

Master's Programme in Spatial Planning and Transportation Engineering

Equity of Public Transport Pricing in Finland

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Abstract

Pricing changes of public transport are often made in Finland and current policies focus mainly on other issues than equity, such as cost-efficiency and increasing total passenger numbers. The concept of equity includes how resources are distributed in a fair way while considering personal capabilities and local circumstances. This master's thesis focuses on the social aspects of public transport pricing and explores the relation of social policy and transport policy. The main research question is: to what extent equity issues are transportation equity issues considered when making decisions on public transport pricing in Finland?

Two major public transport pricing schemes used in Finland are analysed: the zone-based pricing used by the Helsinki regional transport authority (HSL) and the dynamic pricing system used by the Finnish national rail operator (VR). In addition, equity issues are discussed with experts, and analysed through documents and survey data. The results show that equity issues are in the minds of public transport experts, officials, and decision-makers, but detailed equity assessments are currently limited. In general, the impacts of public transport pricing on social issues are assumed to be low, since the social security system of Finland covers some costs of transportation to the people in most need.

The interviewees do not consider themselves experts of social policy, but view equity issues through various different perspectives, such as utilitarianism, libertarianism, Rawls' egalitarianism and Sen's capability approach, that can steer public transport pricing policies. Key connections to transportation and equity literature are recognised in the literature, and there is a risk of transportation poverty and social exclusion if public transport prices become unaffordable to vulnerable groups of people.

Suggestions are made to assess equity of public transport pricing whenever significant pricing changes are considered and impacts on different groups of people are expected. In addition, developing easy-to-use tools for equity assessments is needed to do this in practice. Clarifying the responsibilities between public transport officials and social services is needed, since ticket discounts are based on transport policy, social policy or market-based policy, and financial support can be either direct or indirect through social support, ticket discounts and public transport subsidies.

Keywords Transportation Justice, Transportation Equity, Transportation Poverty, Social Exclusion, Public Transport Pricing, Public Transport Fares, Public Transport

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Tiivistelmä

Suomessa tehdään usein joukkoliikenteen hinnoittelumuutoksia, ja nykyiset linjaukset keskittyvät lähinnä muihin asioihin kuin oikeudenmukaisuuteen, kuten kustannustehokkuuteen ja matkustajien kokonaismäärän kasvattamiseen. Oikeudenmukaisuus käsitteenä sisältää miten resurssit jaetaan reilusti huomioiden henkilökohtaiset ominaisuudet ja paikalliset olosuhteet. Tämä diplomityö keskittyy joukkoliikenteen hinnoittelun sosiaalisiin näkökohtiin sekä tarkastelee sosiaalipolitiikan ja liikennepolitiikan suhdetta joukkoliikenteen hinnoittelussa. Päättökysymys on: missä määrin liikenteen oikeudenmukaisuuskysymykset otetaan huomioon, kun joukkoliikenteen hinnoittelusta tehdään päätöksiä Suomessa?

Kaksi suurta Suomessa käytössä olevaa joukkoliikenteen hinnoittelujärjestelmää analysoidaan: Helsingin seudun liikenteen (HSL) vyöhykepohjainen järjestelmä ja VR:n dynaaminen hinnoittelu. Lisäksi oikeudenmukaisuuskysymyksistä keskustellaan asiantuntijoiden kanssa ja analysoidaan dokumenttien ja kyselyaineiston avulla. Tulokset osoittavat, että oikeudenmukaisuuskysymykset ovat joukkoliikenteen asiantuntijoiden, viranomaisten ja päättäjien mielessä, mutta yksityiskohtaiset oikeudenmukaisuusarviointit ovat tällä hetkellä rajallisia. Yleisesti ottaen joukkoliikenteen hinnoittelun sosiaalisten vaikutusten oletetaan olevan vähäisiä, koska Suomen sosiaaliturvajärjestelmä kattaa liikkumiskustannuksia niitä eniten tarvitseville.

Haastateltavat eivät pidä itseään sosiaalipolitiikan asiantuntijoina, mutta näkevät oikeudenmukaisuuskysymykset useista eri näkökulmista, kuten utilitarismin, libertarismen, Rawlsin egalitarismin ja Senin kyvykkyys-ajattelun kautta, jotka voivat vaikuttaa joukkoliikenteen hinnoittelun linjauksiin. Keskeiset yhteydet liikenteeseen ja oikeudenmukaisuuskirjallisuuteen tunnustetaan kirjallisuudesta, ja liikenneköyhyyden ja sosiaalisen syrjäytymisen riski on olemassa, jos julkisen liikenteen hinnat nousevat kohtuuttomiksi haavoittuville ihmisryhmille.

Joukkoliikenteen hinnoittelun oikeudenmukaisuutta ehdotetaan arvioitavaksi aina, kun on kyse merkittävästä hinnoittelumuutoksesta ja odotettavissa on vaikutuksia eri ihmisryhmiin. Lisäksi on kehitettävä helppokäyttöisiä työkaluja oikeudenmukaisuuden arviointiin, jotta tämä voidaan toteuttaa käytännössä. Joukkoliikenneviranomaisten ja sosiaalitoimen välisiä vastuita on selkeytettävä, koska lippualennukset perustuvat liikennepolitiikkaan, sosiaalipolitiikkaan tai markkinaehtoiseen politiikkaan, ja taloudellinen tuki voi olla joko suoraa tai epäsuoraa sosiaalituen, lippualennusten tai joukkoliikenteen tukien kautta.

Avainsanat Liikenteen oikeudenmukaisuus, liikenneköyhyys, sosiaalinen eksklusio, joukkoliikenteen hinnoittelu, joukkoliikenteen hinnat, joukkoliikenne

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Abbreviations

CBA	Cost-benefit analysis
ELY	Centre of Economic Development, Transport and the Environment
HSL	Helsinki Region Transport
LVM	Ministry of Transport and Communications
MAL	Land use, Housing and Transport
PT	Public Transport
TAP	Triple Access Planning
VR	VR Group

1 Introduction

Researchers in the field of transportation have been calling for including equity issues in planning practices for years (Banister, 2008; Pereira et al., 2017). This master's thesis emphasises this by exploring the relation of social policy and transport policy in public transport pricing. Equity as a concept covers issues such as how resources are distributed, how fairly it is done, and what rights people have in a society (Pereira et al., 2017, p. 4), while considering various needs of people.

Pricing of public transport can lead to social issues such as exclusion (Lucas et al., 2016) and transportation poverty (Moore et al., 2013). In 2021, almost 900 000 people or about 16 % of the population of Finland, were at risk of poverty or exclusion, and 6.7 % of people experienced issues with basic livelihood (Tilastokeskus, 2023). Tiikkaja et al. (2018, p. 24) mention people living in rural areas as an example of vulnerable groups that can experience social exclusion in Finland. Equity-related themes that require special attention considering costs of transport are transport affordability and accessibility poverty (Tiikkaja et al., 2018), although the social security system can answer to affordability issues to some extent. The basic level of social support is meant for the poorest people for short-term use to get past difficult life situations, and is granted for primary needs such as food or transportation (Kela, 2024; Sosiaali- ja terveystieteiden ministeriö, 2023).

Currently a deep analysis of possible equity impacts of public transport pricing in Finland is missing and the social security system is assumed to cover costs of transport for the most vulnerable. According to Tiikkaja et al. (2018), vulnerable groups of people should be taken into account in public transport pricing if the goal is to have a fair transport system. In addition, different ways of organising public transport pricing systems have different equity implications (Mutiganda et al., 2023; Rubensson et al., 2020). Two of these systems that are used in Finland are analysed: the zone-based pricing used by the Helsinki regional transport authority (HSL) and the dynamic pricing system used by the Finnish national rail operator (VR).

The question of *what is fair* can be viewed from many different perspectives. Five key concepts of justice are recognised that can steer public transport pricing policies: utilitarianism, libertarianism, intuitionism, Rawls' egalitarianism, and Sen's capability approach. Utilitarianism focuses on the masses and aims to maximise total societal benefits. Libertarianism aims to minimise government interference and trusts in the markets to provide optimal conditions. Intuitionism is a context-specific approach. Rawls' Egalitarianism emphasises freedom of choice and mitigation of inequalities of opportunities, and Sen's Capability Approach prioritises human capabili-

ties. The views of justice have major differences between them, and it is important to understand how public transport pricing experts and officials view equity.

Public transportation pricing policies change over time: VR, the government owned railway operator, introduced dynamic pricing scheme in 2016, and extra levels of prices in 2023. HSL, the public transport official responsible for the Helsinki region, increased ticket prices in 2023, reduced prices in 2024, and are planning to increase ticket prices again. Sometimes major public transport pricing system changes are made: HSL updated its zone-based system in 2019. More information on equity issues of public transport pricing is needed to make more informed decisions on future pricing changes, as the current public transport policies focus mainly on themes such as total passenger numbers, balanced economy, accessible public transport vehicles and ticket systems, efficiency of public transport, and the environment (HSL, 2022a, 2024a; VR, 2023).

This master's thesis discusses equity in the context of public transport pricing. The aim of this thesis is to understand to what extent equity is considered when making decisions about public transport pricing. For example, transportation poverty, social exclusion, and impacts on opportunities and wellbeing can be experienced by vulnerable groups of people if ticket prices are unaffordable. The impacts can distribute unevenly between people with various levels of income and living location. The main research question is:

- To what extent are transportation equity issues considered when deciding on public transport pricing in Finland?

With the following sub-questions:

- How is equity viewed in the context of public transport in Finland?
- How are social issues discussed in the context of public transport pricing in Finland?
- To what extent can public transport pricing impact social issues in Finland?

The research data was collected from three sources: semi-structured expert interviews, documentation on public transport pricing and equity, and by re-examining existing data of opinion surveys from the equity perspective. The collected data was analysed with qualitative content analysis.

Experts and officials from HSL, Ministry of transport and communications (LVM), The Finnish public transport association, and consultancy companies were interviewed. The interviews included questions about equity in public transport policy-making, social impacts of public transport pricing,

and the goals of public transport policies. The documentation analysed include strategies, assessments, and documents from HSL, VR, LVM, the non-discrimination ombudsman, and other sources. Data from the surveys regional barometer of land-use, housing and transportation, and resident satisfaction with the transport system and travel chains, were analysed to provide public transport user perspective to the study.

First, theoretical starting points are presented to link public transport pricing to a larger context. Then, materials and methods are introduced in detail, followed by the results. Last, discussions are added with future research suggestions and suggestions for policy-making, and conclusions are made.

2 A review of theoretical starting points

This chapter reviews academic literature concerning equity and transport policy. The chapter introduces these issues in three sections: key concepts and theories of justice, transportation justice, and equity in public transport pricing.

2.1 Key concepts and theories of justice

Equity and justice issues are becoming more important in the field of transportation, as shown in increased amounts of research on the topics (Pereira et al., 2017, p. 4). Fundamentally, these issues come down to allocation of resources and to how it is done in a fair way, such as distribution of transportation services. The allocation problem is universal and is found to occur in all sizes of groups and societies (Leventhal, 1976, p. 3). To discuss justice in the context of transportation, and its relation to public transport ticket pricing, it is important to understand the differences between equity, equality, and justice in transportation.

Justice can be considered to be a general term that covers equity and equality issues, although sometimes it is used interchangeably with equity (Pereira et al., 2017, p. 4). Pereira et al. (2017) describe justice in terms of how resources are distributed, how fairly it is done, what rights people have in a society and how the rights are administered. Equity is split into two main categories: horizontal equity and vertical equity. Horizontal equity, also known as equality, divides resources equally without taking individual needs into account (Duran-Rodas et al., 2020, p. 301). Vertical equity, also referred to as equity, distributes resources according to various needs of people (Duran-Rodas et al., 2020, p. 301). These can include elements from the built environment, socioeconomic and demographic background, access to opportunities, and personal abilities (Duran-Rodas et al., 2020, p. 301). In other words, equity aims to lessen inequalities (Bruzzone et al., 2023, p. 1), differing from equality that treats everyone the same without considering variable circumstances and differences of people.

