Gilkinet & FOD Mobiliteit en Vervoer, 2022). In Ghent, the concept of transportation poverty addresses equity issues in mobility (Dienstoverschrijdende werkgroep vervoersarmoede Stad Gent, n.d.). Public transportation is crucially accessible for people with disabilities, making it a focal point for enhancing their mobility. The city emphasizes Universal Design in its urban planning, which aims to create environments usable by everyone without specialized adaptations (Stad Gent, n.d.). Ghent defines integral accessibility as ensuring equal and independent access to environments, products, buildings, services, information, and transportation, thereby promoting full social integration and participation for all residents (Stad Gent, 2023). It is mentioned that Ghent as a city plans to make 50 percent of stops accessible by 2030, which is in line with the masterplan accessibility, drafted by Flanders.

These goals are definitely relevant. In their action plan, specific subgoals are drafted to reach integral accessibility (Stad Gent, 2023). Attention went to accessible stops and additional transportation methods. These goals were perfectly in line with the SMART framework.

Assessment Standards

Ghent's strategy aligns closely with sufficientarianism, prioritizing the fulfilment of individual needs to ensure everyone's basic necessities are met. Additionally, elements of prioritarianism are evident in Ghent's mobility plan, particularly in its focus on enhancing public transportation for those experiencing transportation poverty. This approach aims to equalize opportunities, as advocated by Martens et al. (2019), and includes initiatives like free tram and bus travel for people with disabilities. By improving the efficiency of available options, Ghent sets higher standards that may pose challenges in achieving optimal transportation equity.

Transportation Equity

In Gent, 11 percent of journeys is made by public transportation. Buses and trams are responsible for 7 percent and trains are responsible for 4 percent. For long journeys, people tend to choose other transportation methods. Movements in Ghent are more often made by less accessible transportation methods. Approximately, 96 percent of people have a stop close enough to their home and in Ghent specifically, 96 percent of stops has a bus or tram passing by every hour[iv] (Debackere, Wouters & Buytaert, 2024). In Flanders, for trains, there is a general satisfaction rate of 66,7 percent (NMBS, 2019). For buses and trains, this is 59,4 percent

(De Lijn, 2024). Moreover, it is mentioned by several interviewees that there is still a lot of transportation inequity for people with disabilities.

In conclusion, Ghent currently scores moderate on transportation equity. The satisfaction scores are very average and still a lot of people do not travel by public transportation.

4.1.2.2 Genk

Distribution of burdens and benefits

Accessibility

Genk uses the same broad accessibility measures as described in the Ghent case description. Of Genk's 304 bus and tram stops, 40,8% are accessible with assistance, 24% without, and 22% are accessible for visually impaired individuals.

The greatest issue in creating accessibility mentioned by interviewees is the fact that the "design for all[v] principle has been instated too late. Current measures are mostly instated to make earlier designs more accessible. One example for this is the fact that train stations have three possible platform heights. When making those stations accessible, one common height must be chosen. All stations that use the other heights need to be rebuilt. This is very time and cost expensive.

It is also mentioned during multiple interviews that there are entire neighbourhoods that have few to no accessible stops at this instance. To improve official accessibility rates, transportation companies often want to remove lesser used non-accessible stops for cost optimalisation. However, when the nearest bus stop becomes further for citizens, this does not lead to higher accessibility either. This is a difficult trade-off; officials are faced with.

It is clear that in Genk, people with disabilities still experience a lot more burdens on the topic of accessibility, than people without disabilities.

Mobility

According to multiple policy advisors, public transportation is not considered essential for the mobility of people with disabilities in the Genk area. They argue that in Limburg, car travel predominates due to factors such as providing a sense of independence to residents and the less developed public transport network compared to other provinces. Many destinations are inaccessible by public transport, making the car a more appealing option. Additionally, the

area's spatial planning, influenced by its historical development around mining, lacks a compact network (Arcadis, 2014). As a result, residents, including those with disabilities, heavily rely on cars, even though not all can drive themselves, thus compromising their independence.

Currently, public transportation is not crucial for the mobility of people with a disability in Genk, because the regions in general reliance on cars. Here, people with a disability are not disproportionately burdened by mobility.

Availability

In Limburg, the options for public transport are rather limited. In Genk, only two trains leave every hour. The connection with other bigger cities is possible, but often takes a lot longer than by car. Furthermore, the eastern part of Limburg is not connected by train. For local mobility, Genk has to focus mostly on the bus network. For people with disabilities, the city provides taxi cheques and the option to make use of the MinderMobielenCentrale (Genk, 2023; Vlaanderen, 2023).

Public transportation in the area seems to be mostly reliable. Buses appear to be more dependable than trains, but this might also be because people expect a higher efficiency rate from trains. No specific remarks on reliability of assistance were made.

Concluding, when it comes to availability, there does appear to be inequality in the distribution of burdens and benefits. While people without disabilities also encounter gaps in the transportation network, these gaps may affect individuals with disabilities more severely due to their reliance on accessible transport options.

Safety

In general, traveling by bus or train is safe, according to the interviewees. The used equipment is safe and adapted to people with diverse needs. Although, as mentioned earlier, Genk is a city mostly built for and around cars. Therefore, wheelchair users might feel unsafe or unable to reach their bus stop in a safe manner.

There seem to be no significant impact or special social safety issues.

There might be some sort of unequal distribution of burdens when it comes to safety because it is more unsafe for people with physical disabilities to reach their stop.

Stigma

There is no major problem with stigma from personnel, as this was not mentioned in the interviews or in the policy documents. To make sure personnel is equipped to manage possible issues, they do receive some form of basic training. This goes for both the train and bus personnel.

There are no issues of stigma towards people with disabilities mentioned.

There is no major issue concerning stigma in the Genk area.

Clarity of goals

In Belgium, autonomous travel should be possible for 90 percent of travellers by 2040 (Gilkinet & FOD Mobiliteit en Vervoer, 2022). In the mobility plan of Genk, it is stated that everyone should be able to join in society. An important principle to establish this is called 'Design for all.' In order for this to happen, existing modes of transportation should be optimised. For people with disabilities, the emphasis needs to be on public transport. When it comes to accessibility of bus stops, the goal is quite clear. Everybody should be able to travel by bus or train. To make it happen, 70 to 75 percent of stops should become accessible. Flanders' goal is to make 50 percent of stops accessible by 2030. Yet, it remains unclear by when this should be finished. When looking at the SMART framework, it is apparent that these goals are specific, measurable, achievable and relevant. The only missing element is the time.