According to Pereira et al. (2017), the most commonly discussed theories of justice are utilitarianism, libertarianism, intuitionism, Rawls' egalitarianism and capability approaches. These theories provide understanding of what kinds of justice theories can impact public transport policies. In this chapter, these main theories and their relation to transportation policies are summarised.

Utilitarianism aims to maximise total benefits for the society (Adli & Chowdhury, 2021, p. 2), without considering distribution of impacts on a more detailed level. In transportation planning, this theory would provide maximum amount of accessibility and other transport services, but at the same time could limit them for some. One example of utilitarianism is the popular policy assessment method cost-benefit analysis (CBA). CBA considers efficiency and effectiveness well, but mainly ignores equity issues (Van Wee & Roeser, 2013, p. 3). If this method is used for public transit policies, like allocating subsidies or deciding on ticket prices, considering equity issues would need another method to support this evaluation. Otherwise, individual needs are ignored for the benefit of the masses, and could favour majorities over minorities (Van Wee & Roeser, 2013, p. 5), or high-income people over low-income people (Adli & Chowdhury, 2021, p. 2). If the goal is to achieve maximum number of social benefits, it can result in increased inequalities within a population, leading to questions of the rights of minorities and their opportunity to participate in a society.

Libertarianism is based on individual rights and in its extreme form aims for a society without government interference (Adli & Chowdhury, 2021, p. 3). Libertarians consider free markets as the best way to distribute resources, such as public transport accessibility, and consider it to be fair (Adli & Chowdhury, 2021). This links back to the concept of equality, which does not take individual needs into account, just like utilitarian principles. According to this theory, government intervention disturbs the free-market, and does not result in an optimal distribution of social welfare (Adli & Chowdhury, 2021, p. 3). Some critics of this theory say that free-markets are not efficient in the cases of market failures (Pereira et al., 2017, p. 7), that are common in transportation (Estache & Gómez-Lobo, 2005, p. 2). Prioritising individual rights and trusting in the power of the free markets, this approach could result in transportation policies that mainly serve the masses. An example of market failures in transportation, in the Finnish context, are areas that would not operate public rail transportation without the Ministry of Transport and Communications purchases of rail transport services to those areas. These areas are considered necessary to be served by public transport, but would not be operated through the free markets alone (Ministry of Transport and Communications, 2022).

Intuitionism differs from the previous theories by analysing situations case-by-case, as some theorists believe that only a more pluralistic approach can solve complex planning problems (Pereira et al., 2017, p. 7). The areas considered can be, for example, basic needs, equality, or procedural fairness, which demands that every stakeholder should be heard evenly (Barry, 1965). As for transportation policy, this theory could justify subsidies for people with lower incomes, or for example students, to guarantee some lev-

el of accessibility to essential services to everyone (Pereira et al., 2017, p. 17). However, some critics argue that this approach would be too specific to individual decisions, leading to opportunistic, conflicting and inconsistent policies (Pereira et al., 2017, p. 18).

Rawls' egalitarianism, or Rawls' theory of social justice, was introduced by John Rawls in 1971 with the publication of *A Theory of Social Justice*. It consists of two main principles. According to the first principle, everyone should have equal basic rights and liberties, such as freedom of thought and treatment under the law (Rawls, 2003). Pereira et al. (2017) describes that in the core of this theory, everyone should have freedom to choose what they do, to the extent that it does not interfere with others' freedom. The second principle is focused on the distribution of various primary goods, such as wealth or opportunities, which allow people to fairly steer their own lives towards their own goals. Inequalities can be accepted, or considered to be fair, if two conditions apply: equal opportunity is provided, that are not dependent on given circumstances, or in other words aim to mitigate inequalities of opportunities, and that the inequalities benefit the least well-off people (Rawls, 2003). In the context of transportation, this means that a certain level of accessibility should be provided to everyone, if mobility is considered to be a primary good. Rawls considers government-provided goods to be such basic goods (Rawls, 2003). Criticism of this theory includes mitigation of the inequalities of choices in addition to inequalities in circumstances (Pereira et al., 2017, p. 9).

Capability Approach, by Amartya Sen, provides an alternative to Rawls egalitarianism, with some similar goals but different focuses. This approach puts human capabilities, such as various personal abilities and overall local environment in which a person is operating, to main focus instead of Rawls' primary goods (Sen, 1979). According to Sen (1979), to address diverse needs of diverse people, distribution of primary goods is not sufficient, but they are a tool to achieve personal objectives. The theory aims to provide everyone a minimum number of basic needs, such as food, health, mobility, and the ability to participate in a society. For transportation, this means that essential services like education, employment opportunities, health care and grocery stores should be accessible by everyone, within their personal abilities and local environments. The Capability Approach, although generally accepted social justice theory, has some drawbacks, as that the minimum level of accessibility to primary locations is hard to define (Pereira et al., 2017, p. 21).

As seen from the different theories of social justice, there are major differences between them. Some seek to maximise total well-being, some are very context-specific, and some focus on the least well-off. Newer theories and

arguments seem to favour mitigation of circumstantial inequalities and notice individual differences, as free markets do not function well in cases of market failures, which occur commonly in the transportation sector. Table 1 shows main goals, criticism, and examples from transportation policy of the different social justice theories. The next chapter explores how transportation justice is measured, and how transportation poverty and social exclusion connect to it.

Table 1 Summary of social justice theories and examples from transportation policies

Theories of Justice	Main goal	Criticism	Example from transportation policies
Utilitarianism	Maximise total societal benefits.	Increased inequalities. Concerns of the rights of minorities.	Cost-Benefit analysis or CBA
Libertarianism	Individual rights. Minimum government interference. Absolute equality.	Inability to deal with market failures. Concerns of the rights of minorities.	Lack of incentives to provide wide coverage public transport services
Intuitionism	Case-by-case decisions with a pluralistic approach.	Opportunistic and inconsistent policies.	Can justify e.g. public transport subsidies
Rawl's Egalitarianism	Freedom of choice. Distribution of primary goods. Mitigation of inequalities of opportunities.	Mitigation of the inequalities of choices in addition to opportunities.	Provide a base level of accessibility to everyone
Capability Approach	Similarities with egalitarianism. Prioritises human capabilities instead of primary goods.	Minimum accessibility levels are difficult to define	Provide a minimum number of basic needs, such as mobility and access to essential services, to everyone

2.2 Transportation justice

Measuring transportation justice is often done through two fundamental concepts: transportation inequality and transportation poverty (Karner et al., 2024, p. 3). According to Karner et al. (2024), transportation inequality measurements are focused on the distribution of transportation services between people and locations, and transportation poverty measurements often focus on examining the gap between demand and supply of public transport. The discussions on transportation justice have evolved over time from physical accessibility to distribution of the impacts of subsidies, projects and policies, and social exclusion (Verlinghieri & Schwanen, 2020). Martens (2017) notes that transportation planning should focus on people more than transportation system itself, and that transportation pricing policies should be designed to guarantee sufficient level of accessibility to everyone.

According to Banister (2008, p. 73-74) two concepts have been dominant in the field of transport planning: travel as a derived demand in contrast to valued activity, and that people minimise time and money spent on travel. This approach is questioned with a contradicting view that includes social elements into urban form and transport planning: for example discussing accessibility instead of mobility, social dimensions instead of physical dimensions, visions instead of forecasts, multicriteria analysis instead of economical analysis, and reasonability of travel times instead of minimisation of travel times (Banister, 2008, p. 75). These issues and their connections to public transport pricing are introduced through two fundamental concepts of transport justice: transportation poverty and social exclusion.

2.2.1 Transportation poverty

Transportation poverty as a concept covers many different, partially overlapping subconcepts: mobility poverty, accessibility poverty, transport affordability and exposure to transport externalities (Lucas et al., 2016, p. 3). Mobility poverty can be defined as the lack of options in transportation, either spatially or economically, as introduced by Lucas et al. (2016). Accessibility poverty includes the concept of basic needs: the ability to reach necessary places with reasonable effort, time, and cost (Lucas et al., 2016, p. 356), which is connected to opportunities as well. Lucas et al. (2016) describes transport affordability to be the inability to afford transportation options such as a private car or public transport. Lastly, exposure to transport externalities is defined as outcomes of transportation caused externalities. These externalities include pollution, safety issues, and construction caused issues, that can result in disease, death, or dislocation (Lucas et al., 2016, p. 356). Table 2 summarises the subconcepts of transportation poverty.

Table 2. Subconcepts of transportation poverty (Lucas et al., 2016), figure made by the author.

Subconcept of transportation poverty	Key definition
Mobility poverty	Spatial or economical lack of transportation options
Accessibility poverty	Unable to reach basic needs within reasonable effort, time and cost, such as health care, education and work opportunities
Transport affordability	Inability to afford transportation options such as a car or public transport
Exposure to transport externalities	Exposure to safety issues, pollution, or construction caused issues, that can result in disease, death or dislocation

According to Tiikkaja et al. (2018), transportation poverty can also be defined as a phenomenon, in which a person is not able to move with reasonable effort, price, or time to essential locations. This can be split into personal capabilities and location-based circumstances. The personal capabilities include needs and resources, attitude, physical restrictions and know-how, and the location-based circumstances that include accessible services, work-place location, home location and housing price, and the price of transportation (Tiikkaja et al., 2018). These attributes are linked and should not be viewed separately from each other. From the four main themes of transportation poverty, Tiikkaja et al. (2018) have recognised transport affordability and accessibility poverty to be the main issues in Finland. Mobility poverty related ability to meet costs of transport is not considered to be a big issue, as last resort social support is available for those who need it the most.

Discussing transportation poverty requires understanding of the elements of accessibility. Rye et al. (2024) introduced the concept of Triple Access Planning (TAP), linking Spatial Proximity, Digital Connectivity and Physical Mobility to accessibility (Figure 1). The TAP reduces lengths of trips through proximity, that also encourages sustainable modes of transport, substitutes trips through digital connectivity, and encourages transport investments that support shorter trips (Rye et al., 2024, p. 4). Rye et al. (2024, p. 18) find that proximity and reduction of total trips are often considered in sustainable mobility plans, but that mentions of digital accessibility are rarer. If models like TAP are considered more in the future, public transport pricing systems might need to adapt to changes in mobility pat-

terns, which elements of accessibility such as digital connectivity can alter. In addition, better accessibility can raise housing prices and cause affordability issues (Bohman, 2021), impacting total costs of housing and transport for households.

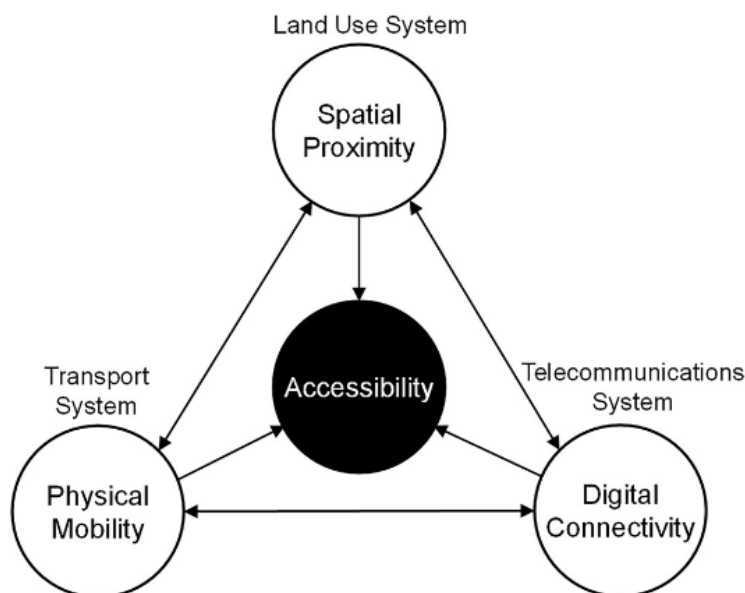


Figure 1 The Triple Access System by Rye et al. (2024).

Tiikkaja et al. (2018) have recognised six groups that are vulnerable to transportation poverty in Finland: low-income households, households without motorised vehicles, persons that are too old or young to drive, people with limited mobility or cognitive disabilities, minorities, and immigrants. Transportation poverty can be experienced differently: in urban areas, public transport services are more important than owning a private vehicle, as the core of transportation poverty issues is that a person does not have any options to reach subjectively important locations and services with reasonable effort, reasonable price or in reasonable time (Tiikkaja et al., 2018, p. 46). Tiikkaja et.al (2018) also mention, that especially in urban areas, vulnerable groups of people should be noticed in public transport pricing if the goal is to have a fair transportation system. Essentially, Lucas et al. (2016, p. 356) note that if an individual cannot reach subjectively important destinations to achieve reasonable quality of life, it can be seen as transportation poverty.

In this thesis, the main focus is on transport affordability and accessibility poverty, as they closely relate to public transport pricing. Generally used limits to what is affordable are noted in research literature, ranging from 6% to 15% of monthly income spent on work-related transportation (Estupinan et al., 2007, p. 13), or 45 % of monthly income spent on transportation and housing combined (Litman, 2021). Estupinan et al. (2007) note

that this approach does not necessarily take the poorest people into consideration, as they might walk, cycle, or skip trips altogether instead of using other, expensive modes of transportation. This issue can be noted by measuring affordability with a specific number of trips, for example 50 or 60 trips, as a baseline number for the percentage calculation of monthly income, as is done in some developing countries (Carruthers et al., 2005, p. 2). Links between transport unaffordability, mobility poverty, and accessibility poverty are shown in figure 2.

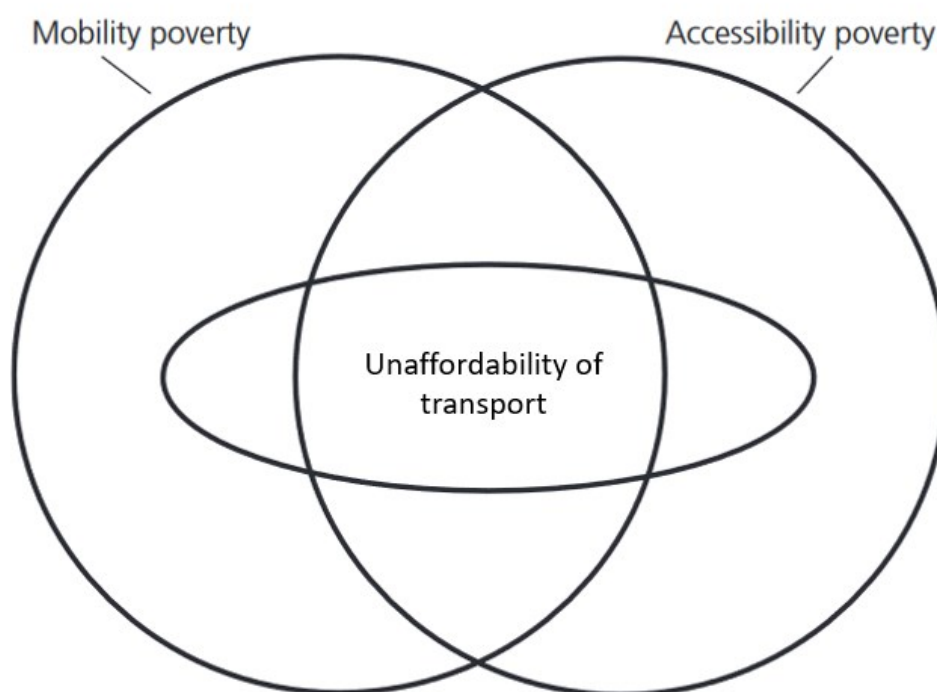


Figure 2 The unaffordability of transportation and its links to mobility poverty and accessibility poverty (adapted from Lucas et al. 2016).

In more detail, transportation affordability includes the aspect that someone cannot afford transportation costs (Litman, 2021). This includes different modes of transportation, such as a private car, or public transportation. Lucas et al. (2016) highlights the relevance of transportation affordability in the global north, which is usually related to high cost of private car ownership, and in some cases high cost of public transport fares. Several ways are identified to reduce total cost of transportation, including improvements in affordable transport modes, such as walking, cycling and public transportation, and improving accessibility through urban structure (Litman, 2021, p. 3). Litman (2021) argues that different strategies should be combined to increase affordability in transportation, such as considering it more in policymaking, which is usually quite focused in speed, and supporting affordable modes of transportation.

According to Tiikkaja et al. (2018) transportation affordability issues that require special attention in Finland are public transport pricing and ticket discount groups in Helsinki region and other urban areas. In rural areas, car-dependency and costs of car ownership should be focused on more (Tiikkaja et al., 2018, p. 36). Affordability issues can arise in situations in which a household needs two cars to move within reasonable time and effort, and should be noted also in areas with generally good public transport options (Tiikkaja et al., 2018, p. 37). Tiikkaja et al. (2018) note that zone-based public transport pricing system can lead to people paying more for public transport in the outer areas of the public transport region. Price discrimination in the favour of vulnerable groups of people is an important tool to counter transportation poverty (Tiikkaja et al., 2018, p. 37). Through different policies, everyone should be able to afford transportation, with or without a private vehicle.

In Oslo, transportation poverty was researched by examining time-based competitiveness and accessibility of public transport in the region. The findings of the study show that poorer areas tend to have lower public transport time-competitiveness of access to job opportunities, which could indicate that car-dependency costs of car-ownership are likely to be affordability issues in these areas (Lunke, 2022). In addition, Lunke (2022) concludes that areas with immigrants can have better public transport accessibility, as native Norwegians prefer living in the suburbs. It should be noted that accessibility poverty includes time and affordability elements in addition to location based elements (Lucas et al., 2016, p. 356). According to Lunke (2022), public transport accessibility consists of socio-economic, demographic, and cultural factors, shown through the Oslo study.

Rosengren et al. (2023) analysed the city-regional scale development plan (MAL-plan) of the Helsinki Metropolitan Region from the perspective of accessibility and segregation. The researchers link transit-oriented development to accessibility and segregation issues, identifying a mismatch between them, as social housing can be clustered into areas with lower socio-economic status. In the MAL-plan, Rosengren et al. (2023) argue that segregation issues should be better defined to enable measuring of it. Impact assessments on contradicting goals would be needed, as it is identified that measuring primarily accessibility, which is meant in part to reduce transportation poverty issues, can result in increased segregation, if not done carefully (Rosengren et al., 2023, p. 15). The research by Rosengren et al. demonstrates how impact assessments can lack holistic views on equity related issues in planning.

2.2.2 Social exclusion in transportation

Social Exclusion is closely related to transportation poverty (Lucas, 2012, p. 3), but it should be understood as more than just poverty. According to Church et al. (2000, p. 197), it also means people who involuntarily are not able to participate in a society due to not being able to connect to essential jobs, services and facilities. It can be hard to get out of this situation, as it can be a self-feeding cycle, but it is noted that the state is dynamic and can vary with time (Church et al., 2000, p. 197). Social exclusion can be caused by individual elements, such as age, income or gender, and circumstantial factors, such as access to public transport, and national or global factors, such as legislation and cultural impacts (Lucas, 2012, p. 106). Lucas (2012) also notes, that in the context of transportation, social exclusion is not about the accessing the means of transportation, but the consequences of not being able to do so, leading to inability to reach essential goods, or for example social networks. Preventing social exclusion shows clear links to some social justice theories, such as Rawls' Egalitarianism and Sen's Capability Approach.

Moore et al. (2013) connect social exclusion to transport disadvantage and social disadvantage, examining links between them, and noting that transport disadvantage is only one part of social exclusion. Transport disadvantage can be experienced if there are issues with accessibility to transport modes such as a car or public transport, if fare costs are too high, information is missing, or if there is fear of crime, affecting vulnerable groups of people such as people with no private cars, people living in rural areas, and people with disabilities (Moore et al., 2013, p. 6-7). Moore et al. (2013) link social disadvantage to low incomes, unemployment, poor housing, skill and health related issues, and recognise single parents, ethnic minorities, and elderly people as vulnerable groups. It should be noted that one can be socially disadvantaged without being disadvantaged in transportation, and vice versa. Figure 3 from Lucas (2012) demonstrates the link between transportation poverty and social exclusion and shows that fare costs are part of a larger phenomena. The illustration shows how "high cost of fares" is connected to social exclusion and how it can lead to other social issues, such as lack of access to various life opportunities. Lucas (2012) also demonstrates in the figure how local context matters through social norms, governance related framework, and economic and political structures.

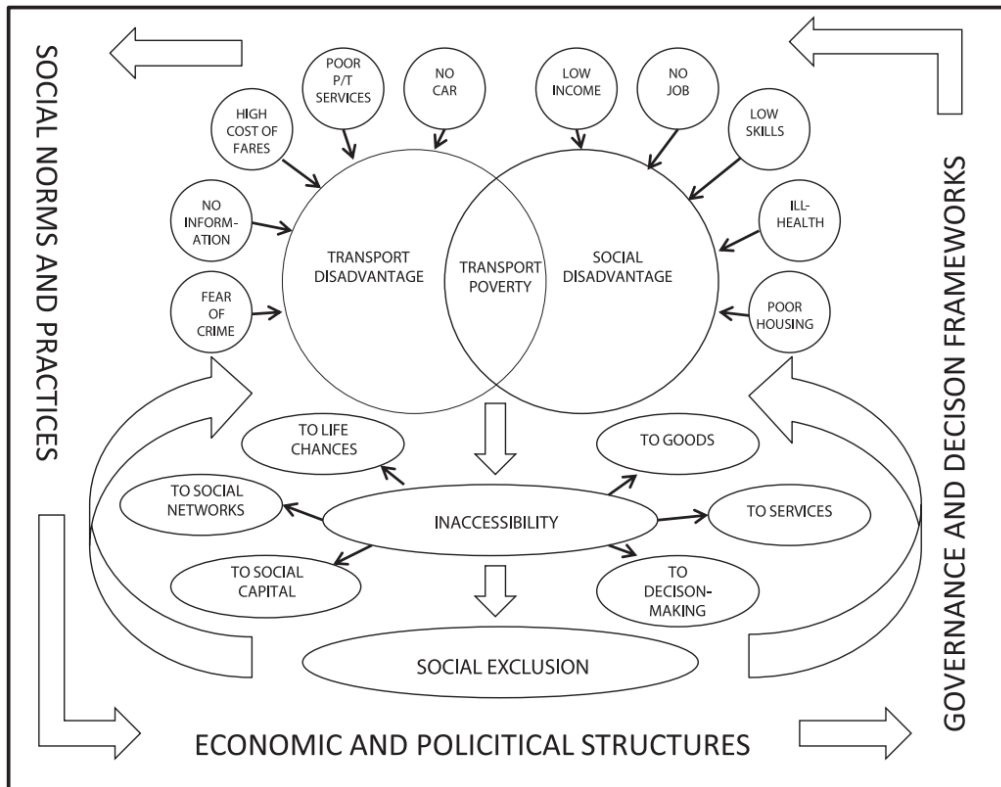


Figure 3. An illustration by Lucas (2012) showing the multi-dimensional links between social exclusion and transportation poverty.