Assessment Standards

The goal in Genk is that everyone should be able to use public transportation. This is in line with sufficientarianism, there are no specific gestures, but there is some sort of bottom line. To create this, the used assessment is equalisation.

Transportation Equity

In Flanders, 96 percent of people have a public transport stop close enough to their home. However in Limburg, 50 percent of these stops do not have a service before 7 a.m. or after 8 p.m. in the evening. In Genk, 86 percent of stops have a bus passing through every hour. In the other municipalities in Limburg, this is often a lot lower, with a minimum of 12 percent in Kinrooi (Debackere et al., 2017). In Flanders, for trains, there is a general satisfaction rate of 66,7 percent (NMBS, 2019). For buses and trains, this is 59,4 percent (De Lijn, 2024). Usage

rates were requested but not received. Moreover, it is mentioned by several interviewees that there is still a lot of transportation inequity for people with disabilities.

In Genk, the transportation equity is on the lower side. People do not seem to use public transportation regularly and also only enjoy it moderately.

4.2 Cross-Case Analysis

Transportation equity

In general, Dutch passengers rate their experiences higher than in Flanders, with greater public transport usage observed among Dutch citizens compared to Flemish passengers

Distribution of Benefits and Burdens

Accessibility

Both The Netherlands and Flanders face challenges in making public transport more accessible due to the long lifespan of vehicles, which delays the replacement of older, less accessible models. This is why, for example in Amsterdam there are two sorts of trams with different heights, which might make entering the tram harder. When it comes to accessible stops, Rotterdam scores highest, followed by Ghent and Amsterdam. Genk scores lowest. For train stops, both Rotterdam and Amsterdam have exclusively accessible platforms. This is not yet the case for Genk or Ghent. All regions are working on slowly replacing old inaccessible trains for more accessible trains. Issues with infrastructure, such as non-functional elevators and escalators, are common in both regions.

For people with mental disabilities, the lack of clear legislation and representation through interest groups has led to slower progress in accessibility improvements. Overall, higher accessibility in the Netherlands results in less transportation inequity compared to Flanders. The Netherlands has also initiated some improvements. One example is the fact that announcement boards on platforms no longer only display the time of departing, but how many minutes until departing as well. This might help people with mental disabilities or difficulties reading the time.

These findings support the importance of accessibility in achieving transportation equity, as highlighted by previous studies (Di Ciommo & Shiftan, 2017; Martens et al., 2019; Manaugh et al., 2015).

Mobility

In most areas public transportation is crucial in order for people with a disability to be mobile. The impact of mobility on transportation equity was highlighted by Martens et al. (2014). This is because this often concerns people who are not able to go on foot, bike or use the car by themselves. When public transport is not crucial for people's mobility, this is often because there are not enough options available, or the frequency is not high enough. In Ghent, Rotterdam and Amsterdam public transportation seems to be crucial for mobility and flaws in this system regulates largely the experienced transportation equity. This is because it is often the fastest and easiest mode of transport when moving around independently. In Genk, public transport was not crucial for mobility and did not influence transportation equity.

Availability and Reliability

Availability, identified by the EU expert group as pivotal for transportation equity (Directorate-General for Mobility and Transport, 2024), was generally perceived positively by respondents regarding options for people with disabilities. Alongside public transport, additional services such as special vans were noted, albeit with concerns that these often do not take the most efficient routes. This suggests an optimization rather than availability issue. Respondents indicated fewer travel options for disabled individuals compared to non-disabled counterparts, although generally sufficient. However, improvements in extensiveness and reliability were suggested. The study did not assess reliability of these additional services. Trains showed comparable reliability between the Netherlands and Flanders (NMBS, 2024; Prorail, 2024) , while metros, trams, and buses were reportedly most dependable in Rotterdam, followed by Amsterdam and less dependable in Ghent and Genk (Autoriteit Consument & Markt, 2021; Mobiliteitsraad, n.d.).

People with disabilities are often dependant on public transport and have less alternatives. When this public transport system is not dependable, this creates inequity, because people with disabilities often have fewer other options. Additionally, possible reliability issues in assistance and infrastructure influence transportation equity. There is an interplay between reliability and availability.

Safety

Safety was identified as an important burden by both Martens et al. (2019) and Manaugh et al. (2015). Respondents reported no major safety issues for people with a disability.

In all cases, physical safety seemed to be sufficient. Social safety differed from case to case. However, respondents noted that social safety issues were in general issues related to bigger challenges within the city. Safety did not have a significant impact on transportation equity within the examined cases.

Comfort

Comfort was a factor that did not stand out in the literature review but did appear to be highly influential throughout the research phase. In Amsterdam and Rotterdam, it was apparent that the comfort was a lot higher than in Ghent and Genk, especially when it comes to traveling by train. The experienced comfort while traveling defines transportation equity within a region. If, for example, people with disability, do not have the ability to travel in a group, use the restroom or sit comfortably, they will experience transportation inequity.

Stigma

Bezyak et al. (2017) highlighted in their research that stigma and prejudices make people with disabilities feel less welcome in public transportation. This, however, did not appear in the interviews. Throughout all interviews, there was a broad consensus that there was no issue of stigma from one passenger to another.

Stigma from personnel did not appear to be a major issue either. Although different parties did emphasize the importance of educating personnel. This is because they often do not know how to treat people with different accessibility needs.

Concluding, stigma does not seem to be a determining factor of transportation equity in The Netherlands and Flanders. Differing results in transportation equity did not appear to be influenced by stigma.

Clarity of goals

Most cases and actors have the similar goals. They want all people, regardless their disability, to be able to travel independently and autonomously. However, some actors mention that this is not possible. An achievable goal seems to be that people who can otherwise participate in society, should be able to travel by public transport as well. Creating such changes can require

time and effort. Drafting meticulous plans appears to be the best approach. For example, in making stops more accessible, it is required to follow the SMART framework to create better results.

It is notable that the Netherlands often has goals that are more in line with the SMART framework. Consequently, they also have higher transportation equity. Using SMART goals leads to more transportation equity for people with disabilities.

Assessment Standards

According to Martens et al. (2019), transportation equity within a region is defined by the assessment standards used to evaluate the current and future situation. When standards are more ambitious, the current and future situation will improve as well.

Currently, there are no common standards or measurements used by all parties or cities, though several stakeholders have indicated they are exploring this. When assessing the current situation and evaluating interventions, there are no significant differences between different cases. Most regions adopt a sufficientarist approach, aiming to develop public transportation so that everyone can use it independently.

While all cities appear to adopt the same approach to improve transportation equity, the results vary. This suggests that assessment standards are not uniformly influencing transportation equity in the examined cases.

Legal Framework

One conclusion is that the pre-drafted operational framework was incomplete. The legal framework set by different governments has a significant impact. This is because accessibility goals and cost optimization often require opposite approaches. To ensure the needs of the most vulnerable are met, it is often necessary for governments to promote this through official legislation. Flemish professionals mostly mentioned this need. Within the municipalities, it is often unclear who should be in charge of accessibility and inclusion in public transportation. This is because policy advisors on the topic of mobility are usually solely responsible for the coordination of mobility and policy advisors on accessibility and inclusion often do not really work with public transport.

When laws are more concrete and provide clear goals, the odds of municipalities and transportation companies putting in more effort are bigger. It is also assumed that existing changes have been gravely influenced by policy changes. These changes have been on the topic

of physical accessibility for the most part. It was highlighted by multiple respondents that policy for understandability and mental accessibility has yet to be developed. That being said, there are policies for accessibility of websites, adapted to people who cannot read, because they are blind or illiterate.

5. Discussion

Summary of key findings

To present the key findings of this thesis, it is essential to go back to the hypotheses that were drafted before starting the empirical analysis.

- Hypothesis 1 (Distribution of Burdens and Benefits): The study found that accessibility, mobility, availability and reliability caused inequity for people with disabilities. This effect was found in lesser extent for safety. This supports the hypothesis that higher levels of accessibility, mobility, availability and reliability contribute to greater transportation equity.

- Hypothesis 2 (Stigma): The effect of stigma on transportation equity was less visible compared to other factors studied, suggesting that reduced stigma may have a limited direct impact on transportation equity.

- Hypothesis 3 (Clarity of goals): The lack of clarity in goals was identified as a significant barrier to achieving transportation equity. This aligns with the hypothesis that clear and well-defined goals lead to greater transportation equity.

- Hypothesis 4 (Assessment standards): The influence of assessment standards on evaluating transportation equity indicates a complex relationship, potentially aligning with the hypothesis that stricter assessment standards could reduce the assessment of transportation equity (Martens et al., 2014).

Interpretation of results

The clearest effects were found in the distribution of burdens and benefits as described by Martens et al. (2019) and lack of clarity of goals as described by Manaugh et al. (2015) and Karner and Marcantonio (2017). The effects of stigma as described by Bezyak et al. (2017) or assessment standards as described by Martens et al. (2019) were less visible. Although it was apparent that historical detriment should be addressed by national governments and require more legal actions (Asch, 2017). Furthermore, differences in legal framework seemed to be quite influential. In Flanders, there was often no clear authority on inclusive public transportation. This led to unclear policies and confusion.

Flemish and Dutch policies seem to be influenced by the same philosophies. This can be explained by similar western ideologies. Bigger geographical distances might also bring

forward more different philosophies and more philosophies in which people with disabilities are not prioritised.

Broader Implications

It can be concluded from this thesis that in the near future, policy makers should mainly focus on making as many stops accessible as possible. Furthermore, they should also focus on increasing reliability of infrastructure. When improving infrastructure, they should take the opinions of people with disabilities into account, to make sure that the right stops are made accessible first. Not only the stops should be made accessible, but also the access road.

Adopting SMART goals can significantly enhance transportation equity. Clear and measurable objectives provide a roadmap for implementation and help in evaluating progress, leading to more equitable transportation systems.

Limitations

One obvious limitation of this chosen method is the heavy dependence on the willingness of professionals to be interviewed. If one person does not want to be interviewed for a certain region, it becomes tough to find an alternative. For example, the GVB spokesperson reached out to explain that they are in a period of transition and currently have no person available for an interview. This created a gap in knowledge for the transport region Amsterdam. In order to minimalize this gap, as many other relevant actors as possible were interviewed. The same happened when trying to find respondents from smaller municipalities. Both in the region of Ghent and Rotterdam, respondents either did not answer or referred to higher authorities, who in their opinion could provide a better answer. This makes it challenging to compare the smaller cities in the area.

The second limitation lies in the operationalisation of transportation equity. It would have been useful to use official transportation poverty scales or public transport usage rates among people with disabilities. Unfortunately, it was not possible to find such numbers for all cases.

A third limitation can be found in the case selection. When trying to find respondents, policy advisors from both bigger cities and smaller cities were contacted. When choosing respondents, it became clear that not all cities have filled the position of mobility policy advisor. Therefore, only cities that have filled the position have participated in this study. This creates a bias, in which only cities with more knowledge and desire to change mobility issues have participated. When searching for people to interview, it also became clear that in several instances, multiple

people have different responsibilities in creating accessibility. One person may be responsible for physical accessibility, while another is focused on creating more accessible information. Therefore a choice had to be made per organisation which person could create the broadest possible picture. Sometimes people were unable to provide information on certain details. This issue was mostly resolved by researching policy documents.

6. Conclusion

To conclude this thesis, it is necessary to go back to the research questions. The central question for this thesis was:

"Which improvements need to be made to improve transportation equity for people with disabilities in The Netherlands and Flanders."

A: According to academic literature, what are the causes and effects for transportation equity issues? (In general and for people with a disability)

After thorough literature review, distribution of burdens and benefits, stigma, clarity of goals and assessment standards appeared to be the influencing factors for transportation equity.