As seen from the figure, pricing of transportation is linked to social exclusion. If transportation costs are too high, social exclusion can be experienced from, for example, education and other opportunities (Lucas et al., 2016, p. 355), and it can lead to reduced spending in other goods and services. As mentioned before by Lucas (2016), transport costs should not be measured individually from housing costs, as both are considered to be basic needs.

Notably, almost 900 000 people, about 16 % of the population of Finland, were at risk of poverty or exclusion in 2021, and 6.7 % of people experienced issues with basic livelihood (Tilastokeskus, 2023). Tiikkaja et al. (2018, p. 24) mention people living in rural areas as an example of vulnerable groups that can experience social exclusion in Finland. In addition, a case of a young immigrant that is too afraid to use public transport due to racism is mentioned and linked to fear-related social exclusion (Tiikkaja et al., 2018, p. 30). In Sweden, transport-related social exclusion of people aged 65 – 79 years was researched in 2019. The results of this study show increased dissatisfaction when public transport as a transport mode was not accessible (Ryan & Wretstrand, 2019, p. 117). Focusing on trips that were not actualised, the study of Ryan & Wretstrand (2019) finds that people have maximum of one transport option can experience social exclusion, es-

pecially older people dependent on cars, as it might not be an option for everyone, highlighting the importance of accessibility to public transportation.

2.3 Equity in public transport pricing

Public transportation pricing can be organised in many different ways, each having their benefits and drawbacks. Some methods of organising public transport fares are based on distance, some on rush hours, some are flat priced that do not consider distance, and sometimes discounts are provided for passengers with different abilities (Bondemark et al., 2021, p. 2710). In addition, cities such as Tallinn have a completely free public transport system for locals. This chapter focuses on equity and social issues of different pricing systems, and how subsidies are used to manage these issues. In addition, price elasticities are briefly discussed, as it demonstrates how pricing impacts transportation behaviour of different groups of people.

In Stockholm three different public transport pricing schemes were studied from the perspective of equity: flat fares, zone-based system, and distance-based system. Rubensson et al. (2020) find that vertical equity, also known as equity, increases when using systems with less dependence on trip length in Stockholm. Horizontal equity, or equality, increases with more distance-based schemes (Rubensson et al., 2020). Although Rubensson et al. (2020) find connections between public transport pricing schemes and equity, they note that the schemes might not be the best way to address inequality issues but do have distributional impacts. Review on public transport economics from Hörcher & Tirachini (2021a, p. 19) also support the claim that distance-based pricing can have equity issues, despite being economically efficient. Research shows some differences between equity assessments of flat fare pricing, considered to be more equal in Stockholm and Santiago than distance-based pricing, but to have similar equity effects in Barcelona (Hörcher & Tirachini, 2021a, p. 20). Hörcher & Tirachini (2021a) also note that public transport pricing schemes are dependent on local contexts, such as urban structure and land use policy.

In Finland, flat fare pricing scheme for regional buses in Turku region was studied, and it was found to increase both accessibility and affordability for regional public transport passengers (Mutiganda et al., 2023, p. 12). Notably, according to Mutiganda et al. (2023), some bus lines with less passengers designed to increase accessibility and affordability got criticized by municipal politicians, but were settled later. In Estonia, satisfaction towards public transportation and public transport usage of low income residents increased with the implementation of free fare public transport (Cats et al., 2017). Interestingly, Cats et al. (2017) found that the city of Tallinn was able

to cover costs of subsidies through increased residents of the area, but it is noted that it could have impacts on regional equity.

In long distance public transport, rail transport sector is seeing liberalisation of markets in the European Union. In Spain, public monopoly was replaced with a free market system in 2016, leading to three companies operating railway public transport (Sanchis et al., 2023). The operators of rail transport services have complex pricing systems, having multiple levels of prices and classes, which adapt to demand and capacity (Sanchis et al., 2023, p. 614). Sanchis et al. (2023) note that average prices of two companies were slightly lower than the state monopoly's, but also acknowledge the need for studies on the effects of competition of rail markets on total well-being. Demand-responsive pricing, or dynamic pricing, can be used as a tool to steer people using rail services during less crowded times resulting in efficiency, but is criticised for the lack of information to passengers and their possibility for planning their trips (Fournier et al., 2023). According to Fournier et al. (2023), equity issues can arise especially if there are no other alternative travel options, and can impact lower income customers who cannot plan their travels well in advance.

Equity is often an important issues for politicians and elected officials when considering public transport pricing (Hörcher & Tirachini, 2021b, p. 19). According to Bondemark et al. (2021) one reason for public transport subsidies is to improve accessibility for low income groups of people, in addition to economic reasons. These subsidies can be used to encourage more usage of public transport in total, and are often directed into season tickets instead of single tickets, leading to higher one time payments for public transport users (Bondemark et al., 2021, p. 2710). This can lead to low income people buying the less subsidised tickets, as they cannot afford the high single cost of subsidised options (Jones & Lucas, 2012, p. 9). Bondemark et al., (2021) note that using more expensive single tickets as an incentive to switch to season tickets can worsen issues of disadvantaged groups.

Price elasticity of public transport, or fare elasticity, describes transport habit changes of different groups to changes in public transport fares. Four goals of using price elasticity is recognised by Kholodov et al., (2021): improving revenue, maximise ridership that lead to impacts on externalities, improving efficiency, and improving equity related to service levels and fares. Through a case study in Stockholm, price elasticity is found to change with trip length, transport mode, and between socioeconomic groups such as low incomes and car ownership rates (Kholodov et al., 2021, p. 45). Kholodov et al. (2021) conclude that metro users and bus users are less sensitive to prices than commuter rail users, and that low income people and

people with lower car ownership are more sensitive than higher income people and people with higher car ownership rate.

The examples from this chapter show that equity increases when using systems that are less dependent on trip lengths and indicate that systems with flat fare pricing can be more equal in some contexts. Especially low-income customers value lower prices of public transport. Dynamic pricing is seen to be efficient but can have equity impacts to those who cannot plan their trips in advance. In general, subsidies are used to counter equity issue and to encourage the use of public transport. Customers reactions to price changes of public transport differ with personal abilities and local conditions. From the equity perspective, avoiding policies that can lead to vulnerable groups purchasing non-subsidised tickets should be avoided.

3 Materials and methods

This chapter introduces the research materials and methods used to answer the research questions. First, the case study of public transport pricing in Finland is introduced. Then, data collection methods and analysis methods are presented. Lastly, limitations of the materials and methods used are discussed.

3.1 Case study: public transport pricing in Finland

Public transportation pricing systems can see major and minor changes, from changes to different pricing systems, to smaller ticket price changes and discount group reconsiderations. This chapter introduces two examples of public transit pricing systems used in Finland, and their recent changes. The national railway operator VR and public transport official HSL were chosen for their significance in the Finnish public transport system, and to provide perspective from long-distance, regional and local public transport. In addition, social support system and subsidies used in Finland are presented.

Many organisations are involved in making public transport pricing policies in Finland. These include the Ministry of Communications and Transportation (LVM), Finnish Transport and Communications Agency (Traficom), Centre of Economic Development, Transport and the Environment (ELY), Helsinki Region Transportation (HSL), rail transport operator VR, and consultancy companies in the fields of transportation and economics. The actual schemes of pricing are made by public transport officials in local and regional transportation, and public transport operators in long-distance public transport. Decisions in local public transport are made by local politicians. Long-distance public transport pricing in Finland is mainly market-based, and local public transport pricing includes subsidies from the state and municipalities. LVM has some steering power over the service levels of market based public transport and can purchase additional public transport if necessary. The government can give financial assistance to specific public transport services of all scales through Traficom. ELY has a part in defining service levels of regional and national public transport with other officials.

As mentioned, local and regional public transport are often subsidised. Tiikkaja et al. (2018) mentions three significant public transport subsidies used in Finland: government purchases of additional public transport services, ticket subsidies, and agreement-based public transport deficit compensations. The Governments purchases of additional public transport services are meant to guarantee a basic service level of public transport to are-

as considered necessary, in addition to support public transport in general (Tiikkaja et al., 2018). According to Tiikkaja et al. (2018) subsidies have a significant role in affordable public transport in Finland. School citizens and students can get support for public transport in some cases. In addition, trips between home and workplaces are tax-deductible, calculated using the cheapest available transport mode.

On a general level, typical public transport ticket discounts used in Finland are based on either markets, transport policy or social policy (Finnish Public Transport Association, 2021). The justifications for market-based discounts include public image and getting more customers based on a customer group. Transport policy reasons include safety, increased passenger numbers, health issues, providing a basic level of service, and practicalities of public transport operations. The social policy justifications include support for families with children, for people with low incomes, and compensation for veterans. The discounts are based on age, socioeconomic status, rush hours, and disabilities.

3.1.1 HSL and VR pricing schemes

HSL, responsible for the Greater Helsinki region public transport, operates partly with ticket revenue and partly with member municipalities subventions, with the goal of 50 % revenue coming from tickets and 50 % from municipalities (HSL, 2022b, p. 12). This can create some extra pressure for HSL to increase ticket prices, if this goal is not reached. Normal public transport tickets of HSL, that do not have extra discounts, already have reduced prices through subsidies. The subsidies are focused on tickets for frequent customers, and less on individual trips, as mentioned later in the interviews. VR, the main operator of rail transport in Finland, operates long-distance and regional trains based on the markets, competing with for example Onnibus and Matkahuolto, two long-distance bus operators. According to VR (VR Group, 2024b), over 80 % of their passenger rail transport is market based transport, the rest being HSL-region transport, and government purchased additional transport.

HSL introduced its new zone-based system in 2019, based on four zones (A, B, C and D, figure 4). Excluding zone D, passengers always have to buy a ticket for two zones at the time, with the goal of reducing impacts on people who live close to zone borders in addition to ticket revenue-based reasons. Before this system, zones were based on municipal borders, and HSL justified the new system with clarity, reducing price impacts of municipal borders, and transportation behaviour changes with urban development (HS, 2019). Smaller changes to ticket prices happened in 2023, increasing prices of some ticket types, and reducing student discount to 40 % from 45 %. In

2024, ticket prices were reduced slightly, but plans are made for further increases in ticket prices. HSL has varied ticket types that include single tickets, day-tickets, multi-journey tickets and season tickets (Helsinki Region Transport HSL, 2024). Additional discounts are given to students, children, pensioners, elderly, and people with reduced mobility. For the youngest children, under the age of seven, visually impaired people, and wheelchair users, tickets are free. For the rest, the discount percentages range between 40 % and 50 % if eligible.



Figure 4. Zones used in the HSL region (HSL, 2024b).

VR has a near monopoly in the passenger rail transport sector. Dynamic pricing has been used in long-distance single tickets since 2016, and they introduced new levels to it in 2023. The price range increased, so that lower priced tickets and more expensive tickets would be sold based on the length of the trip, time of ticket reservation and demand of the specific train (VR Group, 2023a). In an interview to YLE news, a VR representative commented on dynamic pricing, that they wanted to encourage people to purchase tickets as early as possible. Smaller changes in pricing were done in 2023 to some local transport tickets, justified with inflation and energy prices (VR Group, 2023b). A wide selection of tickets is available, from single tickets to

season tickets, Interrail-tickets, and tickets for people traveling with passenger cars. VR offers discounts based on age, ranging from free (under 4 years old) to 50 % (local transport for 7 – 17 years old). In addition, there are discounts for students, pensioners, conscripts, and civil servants, ranging from 20 % to 50 % (VR Group, 2024a).