B.1: Is there a situation of transportation inequity for people with a disability in the studied regions?

If so, what characterises this situation?

After empirical analysis, it can be concluded that the examined cases are defined by a situation of transportation inequity. Distribution of burdens and benefits and clarity of goals turned out to be the most influential factor in determining transportation equity for the studied cases.

B.2: Which policies have been established for this situation?

All cases are currently aiming at optimising accessible train, bus, tram and metro journeys. However, drafting specific goals with a deadline turned out to have more effect than just optimising accessible stops. For people with mental disabilities, Amsterdam seems to be the front runner, by implementing OV-coaches who learn (mostly) young people to travel by themselves. This project will start in Rotterdam soon as well.

C.1: How could transportation inequity for people with a disability be diminished

First of all, it is necessary to improve the current accessibility level. More stops need to be made accessible and the municipalities need to keep in mind that the road towards these stops need to be made accessible and safe as well. Furthermore, responsible instances should also craft their goals and objectives more thorough.

C.2: What are the best practices within policies? Are there significant differences between different policy innovations?

Best practices observed include the setting of clear, measurable objectives as seen in Rotterdam, which helps track progress and ensure that goals are met. Additionally, innovative programs like Amsterdam's OV-coaches demonstrate effective support for people with mental disabilities. The significant difference in policy effectiveness lies in the specificity and enforceability of the goals. Regions with more detailed and enforceable policies, like Rotterdam and Amsterdam, show better outcomes compared to those with less defined goals.

In summary, to improve transportation equity for people with disabilities in The Netherlands and Flanders, it is crucial to enhance accessibility, set clear and measurable goals, and foster collaboration among all stakeholders. By adopting best practices and learning from successful policy innovations, these regions can make significant strides towards equitable transportation for all.

7. Recommendations

Academic Recommendations

It is recommended that this research be repeated for other regions in the Netherlands and Flanders. Both the transportation area Amsterdam and the MRDH mentioned that they believe their region to be further advanced on the topic of accessibility because of the higher need within big cities. It might be interesting to compare these results with areas with smaller cities. Moreover, while it was always the intention to include smaller cities as well, this did not happen for every region. That is why, in the future, to draw more conclusions, it could be helpful to invest more effort in interviewing smaller cities and their perspectives as this project is currently unable to make conclusions for these smaller cities. Second, while this research project focused on the policy aspect, it might be relevant to interview more people from the target audience, to further specify their needs and most urgent improvements.

Furthermore, it could be beneficial to take other transportation modes, frequently used by people with a disability, into account. Specifically, specialised transportation, which is regulated by the city or the mutuality.

In the future, transportation equity should also be measured more extensively. Working on more universal measures, such as transportation poverty or public transportation usage by people with disabilities could increase knowledge and comparability.

Policy Recommendations

In light of the findings from this research, the following policy recommendations are proposed to enhance transportation equity for people with disabilities in the Netherlands and Flanders.

First, more attention should be given to the mutual alignment and cooperation of the actors involved. Adapting public transport systems is a long and complex process, that requires meticulous planning. Therefore, it is crucial for municipalities to work together with public transport providers for improving access roads. Furthermore, transport providers should also look to collaborate with instances equipped with increasing understandability for people with intellectual disabilities.

Second, it is crucial that national or European governments develop more laws on understandability, but mostly mental accessibility. Local providers are often unsure of what actions they should take on the topic. Existing policies should also be made stricter. Consulting advisory groups on the topic could also be beneficial. Right now, it is clear that people with physical impairments have found their way to the table, but for other impairments the representation is less present.

Third, additional attention should be given to the experienced comfort while travelling. The focus should not only go to whether or not passengers arrive safely, but also if they have a comfortable seating arrangement and feel welcomed by other travellers. Making sure multiple travellers can sit together or creating campaigns for solidarity might improve this.

Furthermore, it became apparent that Amsterdam and the Netherlands in general instate the most out-of-the-box initiatives to improve transportation equity. This effect seems to be mostly visible in satisfaction rates. Therefore, it might be beneficial for other regions to either take over successful initiatives such as the OV-coach or brainstorm with professionals about solutions that might work in their own context. Another valuable project is the tactile map that

together with NaviLens, can help blind or visually impaired individuals find their way through the station.

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9. Appendices

Appendix 1: Philosophies Martens et al. (2014)

Table 1: Philosophies Martens et al. (2014)

Appendix 2: Interview Guideline

Appendix 3: Code Tree

Appendix 4: Ethical Concerns

Appendix 5: Map Cases

Appendix 6: Case Description

Table 2: Policy Documents and Interviews

Table 3: Operationalisations

Appendix 1: Philosophies Martens et al. (2014)

The first philosophy is named utilitarianism (Martens et al., 2014). This approach sees every benefit and every resident as being equally important. Every recipient will receive the same benefits in this scenario.

The second one is called sufficientarianism. This refers to the principle in which basic needs of residents are fulfilled. Here, every single resident's needs are evaluated separately and fulfilled (Martens et al., 2014). This corresponds with what Pereira et al. (2016) call libertarianism. This refers to a situation in which individuals are inherently free and have opportunities to create a situation for themselves that is better than the basic rights they have.

Another approach is called prioritarianism (Martens et al., 2014). This approach gives more benefits to people who need it more. This means that not everyone achieves the same number of benefits, but an evaluation is made according to how much they need it (Martens et al., 2014). This is also in line with Rawl's egalitarianism (Pereira et al., 2016). This approach stresses the importance of achieving an equality in opportunities. An extension of this is called the capability approach. This approach recognizes that transportation options are not a goal in itself, but mainly a method to achieve higher goals. Transportation equity should thus be achieved by giving citizens the same opportunities for these higher goals (Pereira et al., 2016). The result of this is also that the relative benefit will diminish once recipients are better off.

Pereira et al. (2016) have added some extra theories to this basis. One of them is called intuitionism. This highlights the importance of moral dilemmas. It is important to search for the ethically best suited solution. Throughout the process of finding this solution, it is crucial to listen and pay attention to all the affected groups and take their needs into account (Pereira et al., 2016).