3.1.2 Social security

Social income support, provided by the Social Insurance Institution of Finland (Kela) covers local public transport costs for the poorest people and families (Sosiaali- ja terveystieteiden ministeriö, 2023). The support is meant only for short-term use to get past difficult life situations, and is a last-resort social support (Kela, 2024). According to the Ministry of Social Affairs and Health (2023), the support is granted for primary needs, including food, transportation, clothing, and some health care costs. This support is part of the subsidies that ease transportation poverty issues for vulnerable groups (Tiikkaja et al., 2018).

3.2 Data collection

The research data was collected through three different methods: expert interviews, public transportation related documents, and from existing transportation surveys.

3.2.1 Expert interviews

Semi structured expert interviews were conducted to understand how experts consider equity and social issues related to public transport pricing. This method is commonly used in social research (Flick, 2010, p. 203). Using this qualitative research method allows the interviewer to be flexible with the interviews within a theoretical framework (George, 2022), while being able to investigate issues within it to answer the wanted research questions. It allows flexibility even when the interview questions are prepared before the interviews, focusing on open-ended questions, and allows the interviewer to ask additional questions, in contrast to structured interviews. According to George (2020), semi-structured interviews provide rich and detailed answers compared to structured interviews or surveys, but it also has a risk of bias. For instance, in transportation studies, this method has been used to understand organisational structures and co-operation (Cannon et al., 2024), understand the uncertainties of public transport maintenance projects (Ivina et al., 2023), and understand the impacts of new public transport systems (Almatar, 2024). The goal of using this method was to gain deep and detailed understanding of equity and social issues in connection to public transport pricing.

The organisations for the interviews were chosen based on their involvement in public transport pricing policies, public transport operations, and / or social impact assessments. They operate on national, regional, and local levels and were approached by email. A major public transport organisation that was chosen is Helsinki Region Transport (HSL), that is responsible for organising public transport in nine municipalities in Helsinki region area. In addition, Ministry of Transport and Communications was chosen for its national perspective and its role as a public transport official in national rail network (excluding Helsinki region). Consultancy companies who provide consultancy services and policy advice to national and local governments were also interviewed. In addition, Finnish Public Transport Association, which consist of twelve major local public transport organisations and other supporting members, was interviewed for their general understanding of various public transport systems around Finland. The professional responsibilities of the people interviewed ranged from management to impact assessments, public transport pricing policies, and transport economics.

In total, seven interviews were conducted totalling nine interviewees. Three interviews were held live in the Helsinki region, and four online through Microsoft Teams, preferring live interviews whenever possible. Recordings were made from every interview with the interviewee's permission. The interviews are listed in table 3. The interviews were held between 7.2.2024 and 26.2.2024 and interviews times ranged from 39 minutes to 57 minutes. The language of the interviews was Finnish in every interview. To guarantee anonymity of the interviewees, only the organisations are mentioned. All of the interviewees were interviewed with the same set of questions and the research outline was sent to them before the interviews (Appendices A & B), with the possibility of asking additional questions as is typical for semi-structured interviews. The questions were split into three main categories: Equity in Public Transport, Objectives of Public Transport, and Public Transport Pricing. Lastly, the interviewees were asked if they would like to add any relevant information that was not asked in the interview, and suggestions for additional interviewees, documents, or data to analyse.

Table 3. Information on the semi structured interviews.

Organisation	Number of Interviewees	Interview Type(s) (online / live)	Interview Duration(s) (minutes)	Interview Date	Interviewee code
Consultancy Company 1	2	Live	41	21.2.2024	I1 & I2
Consultancy Company 2	1	Online	54	20.2.2024	I3
Consultancy Company 3	1	Online	54	26.2.2024	I4
Finnish Public Transport Association	1	Online	39	15.2.2024	I5
Ministry of Transport and Communications	1	Live	42	7.2.2024	I6
HSL	3	Live & Online	48, 57	8.2.2024, 13.2.2024	I7, I8 & I9

3.2.2 Document collection

To deepen the understanding of how equity and social issues are considered by public transit organisations and officials, document analysis was chosen as the second research method. With document analysis, publications and other documents from various organisations can be analysed systematically. Document analysis provides stable and exact data without the influence of the researcher, but can lack detail (Bowen, 2009, p. 32), which is why other methods are used in this research as well. As Bowen (2009, p. 33) states, researchers using this method should not focus only on words and sentences of the documents but interpret the meaning of the documents and their relevance to the study. In transportation studies, this method has been used to analyse public transportation policies (Anthony Jnr, 2024), and to analyse relations of technological advancements and sustainable mobility transitions (Reichenbach & Fleischer, 2023).

The documents were chosen from HSL, VR, LVM, Finnish Public Transport Association, Traficom, The Consumer Union, the Non-Discrimination Ombudsman, The National Non-Discrimination and Equity Tribunal, and consultancy companies. They include annual reports, responsibility reports, assessments on passenger price elasticities and discount groups, and statements related to public transport. In addition, decisions from the Non-Discrimination Ombudsman were chosen. The organisations and documents are listed in table 4 on a general level. Exhaustive list of documents is added as an appendix (Appendix C). It should be noted that most of the reports stay on a general level, but the assessments contain more detailed information. These documents were chosen mainly from the publicly availa-

ble lists of publications from each organisation, and some through suggestions from the interviewees. The assessments were received from corresponding organisations directly. The choosing criteria of the documents and organisations were relevance to equity, social impacts, and public transport ticket pricing. This approach brings local, regional and long-distance public transportation perspective into the research, as documents from all scales were chosen. Other local transport authorities and regional public transport operators are left out to limit the scope of this master’s thesis.

Table 4. Documents chosen for the document analysis.

Organisation	Documents
HSL	Responsibility report (2024), strategy (2022), impact assessments (2021, 2023), and PT price elasticity report (2021)
LVM	Documents about equity (2023), responsibility (2022) and impact assessments (2008, 2011, 2024)
VR	Responsibility report (2022) and Report of the Board of Directors and Financial Statements (2022)
Finnish Public Transport Association	Public Transport Ticket Discounts Justifications and Impacts (2021)
Traficom	Guide for Impact Assessments of Regional Transport System Plans (2003)
The Consumer’s union of Finland	Statements on public transport ticket prices and systems (2023) and accessibility (2023)
The Non-Discrimination Ombudsman	Statements on disabled peoples’ rights to accessible PT (2020) and transportation impact assessments (2023)
The National Non-Discrimination and Equity Tribunal	Decision on a blind person’s right to use HSL travel card (2016)

3.2.3 Existing survey data collection

The data of two surveys were chosen for re-analysis from the perspective of public transport pricing, equity, and social issues. Using this approach provided user perspective of public transport into this research. Regional Barometer of Land Use, Housing, and Transport, made in 2021 by HSL as a part of regional transport system plan, is a recurring survey of how residents view transportation and housing goals, and to collect information about the needs of the residents (n=3645). This survey includes opinions on public transportation subsidies, and usage of public transport and its relation to ticket pricing from 15 Finnish municipalities in the Helsinki region. The second survey chosen is made by Finnish Transport and Communications Agency Traficom on resident satisfaction with the transport system (n=3886), which brings national input into the discussion. From this data source, the focus was on how opinions differ with different trips on how satisfied or unsatisfied people were with public transport ticket prices in

regional and local transportation. Information on the surveys is listed below (Table 5).

Table 5. Information on the survey data sets.

Survey	Organisation	Year Conducted	Respondents
Regional Barometer of Land Use, Housing, and Transportation	HSL	2021	3645
Resident Satisfaction with the Transport System and Travel Chains	Traficom	2021	3886

3.3 Data analysis

Two different analysis methods were used to analyse the data collected: qualitative content analysis and existing survey data analysis.

3.3.1 Qualitative content analysis

This method is often used to understand social phenomena by identifying themes and patterns in a set a qualitative data. Since the themes or categories are not decided before the analysis, this bottom-up approach lets unexpected themes surface, while not being restricted by pre-defined themes. It has been used before in public transportation and equity related master's theses (Pakkanen, 2020) and in accessibility related research (Gil Solá et al., 2018). As the interviews and data collected cover concepts from the literature review, this analysis approach combines theory and inductive analysis. In more detail, the analysis was done in five steps. First, all of the interview recordings were transcribed. Then, coding was applied to the transcripts and documents to identify recurring aspects of the data by using the ATLAS.ti tool. The codes used were short phrases or words that describe the content of the text (Appendix D). After that, themes were created by sorting the codes into categories. Lastly, the results were reported based on the themes.

3.3.2 Existing survey data analysis

Questions related to public transport ticket prices were chosen for analysis and compared to respondents age, living location and socioeconomic status. In the Regional Barometer of Land Use, Housing and Transportation survey, housing costs were combined with public transport ticket costs to identify most vulnerable citizen groups. Two questions on public transport pricing and one question on the reasonability of housing price were identified for analysis. The respondents had six options to choose from: Completely agree, somewhat agree, do not agree or disagree, somewhat disagree, completely disagree, and I cannot say. The questions analysed were:

- What are your opinions on the following statements on public transportation?
 - Public transport should receive less subsidies than currently
 - I would use public transport more if ticket prices were cheaper
- What are your opinions on the following statements on housing?
 - My housing expenses are reasonable in relation to my ability to meet costs

In the Resident Satisfaction with the Transport System and Travel Chains survey the respondents answered questions on transportation system and had the option to choose between very unsatisfied, unsatisfied, not unsatisfied or satisfied, satisfied and very satisfied. The question chosen for re-analysis is:

- How satisfied are you with the public transport ticket prices of your living area (trips less than 100 kilometres)

3.4 Limitations

Data availability limited the research options. VR, the government owned railway operator which operates both long-distance and regional passenger trains, did not participate in the interviews, and did not provide documentation or data for analysis. Material from VR was limited to publicly available documentation. This steered the focus of this research towards local and regional public transport systems, although public transport of all scales was discussed in the interviews. The largest amount of data was available from the expert interviews, which shows in the results. In addition, it should be noted, that in both surveys analysed, the data was collected during the COVID19 pandemic, which could have created some bias in the answers. From the survey Resident Satisfaction with the Transport System and Travel Chains, only partial data was available for analysis. In the Regional Barometer of Land Use, Housing, and Transportation survey, income level data was not available, which is why socioeconomic status was used instead. This might not reflect on the wealth or income levels of the people well, as there are diverse groups of people inside these categorisations. From the side of public transport officials and operators, the focus was on HSL and VR and their pricing systems, which limits the focus to these systems. Other public transport officials and operators than HSL and VR also exist and have different pricing systems. In addition, it should be noted, that all of the documents and the interviews done were in Finnish language, and translated to English, so some nuances might have been lost in the process.

4 Results

The results are presented through three main themes: equity in transportation, social issues in public transport pricing, and decision making and suggestions. The first chapter, equity in transportation, introduces how equity is discussed in the context of transportation, focusing on public transport issues. The main theme is split into two subthemes: transportation system, and public transport operations.

All result chapters follow the same structure: the main points are summarised with citations, and then a table shows key findings from that specific theme. The documents are cited according to the numbering from Appendix C to clarify readability, and the interviews based on the interviewee codes presented in chapter 3.2.1.

4.1 Equity in transportation

The experts connect equity with fairness and discuss it from the system perspective – whether transportation is arranged in a way that treats various kinds of people fairly. Accessibility is seen as a factor in equity: a transport system that leaves people in areas that are not accessible is not equitable. For example, Interviewee 1 states:

”Fundamentally, many feel that justice is synonymous with fairness. In a way, it is linked to values through what we perceive fair in the society.” – I1

Different groups of people are recognised and discussed often. The societal perspective is linked to transportation economics and PT service production, and an expert raised an essential question: what is the basic service level, how sparse areas should be served with PT, and why?