According to Martens et al. (2014), all these methods could be used to justify transport investments. However, when equity is the goal, the utilitarian approach is not suitable, and a priority or sufficiency approach should be adopted. This is because not everyone's needs are equal. Therefore, not everyone should receive the same benefits and advantages. Concrete, it is necessary that investments and improvements are adapted to residents. Martens et al. (2014) would deem sufficientarianism and prioritarianism (and capability approach) more worthy for transportation equity solutions.

Within these philosophies, Martens et al. (2019) have thus developed some concrete standards. These standards differ to the situation they are assessing. This can be either the current situation or the intervention, implemented to achieve higher transportation equity.

Consequently, matching these philosophies, Martens et al. (2019) propose several options for standards for assessing the existing situation. These options are numeral. The first one is equality, where every individual receives the same number of benefits or burdens. This is practically impossible and according to Martens et al. (2019) also not desirable). Another option is proportionality, in which every burden is distributed equally over several groups in society, this is practically not possible either. The third option is maximum gap standard, in which unequal distribution of burdens is accepted but with a maximum difference. The fourth option is minimum standards approach, which means securing a certain minimum of good or a maximum of bad. The last option is the notion of basic need, in which a fair distribution is made according to need.

Standards for assessing interventions have also gotten some attention from Martens et al. (2019). The first is again called the principle of equality. The second is the Aristotelian principle of Do No Harm. Public initiatives should leave no individual worse off. The third option is called equalisation. This has two interpretations, the first one states that an initiative should move citizens towards a more equal situation. The second is less extreme, in the sense that it only requires citizens to experience less disparities, because of the initiative. This last definition is also the most universally used as it can fit the most goals.

Table 1: *Evaluation philosophies and Standards by Martens et al. (2014).*

Philosophies	Standards for Current Situation	Standards for Future
Utilitarianism: This approach values every benefit and resident equally, aiming for everyone to receive the same benefits (Martens et al., 2014). **Sufficientarianism**: This principle focuses on meeting the basic needs of each resident individually, corresponding with libertarianism, which emphasizes individual freedom and the opportunity to exceed basic rights (Martens et al., 2014; Pereira et al., 2016). **Prioritarianism**: This approach prioritizes those with greater needs, ensuring not everyone gets the same benefits, but rather benefits proportional to their needs. This aligns with Rawl's egalitarianism, which stresses equality of opportunity and the capability approach, recognizing transportation as a means to higher goals (Martens et al., 2014; Pereira et al., 2016). **Intuitionism**: This theory emphasizes the importance of moral dilemmas, seeking ethically sound solutions by considering the needs of all affected groups (Pereira et al., 2016).	**Maximum Gap Standard**: Accepts unequal distribution but with a limited difference. **Minimum Standards Approach**: Ensures a certain minimum level of benefits or a maximum of burdens. **Basic Need**: Fair distribution based on need (Martens et al., 2019).	**Equality**: Equal benefits or burdens for all, though this is impractical and undesirable. **Proportionality**: Equal distribution of burdens across groups, which is also impractical. **Do No Harm**: Ensures no individual is worse off after public initiatives. **Equalisation**: Moves citizens towards a more equal situation or reduces disparities due to the initiative, the latter being more widely applicable and aligning with most goals (Martens et al., 2019).

Appendix 2: Interview guideline

Through semi-structured interviews, both online and face-to-face, around ten questions are asked to the respondents. The aim is for these interviews to last up to an hour. This is to learn from these respondents' experiences, related to transportation equity. This interview consists of a brief introduction and some introductory questions about who the interviewees are and what their role is. Afterwards, the central questions will be asked. These are the questions asked in function of answering the research question. They aim to generate information on policy measures and their effects. The interview concludes with some concluding questions that summarise and wrap up the interview. Any remaining obscurities can be resolved at that point.

Guideline:

Goedemiddag,

Eerst en vooral wil ik u graag nog eens bedanken om deel te willen nemen aan dit onderzoek. Dit is extreem waardevol voor het scheppen van een zo breed en compleet mogelijk beeld.

Mijn thesis gaat dus over transportation equity in Vlaanderen en Nederland en hoe mensen met een zichtbare of onzichtbare handicap ongelijkheid ervaren op het openbaar vervoer. Hiervoor worden verschillende gebieden binnen deze regio vergeleken. Door verschillende belangrijke instanties te interviewen hoop ik een zo genuanceerd mogelijk beeld te kunnen krijgen.

Graag handel ik eerst even de technische details af zodat we er daarna meteen in kunnen vliegen. Eerst en vooral, zou ik graag even de informed consent met u overlopen en vraag ik ook graag even of u er akkoord mee gaat dat u opgenomen wordt.

1. Informed Consent

- Doornemen van Informed consent en vragen te ondertekenen.

- Bent u er akkoord mee?

- Bent u er akkoord mee dat dit gesprek opgenomen wordt?

- Wenst u een pseudoniem aan te nemen?

2. Intro – Over de respondent

- Eerst zal ik enkele korte introductievragen stellen om uw deelname aan dit onderzoek te kaderen.

- Voor welke organisatie werkt u?

- Wat is uw rol binnen de organisatie?

> *Voor mensen met een handicap, toegankelijkheid lijkt de belangrijkste uitdaging te vormen voor het gebruik van openbaar vervoer. Daarom peilen de volgende vragen naar specifieke maatregelen voor het bereiken van meer toegankelijkheid. In dit onderzoek is zowel een zichtbare als onzichtbare en fysieke als mentale handicap relevant.*

4. Centrale vragen

Division of Burdens and Benefits

> Indien nee, vragen naar interventies

- Accessibility:

  - In welke mate zou u zeggen dat het openbaar vervoer fysiek toegankelijk is voor mensen met een handicap? Is de huidige infrastructuur up-to-date en fysiek toegankelijk?

  - In welke mate zou u zeggen dat informatie over openbaar vervoer gemakkelijk toegankelijk is en aangepast aan mensen met verschillende noden?

- Mobility:

  - Hoe beïnvloedt de toegankelijkheid van het openbaar vervoer de mobiliteit van mensen met een handicap in uw regio?

- Availability:

  - Zijn er voldoende openbaar vervoersmogelijkheden beschikbaar voor mensen met een handicap? Zijn er specifieke tijden of routes waar beschikbaarheid een probleem is?