”No one should be in a situation that moving is not possible, just because they happened to be born somewhere or as some kind of a person.” – I2

Societal total benefits are also associated with equity. The impacts on the society of serving everyone is questioned, as the cost of serving sparse areas can be high. Interviewee 6 highlights the societal perspective:

”I think that societal total benefits are included in the concept of equity, and it should not be forgotten – it’s not only an issues from an

individual’s perspective, but also what the individual causes to society – it impacts how equity is actualised.” – I6

Equity is not the main focus of HSL and VR but is addressed on a general level. They focus mainly on total passenger numbers in addition to offering accessible and environmentally friendly public transport services, which include some equity issues. In addition, legislation steers equity issues through the Constitution of Finland and The Disability Services Act in addition to other legislation. Interviewee 5 states:

”We face fundamental equity questions on a daily or weekly basis ... equity thematic goes through the whole scale. What belongs to whom.” – I5

Taken together, the experts mainly discuss accessibility and different groups of people in relation to equity, while the data from documents stay on a general level, as shown in table 6 below.

Table 6 Key findings for equity in transportation

Data source	Key findings – equity in transportation
Experts (I1 - I9)	<ul style="list-style-type: none"> • Equity is viewed from individual and societal perspectives • Commonly discussed themes were accessibility, affordability, reasonability, fairness, income levels, transport opportunities and distribution of resources • Everyone should be able to access transport opportunities with or without a car and mobility limitations • Exclusion from the society should be avoided • Having accessible transport options is seen as fair and connected to transport needs • Mentions of vulnerable groups of people, such as the elderly, children and people with disabilities • Service levels of PT were seen essential while discussing equity • Differences noted between public transport goals in bigger cities (serving the masses) and smaller municipalities (providing access to transportation) • HSL wants to use their resources responsibly and efficiently, they want to know their customers well, and through that serve various kinds of people
Documents	<ul style="list-style-type: none"> • VR has three main goals in their strategy: satisfied customers bring growth, motivated people create success, and efficiency guarantees profitable future (4) • VR emphasise societal responsibility through large service network and fair pricing, putting effort in to physical and digital accessibility or services, being a significant taxpayer in the state, and increasing total passenger numbers of environmentally friendly modes of PT (3) • HSL has four main strategical goals: towards emission free PT, PT usage in record numbers, cost-efficient PT, and balanced economy (5) • HSL focuses on maintaining a good service level, and through that get increased passenger numbers and ticket revenue (5). They state that <i>public transport belongs to everyone</i> and that they are developing their services in ways that are equitable, inclusive, and accessible (6). • Individuals have the right to participate and influence societal issues, as well as issues to do with their living environment, as stated in the Constitution of Finland (1). The Disability Services Act guarantees a certain number of trips to disabled people, but it is noted, that it alone is not enough to assure actual equitable travel (15).
Data sets	-

4.1.1 Transportation system

In some cases, experts focused on individuals’ opportunities, but in most cases the focus was on the masses, reducing total number of cars, and max-

imising the level of PT service. A point is made on cost-efficiency and total volumes, which allow cheaper ticket prices, and through that benefit individuals as well. Interviewee 7 asks:

“Is it more valuable that some people are not served, than focusing on a system level, and try to get rid of negative impacts of cars as much as possible?” – I7

One expert noted that people living in the city centre of Helsinki are usually wealthier already and asks from whose perspective is it equitable to have underpriced tickets for them, referencing social policy goals - what is equitable for whom. Accessibility is discussed often and is considered to limit opportunities if it is not on a proper level. Interviewee 5 states:

“We want that public transport, depending on the municipality, is so attractive, that it is interesting to anyone. It is not only a social service, but also a good service, which is present in residents’ lives” – I5

In the survey Resident Satisfaction with the Transport System and Travel Chains, people were asked how satisfied they are with the public transport ticket prices of their living area (Figure 5).

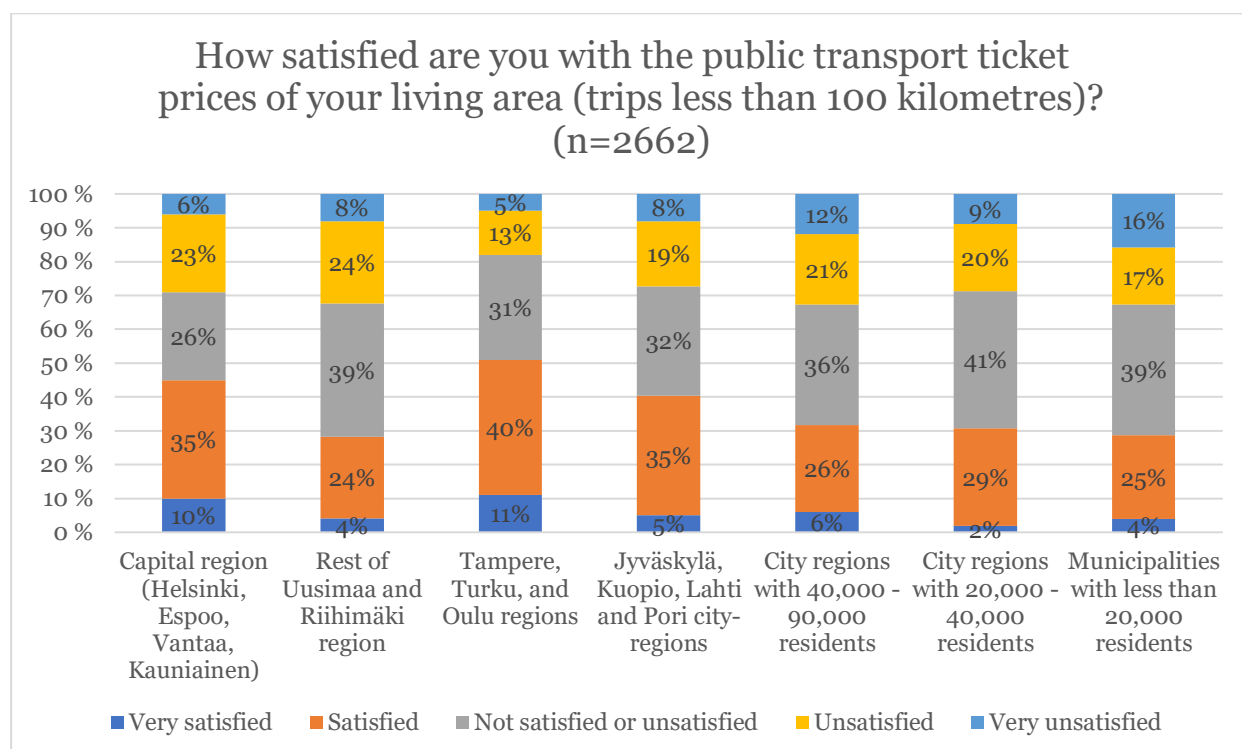


Figure 5. Satisfaction with local public transport ticket prices, answers by living location. (Data source: Traficom, 2022. Graph made by the author).

People from Tampere, Turku, and Oulu region, as well as the capital region, seem to be the most satisfied or very satisfied with public transport ticket prices, 51 % and 45 % respectively, followed by Jyväskylä, Kuopio, Lahti, and Pori city regions (40 %). Least satisfied respondents live in the rest of Uusimaa category and Riihimäki region (28 %) and in municipalities with less than 20,000 residents (29 %). In contrast, people who were the most unsatisfied or very unsatisfied live in 40,000 – 90,000 resident city regions and in less than 20,000 resident municipalities at 33 % on both. People from Tampere, Turku and Oulu regions are the least unsatisfied or very unsatisfied at 18 %. according to survey data.

Overall, pricing is seen as a part of a larger PT system, and car transport is often discussed. In the documents, differences between public and private organisations are noted. In the survey data set, pricing in bigger cities is seen as more satisfactory than in smaller municipalities. The key findings of this subtheme are shown in table 7 below.

Table 7. Key findings for the subtheme transportation system

Data source	Key findings – transportation system
Experts (I1 – I9)	<ul style="list-style-type: none"> • Pricing of PT is seen as a part of a larger system, which includes accessibility, usability, clarity, service levels, reliability, safety, and accessible ticket services • Equity between rural and urban areas are noted: cheap rents and bad public transport or expensive rents and good public transport • As many people as possible should be able to use PT • PT is seen as a service for everyone, not only a way to counter social issues • Strong PT for the masses is beneficial and result in less negative impacts of cars, and more PT usage, but can result in some people not served properly • More PT benefits individuals as well, makes PT more affordable, and results in better service levels • Cost efficiency is seen important and economic restrictions should be remembered • Accessibility, usability, and travel time are seen as more important competitiveness factors of PT than price • Without accessible PT, capacity for cars would have to be increased • PT is seen as a tool to bring accessibility for all groups of people • Lack of accessibility and affordability can limit transport opportunities • Poorer areas usually have a good level of accessibility in Finland • Society and the environment can benefit from ticket subsidies through better service levels, reduced car kilometres, sustainability, safety, and reduced pollution • Equality between citizen groups is realised through ticket subsidies
Documents	<ul style="list-style-type: none"> • PT officials can be guilty of discrimination on a lower threshold than private companies, in cases when officials start a new service, which can not be used by disabled people due to accessibility issues (15)
Data sets	<ul style="list-style-type: none"> • People in larger cities and regions are more satisfied with local PT ticket prices than people from smaller municipalities

4.1.2 Public transport operations

Aims of PT operations are seen to be different in different areas, as the social aspect is more present in rural areas with less transport opportunities. Interviewee 3 highlights this issue:

“In smaller city-regions, providing transport possibilities for different population groups can be the most important goal, and serving the masses is a secondary goal. In larger cities it can be the other way around. Providing basic service-level of public transportation and basic connections.” – I3

Municipal economics play a role in public transport operations, and they have different capabilities of putting money into public transport. Interviewee 7 notes that areas with lower income levels are commonly related with lower car-ownership, and more need for public transport, and as service levels of public transport are planned to meet demand, some social problems could be naturally averted.

“We are in a good situation in Finland ... areas with lower income-levels than average are often located in places with good public transportation connections “ – I7

Discussing service bus lines, which operate infrequently in areas with lower accessibility, another expert notes that costs per passenger can become very high, tens or even a hundred euros per trip, and wonders if that is wise or should the persons be offered other transportation services instead. In market-based PT, the government plays a role in guaranteeing accessibility to areas that would not be served otherwise. Interviewee 4 states:

“In my understanding, defining service levels is the essential starting point when discussing equity” – I4

While the experts focus on differences between municipalities, urban and rural areas, and service levels of public transport, the documents show justifications for subsidies and additional purchases of transport services, as seen from table 8.

Table 8. Key findings for the subtheme public transport operations

Data source	Key findings – public transport operations
Experts (I1 – I9)	<ul style="list-style-type: none"> • Different goals for PT are noted in urban and rural areas, and in regional transport • In rural areas, the social aspect is more present, and providing everyone an opportunity to travel is the main goal including all income levels and various personal abilities • In urban areas, space-efficiency, job opportunities (limited in Finland), and accessibility to services are considered more • The government purchases additional PT services when necessary in market-based PT, that can be related to equity • In local PT poorer areas are served quite well with PT • PT is planned based on transport needs, even when some areas are richer than others • Poorer areas can be connected to lower car ownership, leading to more demand of PT • Service levels of PT are best in areas with masses • PT lines are designed mainly for school children in some areas • The government should secure a basic service level of PT in regional transport • Differences between municipalities are noted, as some are willing and able to put more money in PT than others • Ticket prices play a role in PT economics • Service lines of buses, that compliment the main PT system and provide accessibility, are expensive to maintain
Documents	<ul style="list-style-type: none"> • Reasons for government purchases of PT to areas that would not be profitable is to promote carbon-neutral transportation and to provide transport services in areas that would not otherwise have them (4) • Subsidies can have long term impacts on the service levels of PT (8) • VR sees responsible pricing as a theme of high significance to their responsibility, and cites UN goals of sustainability that mentions special focus on the least well off (3)
Data sets	-

4.2 Social issues in public transport pricing

This chapter focuses on social issues in public transport pricing through three subthemes: public transport pricing and regulation, ticket discounts, and public transport users.

4.2.1 Public transport pricing and regulation

Social impacts are connected to social exclusion, transportation safety and other transport related externalities. Vulnerable groups are noted when discussing accessible ticket services and affordability of tickets. PT tickets are subsidised in local transport and different pricing systems have different benefits and drawbacks. Overall, simplicity of pricing systems is valued over prices. An expert mentions that when the government or municipalities decide on prices or service levels, citizens have the right to demand justifications on the decisions, such as equity related justifications. Private companies, even when government-owned such as VR, are not under the same obligations, they continue. Interviewee 3 connects equity with ticket pricing:

“There are many different ways to influence pricing of public transportation – the end result is a compromise that produces the wanted ticket revenue, and the ticket prices are distributed in a way that

they are experienced to be reasonable. And yes, it is related to equity.” – I3

Accessibility to vehicles and trains are mandated in legislation, but considering poorer or richer customers is not required. The companies can have business related motivations to provide affordable pricing. One example of this is when Onnibus, a regional bus operator, started operations in long distance public transport, VR implemented a major reduction to their ticket prices, an expert mentions. Season tickets are often priced lower per trip than tickets for infrequent customers. Justifications to regulating PT prices include managing externalities of transportation, using resources in an optimal way, reasonability and affordability goals, and avoiding market failures. The feelings of unjustness have been more present after COVID19, when working from home became more common, and ticket types do not fit transport needs well. Socioeconomic status plays a role in opinions of PT subsidies. Interviewee 6 states:

“It is an interesting and complicated problem – how do you define what is equitable and to whom?” – I6

Answers from the survey Regional Barometer of Land Use, Housing and Transport (Figure 7) show that the opinions of public transport subsidies vary slightly based on their socioeconomic status. When asked if public transport should receive less subsidies than currently, the share of people who completely disagree or somewhat disagree with the statement ranges from 48 % (employed people) to 39 % (students or school citizens).

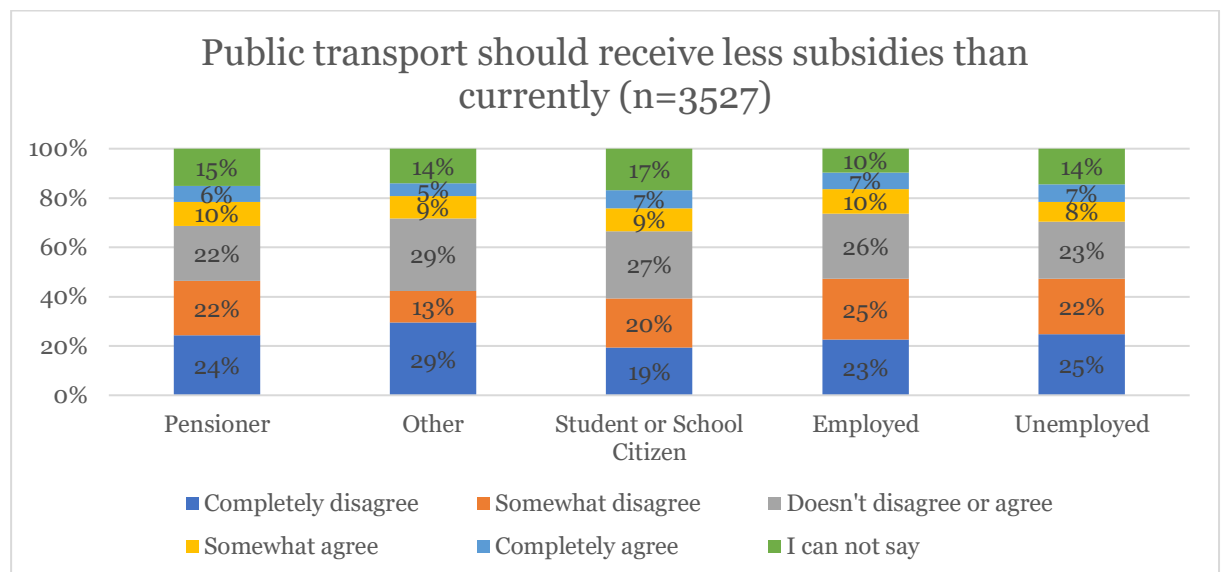


Figure 6. Opinions on public transport subsidies compared to socioeconomic status of the respondents (Data source: Helsinki Region Transport HSL, 2021. Graph made by the author).

The difference between these groups can be explained by the amount of people who could not say their opinion on the statement. The group “other” includes people that are conscripts or civil servants, stay-at-home mothers or fathers, or people who are on a family leave, who interestingly completely disagreed the most with the statement, 29 % of the answers. Table 9 below shows the key findings for this subtheme in detail.

Table 9. Key findings from the subtheme public transport pricing and regulation

Data source	Key findings – public transport pricing and regulation
Experts (I1 – I9)	<ul style="list-style-type: none"> • Accessibility is discussed in the context of being able to buy tickets in other than digital ways, and access PT spatially, and these aspects can be more important than ticket prices • Three aspects of social impacts are noted: inclusion / exclusion, externalities of transport (such as safety and exposure to pollution), and distribution of impacts • Ticket prices should be on a level that the most economically vulnerable people can use PT • Reasonable pricing is mentioned often • Individual financial needs are suggested to be taken care of in other ways than public transport, referencing social security or other forms or financial aid • Social impacts are often present in discussions with decision makers on subventions • Normal level of subvention in PT ticket prices can be over 50 % • HSL has a goal of 50 % of revenue through subsidies and 50 % from ticket prices • In zone-based PT systems, feelings of unjustness can be experienced by people who live near PT zone borders • In distance-based PT systems, people who live in good service level areas can pay less than others • Flat-fare system is complimented on its simplicity, but can be inefficient and can be seen as unfair to those who travel short distances • Dynamic pricing makes possible to steer demand and level capacity peaks of PT, but can lead to high prices for some • In regional PT, purely market-based PT system could set prices to a fair level if there is enough competition – companies have business related reasons to provide affordable pricing • Clarity of the pricing system of PT is seen as an important goal • Pricing of different types of tickets is an equity question - if there are no ticket types that fit the customers transport habits, it can be considered unfair
Documents	<ul style="list-style-type: none"> • Basis for regulation include PT ticket prices do not cover operational costs in some cases, PT has many positive external and indirect impacts to spatial structure, distribution of accessibility, environmental impacts, and health (8) • Unregulated PT pricing can lead to higher prices, limited service, and usage of societal resources in a suboptimal way (8) • Regulations are justified with equal treatment of car transport and PT, as car transport receives subsidies through free parking, distance-based financial support and free use of infrastructure (8) • Additional justifications for regulations include that marginal costs are lower than service production costs (11), unreasonable prices from the passengers perspective (8), assessments of reasonability of pricing if they rise faster than other costs (8), guaranteeing service levels of PT (8), and avoiding market failures (8) • Pricing of PT is used to increase passenger numbers, support urban development and guarantee basic service levels (11)
Data sets	<ul style="list-style-type: none"> • Opinions on PT subsidies vary slightly based on socioeconomic status - civil servants, stay-at-home mothers of fathers, and people on a family leave disagree that PT should be subsidised less the most

4.2.2 Ticket discounts

The general price of local PT tickets is already subsidised, and the level of subvention changes between ticket types. Clarity of discount systems is often valued over pricing and going into details is seen to complicate the system. Many experts think that financial support should be directed through other channels than PT ticket discounts. Interviewee 4 states:

“It is not noticeable from the outside that a poor or a rich person enters a bus, that one of them would have to pay more. Maybe it would be fairer if direct support for the ones who need it would be given. If support goes through a system, it always partly distributes to them who do not need it as well.” – I4

Some discounts are outdated and some that might be needed are not in use. Offering PT ticket discounts is a balance of transport policy, social policy and market-based reasons. When justifying discounts with social policy, it has to remove the barrier to use PT. In general, the goal is seen to be providing affordable PT for everyone. The experts often say that the focus should be on transport policy, and trying to help people through ticket prices can be problematic. Examples are stated by Interviewees 3 and 9:

“...if we give discounts on top of discounts, for example on season tickets that include subsidies, and provide extra discounts based on special groups, can the ticket price become too cheap?” – I3

“Providing all kinds of extra discounts to all kinds of groups is not really justified, especially we cannot direct them properly” – I9

It is also noted that many income-levels exist within different groups of people, such as pensioners and students. An official notes that giving discounts to all pensioners, instead of pensioners with low incomes, is bad social policy and bad public transport business.

“When using public transport, even if it is market-based, it can be trusted that the price is not the barrier, but the existence of public transport service level is. It is a central point when discussing equity issues too.” – I4

Distribution of benefits of discounts is not optimal in the current system. One expert considers this when asked a questions if it could be done better. The expert thinks that it is a difficult equality issue. If some group gets a discount based on lower demands, for example during day times, why is it

not given to other groups? Why not other times of the day? Interviewee 5 states:

“Why can’t we travel for the same price as the people during day-times, even though we are the same kinds of people, which can have transport needs during morning times? This leads to a difficult fair / unfair question from different customer groups – what belongs to whom. That’s why I would avoid discounts based on groups of people.” – I5

When people were asked how satisfied are you with the public transport ticket prices of your living area (trips less than 100 kilometres), the age group 35 – 44 were most unsatisfied or very unsatisfied with the ticket prices (36 %), followed by people aged 25 – 34 at 33 % (Figure 6). Notably, people over 74 years of age answered that they were very satisfied or satisfied with ticket prices the most, 50 % of the time, compare to other groups that range from 36 % (people aged 65 -74 and people aged 35 – 44) to 41 % (people aged 15 – 24).

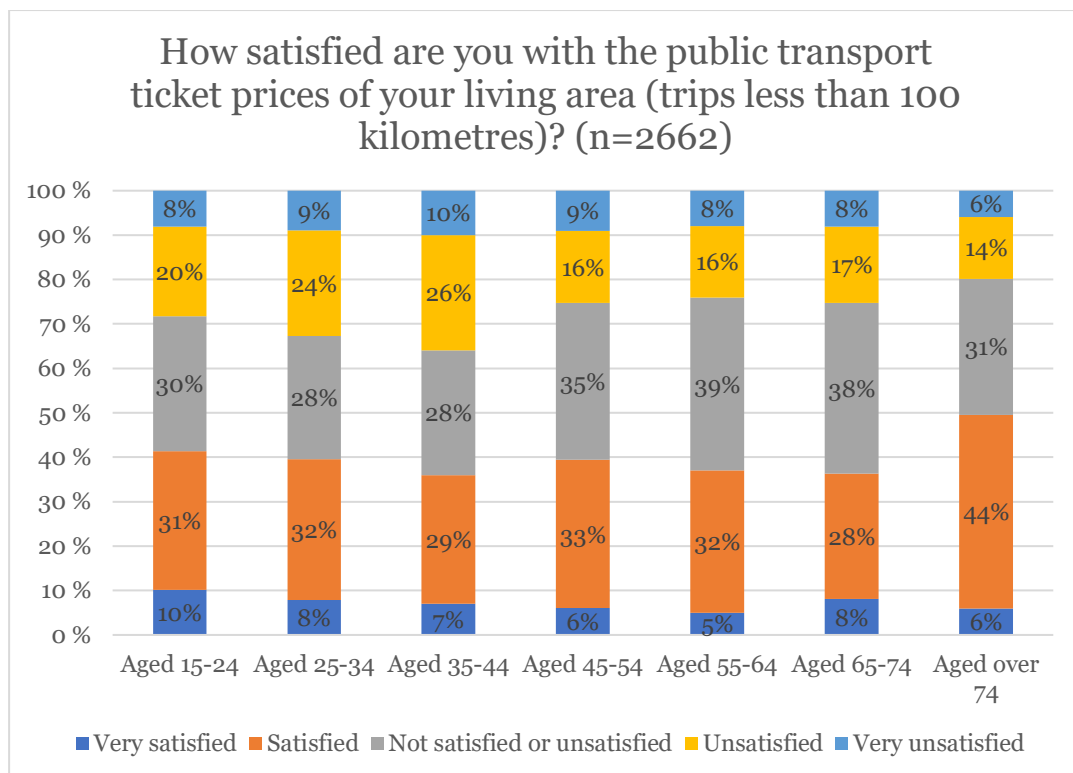


Figure 7. Satisfaction with local public transport ticket prices, answers by age. (Data source: Traficom, 2022. Graph made by the author).