- Reliability:

- In welke mate beschouwt u openbaar vervoer als betrouwbaar voor mensen met een handicap? Zijn er specifieke problemen met de betrouwbaarheid van beschikbare hulp of middelen?

- Safety:

- Hoe veilig is het openbaar vervoer voor mensen met een handicap? Zijn er specifieke veiligheidsmaatregelen die uw organisatie heeft genomen of die nodig zijn?

Stigma (Neg. or Pos.)

- Stigma:

- In welke mate heeft u het gevoel dat mensen met een handicap stigma ervaren

Van het personeel

van medereizigers?

Is dit iets waar uw organisatie zich mee bezig houdt? Weet u of hier maatregelen tegen bestaan?

Clarity of Goals

- Clarity of Goals:

- Heeft uw organisatie een visie om op lange termijn vervoersgelijkheid te creëren en te behouden? Welke doelen en strategieën zijn hiervoor vastgesteld?

Assessment Standards

- Assessment Standards:

- Welke standaarden en criteria gebruikt uw organisatie om de effectiviteit van maatregelen gericht op transportgelijkheid te beoordelen?

- Hoe werd bepaald of een interventie succesvol was? Kunt u voorbeelden geven van meetinstrumenten of evaluatieprocessen?

Voorbeelden en Samenwerking

- Voorbeelden van Interventies:

- Kunt u enkele specifieke voorbeelden geven van interventies die uw organisatie heeft uitgevoerd om ongelijkheid in openbaar vervoer te verminderen? Halen deze volgens u de gewenste uitkomst?

- Welke uitdagingen hebt u ontdekt bij het implementeren van deze interventies? Hoe ging u of uw organisatie daarmee om?

- Samenwerking:

- Werken jullie soms samen met andere instanties om betere resultaten te bekomen? Vindt u dit een meerwaarde?

- Verzamelt uw instantie op een bepaalde manier feedback om interventies te evalueren?

5. Afronding

- Is er iets dat u graag nog wil toevoegen aan dit interview?

Translation Interview Guideline

Good afternoon,

First of all, I would like to thank you once again for being willing to participate in this survey. This is extremely valuable for creating as broad and complete a picture as possible.

So my thesis is about transportation equity in The Netherlands and Flanders and how people with a visible or invisible disability experience inequality on public transport. For this purpose, different areas within this region will be compared. By interviewing several key agencies, I hope to get as nuanced a picture as possible.

Like to deal with the technical details first so we can fly right into it afterwards. First of all, I would like to go over the informed consent with you and also ask if you agree to be included.

1. Informed Consent

- Going through Informed Consent and asking you to sign.

- Do you agree to it?

- Do you agree to this conversation being recorded?

- Do you wish to adopt a pseudonym?

2. Intro - About the respondent

- First, I will ask some brief introductory questions to frame your participation in this study.

- For which organisation do you work?

- What is your role within the organisation?

For people with disabilities, accessibility seems to be the main challenge for using public transport. Therefore, the following questions probe specific measures for achieving greater accessibility. In this survey, both visible and invisible and physical and mental disability are relevant.

4. Central questions

Division of Burdens and Benefits

If no, questions on interventions

- Accessibility:

- To what extent would you say public transport is physically accessible for people with disabilities? Is the current infrastructure up-to-date and physically accessible?

- To what extent would you say that information about public transport is easily accessible and adapted to people with different needs?

- Mobility:

- How does the accessibility of public transport affect the mobility of people with disabilities in your region?

- Availability:

- Are there enough public transport options available for people with disabilities? Are there specific times or routes where availability is an issue?

- Reliability:

- To what extent do you consider public transport to be reliable for people with disabilities? Are there specific problems with the reliability of available assistance or resources?

- Safety:

- How safe is public transport for people with disabilities? Are there any specific safety measures your organisation has taken or that are needed?

Stigma (Neg. or Pos.).

- Stigma:

- To what extent do you feel that people with disabilities experience stigma

From staff

From fellow travellers?

Is this something your organisation deals with? Do you know if there are measures against this?

Clarity of Goals

- Clarity of Goals:

  - Does your organisation have a long-term vision to create and maintain transport equity? What goals and strategies have been set for this?

Assessment Standards

- Assessment Standards:

  - What standards and criteria does your organisation use to assess the effectiveness of interventions aimed at transport equity?

  - How was it determined whether an intervention was successful? Can you provide examples of measurement tools or evaluation processes?

Examples and Collaboration.

- Examples of Interventions:

  - Can you give some specific examples of interventions your organisation has implemented to reduce inequality in public transport? In your opinion, do these achieve the desired outcome?

  - What challenges did you discover in implementing these interventions? How did you or your organisation deal with them?

- Collaboration:

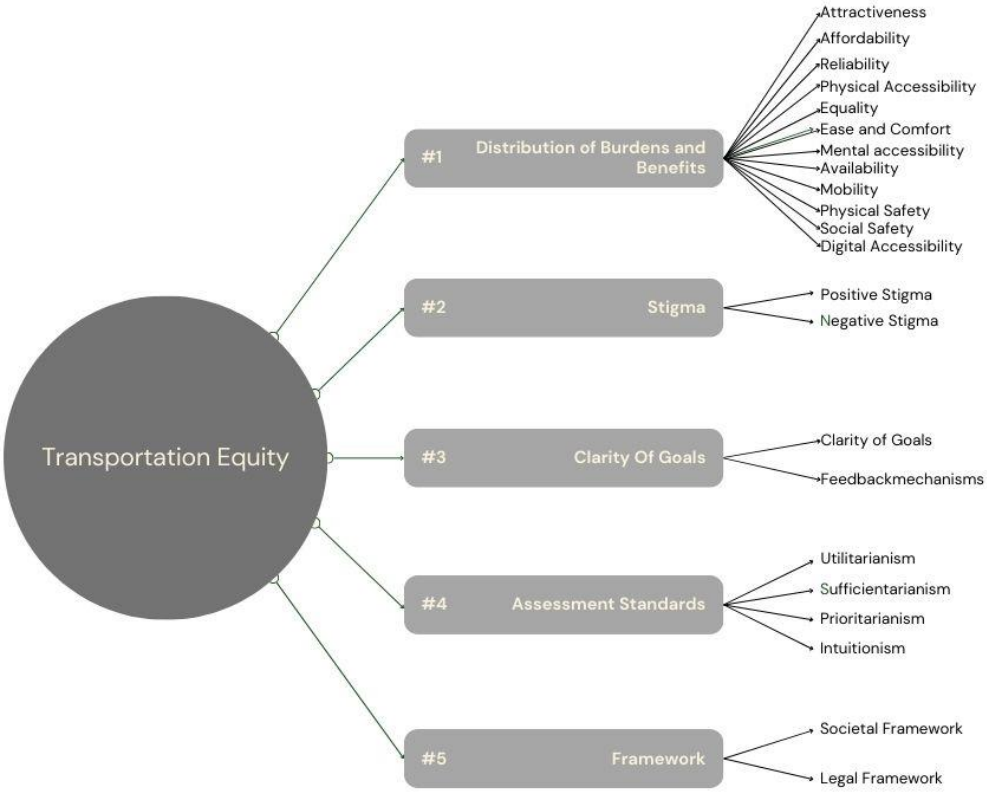
  - Do you sometimes work with other agencies to get better results? Do you find this an added value?

  - Does your agency collect feedback in some way to evaluate interventions?

5. Concluding

- Is there anything you would like to add to this interview?

Appendix 3: Code Tree



Appendix 4: Ethical Concerns

All data is anonymised. The respondents signed a consent form that allows the interviewer to record the interview to use this for the transcribing process. This consent form informs respondents how and wherefor their data will be used. This is done to ensure the highest possible transparency. The records of their interviews will be stored safely and only accessible for a limited amount of people. Every interview starts with a brief overview of the goal of the study, the informed consent and with the question if they are still willing to participate. At the end of the interview, respondents can make remarks or ask extra questions. Because of the limited number of people working in this sector, it might be possible that even with anonymisation, it is clear who a certain respondent is from their answers. Therefore, complete transcripts are not included in the appendix and can only be read by myself and my thesis supervisor. Respondents will also get the opportunity at the end of the interview to leave out certain parts of the interview in the results section.

Appendix 5: Map Cases

Appendix 6: Case Description

In what follows, the composition of each case will be explained.

The Netherlands

To organise public transport efficiently, the Netherlands has been divided in 13 Public Transportation Authorities (Van Hulst, 2023). Concrete, these thirteen authorities each have their own area in which they manage public transport. On the national level, the authority that bears the responsibility of managing public transportation is called the Ministry of Infrastructure and Water Management (Rijksoverheid, n.d.). The authorities that will receive attention in this thesis are Transportation Area Amsterdam and Metropole Area Rotterdam Den Haag. Within these regions, the national train operator 'Nederlandse Spoorwegen' is active (Ministerie van Algemene Zaken, 2024). They are tasked with buying and adapting their stations and carriages to people with extra accessibility needs. The NS works together with Prorail for the maintenance and renewal of tracks (Ministerie van Algemene Zaken, 2024). Other forms of public transport are regulated through concessions. The Transportation Authorities then manage these concessions (Rijksoverheid, n.d.). Similar to NS, making their buses, trams and metros accessible is their responsibility. Making bus stops accessible is the municipality's responsibility (Ministerie van Infrastructuur en Waterstaat, 2022).

Metropole Rotterdam Den Haag

Public transportation in Rotterdam is regulated through the metropole region Rotterdam The Hague (Metropoolregio Rotterdam Den Haag, n.d.). This area consists of twenty-one municipalities. It bears responsibility for the seven public transport concessions, which are active within the region. Three of those concessions are active within the city of Rotterdam. These concessions are called Parkshuttle Rivium, Bus Rotterdam and Rail Rotterdam. The Rail Rotterdam and bus Rotterdam Concessions are currently bought and ran by RET (Metropoolregio Rotterdam Den Haag, n.d.). For children with a disability, they work together closely with the people from MEE op weg (RET, n.d.). This organisation teaches these children (and sometimes adults) to travel by public transport by themselves. Furthermore, the RET often consults with VGR (Vereniging Gehandicaptenorganisaties Rotterdam) (Metrocov, n.d.). The municipality often works together with an organisation called "010Toegankelijk". They consult on the planning and architectural aspects of accessibility (010Toegankelijk, n.d.).

Vervoerregio Amsterdam

In Amsterdam, the vervoerregio Amsterdam is responsible for public transport. Public transport is regulated through concessions. In Amsterdam itself, concessions of buses, trams and metros are for the GVB (Vervoerregio Amsterdam, n.d.). The municipality is responsible for making bus stops accessible. Within the area, the transportation area funds the organisation "Mee Amstel en Zaan". They have a project, called the OV-coach project. This project helps people get used to the process of using public transport, with the ultimate goal of traveling by themselves (MEE AZ, n.d.).

Flanders

Not only the Netherlands is divided into transportation areas, the same goes for Flanders. In 2019, Flanders developed 15 transportation areas in which local municipalities manage challenges on the field of mobility (Vlaanderen, n.d.). The region around Ghent is called "Transportation area Gent" and the region around the second case city Genk is called "Transportation Area Limburg". Both of these areas have been reached out to. However, their answer was that inclusion was not one of their main focuses and that I should reach out to the transportation providers and municipalities. The company, providing bus and tram services is the same for every region and is called "De Lijn". For most bus stops, the responsibility to make bus stops accessible lies with the municipalities (De Lijn, n.d.). To make this transition smoother, the masterplan accessible bus stops was drafted. The company that provides train services is called "NMBS". In order to create more effective interventions and measures De Lijn works together with the Flemish organisation "Inter". They are specialised in accessibility issues. They provide accessibility training and expertise (Vlaanderen, n.d.).

Vervoerregio Gent

Just last year, Ghent won the accessibility price, De Lijn awards to the city that puts in the most effort to make their bus stops accessible. They also have multiple professionals working on accessibility and mobility issues. I have reached out to both the president and the vice-president of the Transportation Area. They mentioned that accessibility was not necessarily something they occupied themselves with. An important instance on the field of inclusion in Ghent is called "Konekt". They also work together with, for example the NMBS to improve the accessibility of their train fleet and their online communication.

Vervoerregio Limburg

Genk is part of the Vervoer Regio Limburg. This means the transport area overlaps with the province. Unfortunately, in Hasselt, the person responsible for making bus stops more accessible had just left. Currently there is nobody responsible for accessibility of public transportation. For this reason, it was decided that Genk should be included in the analysis as well.

Table 2: *Policy Documents and Interviews*

	Amsterdam	Rotterdam	Ghent	Genk
Interviews	- Employee OV-coach - Policy Advisor Mobility Haarlemmermeer - Employee inclusion Nederlandse Spoorwegen - Employee inclusion Transportation area Amsterdam - Employee Inclusion Prorail - Employee mobility municipality - Prorail - Rover	- VGR vereniging van gehandicaptenorganisaties Rotterdam - MRDH - Policy advisors mobility municipality - Asset Manager RET - Employee inclusion Nederlandse Spoorwegen - MEE op Weg - Employee Inclusion Prorail - 010 Toegankelijk - Prorail - Rover	- Employee Inclusion NMBS - Employee Konekt - Policy advisor Inclusion Ghent - Employee Inclusion De Lijn - Inter	- Employee Inclusion NMBS - Alderman Mobility - Policy advisor inclusion Hasselt - Employee Inclusion De lijn - Inter - Policy Advisor Mobility Beringen
Policy documents	- Ontwikkelagenda Toekomstbeeld OV - Actualisatierapport toegankelijkheid Spoor 2021 - Concessieverleningsstrategie Amsterdam - Beleidskader Mobiliteit Deel A: Visie - Vervoerplan NS - Nederland Duurzaam bereikbaar - Afsprakenkader Bus- en tramhaltes - Ontwerp programma van eisen concessieregio Amsterdam 2025 - Bestuursakkoord Toegankelijk Openbaar vervoer 2022-2032	- Ontwikkelagenda Toekomstbeeld OV - Actualisatierapport toegankelijkheid Spoor 2021 - Rotterdamse mobiliteitsaanpak - OV-monitor MRDH - Beleidskader Toegankelijk Openbaar Vervoer - Uitvoeringsprogramma Toegankelijk Openbaar Vervoer 2024-2028 - Vervoerplan NS - Nederland Duurzaam Bereikbaar - Bestuursakkoord Toegankelijk Openbaar vervoer 2022-2032	- Toegankelijkheid Gent Sint Pietersstation - Performantiecontract Infrabel 2023 - Toegankelijkheidsverklaring Stad Gent - Beheerscontract Infrabel - Beheerscontract NMBS - Masterplan Toegankelijke halte-infrastructuur - Actieplan Vervoersarmoede - Mobiliteitsplan Gent - Regionaal mobiliteitsplan vervoerregio Gent	- Meerjarenplan 2020-2025 - Beleidsplan Hasselt - Beleidsplan Genk - Performantiecontract Infrabel 2023 - Beheerscontract Infrabel - Beheerscontract NMBS - Masterplan Toegankelijke halte-infrastructuur

Table 3: *Operationalisations*

Variable	Indicator	Operational Definition	Data Collection Methods	Units Of analysis
Division of Burdens and Benefits	Accessibility	Ease of physical and cognitive access to public transportation systems	Interviews and Policy Document Analysis	Individual respondents and policy documents
	Mobility	Extent to which individuals with disabilities are dependent on public transportation to participate in society	Interviews and Policy Document Analysis	Individual respondents and policy documents
	Availability & Reliability	General availability and reliability of public transportation services within the region	Interviews and Policy Document Analysis	Individual respondents and policy documents
	Safety	Perceived physical and social safety of public transportaiton	Interviews and Policy Document Analysis	Individual respondents and policy documents
Stigma	Public Perception	Negative stigma from public transportation personnel and fellow passengers towards people with disabilities	Interviews and Policy Document Analysis	Individual respondents and policy documents
	Preventive Measures	Actions taken by organisations to prevent stigma and discrimination	Interviews and Policy Document Analysis	Individual respondents and policy documents

Variable	Indicator	Operational Definition	Data Collection Methods	Units Of analysis
Clarity of Goals	Specificity	Goals are well-defined, clear and unambiguous	Interviews and Policy Document Analysis	Individual respondents and policy documents
	Measurable	Goals have specific criteria that measure progress towards their accomplishment	Interviews and Policy Document Analysis	Individual respondents and policy documents
	Achievable	Goals are attainable and possible to achieve	Interviews and Policy Document Analysis	Individual respondents and policy documents
	Relevant	Goals matter and are aligned with broader transportation equity objectives	Interviews and Policy Document Analysis	Individual respondents and policy documents
	Time-Bound	Goals have a clearly defined timeline, including a starting date and a target date	Interviews and Policy Document Analysis	Individual respondents and policy documents

Variable	Indicator	Operational Definition	Data Collection Methods	Units Of analysis
Assessment Standards	Equity Assessment	Standards used to evaluate existing transportation equity and interventions	Interviews and Policy Document Analysis	Individual respondents and policy documents
	Philosophical Approach	Philosophy behind policy makers' goals and standards for transportation equity	Interviews and Policy Document Analysis	Individual respondents and policy documents
Transportation Equity	Satisfaction ratings	Satisfaction levels of public transportation users	Policy Document Analysis, Secondary Data	Official data
	Public Transportation Usage Rate	Frequency of public transportation usage by residents	Policy Document Analysis, Secondary Data	Official data
	Close Stop Rate	Proximity of transportation stops for users	Policy Document Analysis, Secondary Sata	Official data

Endnotes

[i] OV is the Dutch abbreviation for openbaar Vervoer or public transportation
[ii] Procedural equity refers to the process-related factors such as timing and location of public meetings and the language in which information is distributed.
[iii] Geographic equity refers to the distribution of equity across space zijn
[iv] Citizens have a close stop when there is a stop less than 750 meters away.
[v] Design for all is similar to Universal design and refers to a situation in which public transportation is and can be used by all.