The key findings for this subtheme (table 10) highlights the issues of ticket discounts from the expert’s perspective, and the documentation shows different justifications for ticket discounts that are generally used. Satisfaction towards PT prices varies by age groups.

Table 10. Key findings for the subtheme ticket discounts

Data source	Key findings – ticket discounts
Experts (I1 – I9)	<ul style="list-style-type: none"> • Ticket discounts are exceptions to general pricing, which is already subsidised in local PT • In single tickets, the level of subvention is lower than is season tickets • People who travel more get cheaper tickets according to pricing principles of HSL • In the HSL region, prices are considered to be quite low • Easy-to-use, accessible and clear ticket systems can be valued more than even cheaper tickets • Price is not seen as a barrier to use PT • Offering too many discounts can affect the clarity of the pricing system • From the societal side, costs of providing short trips and long trips are close to each other, and could justify flat fares, but can lead to equity issues from the individuals’ perspective • Many experts think that social support should come from other sources than ticket discounts, and the focus should be on transport policy reasons and general service levels • Information on individuals’ financial situations is not accessible to planners of PT • The operator must be able to verify the right of discount • Direct financial support can be fairer than providing PT ticket discounts • Reasonable prices of PT tickets are seen to also mean fair use of societal resources, as the tickets are subsidised • Discounts are subsidies on top of subsidies • Affordable ticket prices means different things to different people • Distribution of benefits is difficult, as various income levels exist within socioeconomic groups • Critique on the discount for people traveling with baby strollers and its justifications are seen to be outdated (paying with cash), and for discounts for high-income pensioners are questioned • Discounts can be good for business if directed well (an example of students is given) • Some groups that might need discounts are not given them, such as the unemployed and single parents • Detailed discount system could be too complicated to implement • Many experts consider discounts of the HSL region to be a good balance of social policy and transport policy
Documents	<ul style="list-style-type: none"> • Ticket discounts are exceptions to general pricing, which is already subsidised in local PT (11) • In addition to economical goals, equity is mentioned as a main goal of ticket discounts: affordable prices in relation to ability to meet costs, and clear and easy-to-use ticket and pricing systems (11) • If the cheapest available season ticket price is too high as a single payment, transportation poverty can occur (11) • Discounts reduce accessibility poverty (12) • Discounts are justified with market based, transportation policy, and social policy reasons, that partially overlap (12) • The market based reasons include getting more passengers and improving the image of PT (12) • The transportation policy based reasons include modal share of PT, safety, and accessibility goals (12) • The social policy based reasons include support for families with children, low-income people, and veterans (12) • If discounts are based on social policy reasons, they should remove the economic barrier to use PT (12) • In social pricing of PT, discounts are given to specific citizen groups, such as pensioners, children and students, which are related to equity goals of the society (8) • Discounts of PT tickets are related to service levels of PT (11) • Suggestion to price tickets according to number and frequency of trips made (11) • Suggestion to only give discounts to children, people aged from 17 – 25, people traveling during rush hours, and other discounts based on operational fluency of PT (11) • The suggestions are possible with affordable standard pricing and the reasons for discounts are based on transport policy (11) • Goal of organising public transport is affordable service for all citizen groups (11) • Discounts have connections to equitable treatment of customers (11) • If discounts are given based on socioeconomic status, they would not distribute well to low income people (11)
Data sets	<ul style="list-style-type: none"> • In general, younger working aged people seem to be most unsatisfied with public transport ticket prices in their living area, and people over the age 74 the most satisfied.

4.2.3 Public transport users

The experts see impacts of pricing changes from two perspectives: impacts on masses and impacts on the most vulnerable. Reasonability can be assessed with changes to current pricing, and it can be used to justify discounts. Price elasticity is used as a tool to understand impacts on transportation behaviour when making changes to PT prices. These elasticities vary between socioeconomic groups, location, time, and the availability of substitute transport modes. Some groups react stronger than others. HSL sees customer understanding as a key element of good PT service and connects it to good business. Interviewee 7 states:

“Maybe if we had a way to lower prices for the most vulnerable people, or people with low-income jobs who do not get social support, the same thing could happen than with students – we would get more customers, more euros, and they would improve their quality of life” – I7

Feelings of envy and unjustness is present in PT pricing systems, especially when living close to PT zone borders and by low-income people who travel short distances. An example of user experiences is told in an interview: removing the cheap tram-ticket from service lead to feelings of unfairness. This ticket supported short trips in Helsinki city centre, but short trips are made elsewhere too, and it was not seen as equitable to keep. Interviewee 8 states:

“In Espoo, ticket prices of people living in zone C did not change, but since people from zone B got cheaper tickets to Helsinki, we got some complaints on it and noticed some envy towards people from zone B. This is related to how people experience pricing.” – I8

Digital ticket systems are not enough to guarantee accessibility of tickets to everyone. This issues is noted by many interviewees, and highlighted by The Consumer’s Union and Helsinki region consumers:

“It should be noted that we have a significant number of consumers to which digital services are inaccessible for different reasons: some are missing equipment, some skills to use digital systems, some have physical limitations and so on.” – The Consumer’s Union

“The worst case is that people cannot utilise discounts and benefits that belong to them because of unclear ticket systems” – Helsinki region consumers

To identify vulnerable groups, people who answered that they found their housing prices to be unreasonable compared to their ability to meet costs (n=2563) were combined with people who answered that they would use public transport more if prices ticket prices were cheaper (n=1391) and were sorted by socioeconomic groups (Figure 8). The answers range from 6 % (pensioners) to 22 % (unemployed). Employed people met the criteria 7 % of the time, students or school citizens 12 % of the time, and the group “other” 15 % of the time. It should be noted that younger people are likely to live with their parents, which might reflect on the results of students and school citizens, conscripts, and civil servants.

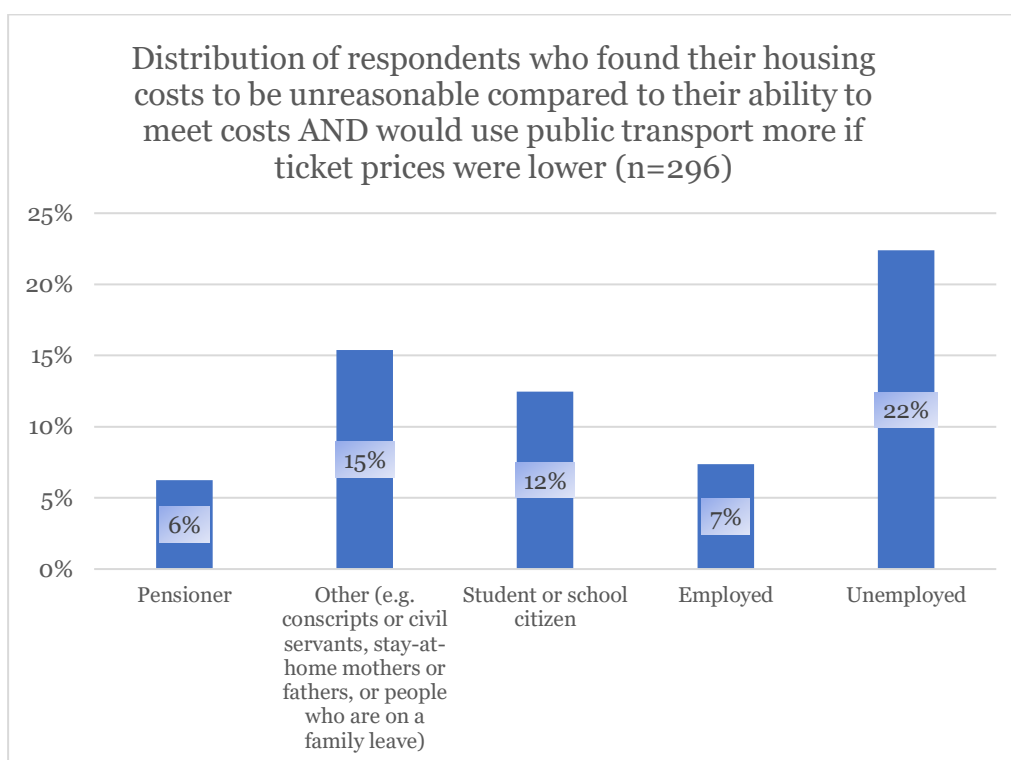


Figure 8. Respondents who find their housing costs to be unreasonable and would use public transport more if ticket prices were lower. (Data source: Helsinki Region Transport HSL, 2021. Graph made by the author)

Different groups of people, their experiences and customer understanding are often discussed with the experts. The documents raise issues with currently used ticket and pricing systems focusing on accessibility of services. From the survey data, it is noticeable that many vulnerable groups can be in need of financial assistance the most. The key findings are shown in the table 11.

Table 11. Key findings for the subtheme public transport users

Data source	Key findings – public transport users
Experts (I1 – I9)	<ul style="list-style-type: none"> • Some users compare ticket prices to previous prices and consider them to be unreasonable, even when they could be considered reasonable • User behaviour analysis is done with price elasticities • HSL uses price elasticities as a tool when deciding on ticket prices • HSL focus strongly on customer understanding, and it is connected to good business • Low income people are best customers of PT • Feelings of envy can be experienced by people who live close to PT zone borders, which HSL answered with minimum 2-zone system • Customers who cannot use mobile tickets are difficult to serve equally, since physical services are challenging to provide • A group that might be disappointed with current pricing of PT could be pensioners and elderly who live in central areas and have low incomes – they can experience feelings of unfairness • Long-term unemployed people, children and young people, people with disabilities and people with chronic diseases are recognised as vulnerable • Some consider impacts of price changes through masses such as the middle class, and some through significance of the impacts to individuals such as low-income people
Documents	<ul style="list-style-type: none"> • In larger regions (over 1 million people) price elasticities are lower than in sparser areas (10) • Price elasticities vary between socioeconomic groups and between PT modes (10) • Trip regularity, high income levels, car ownership, trip length and train usage increase price elasticity (10) • In longer time-scales price elasticity can be double compared to shorter time scales (10) • Better customer understanding leads to more revenue and creates cost efficiency (5) • User-centric assessments of price reasonability can justify ticket discounts (8) • Reasonability assessments can be based on changes to current prices (8) • The Consumer's Union receives feedback from unhappy customers of rail transport mainly on missing or infrequent connections and ticket pricing (17) • Changes to dynamic pricing of VR showed in the feedback numbers to The Consumer's union (17) • Comments on PT development needs received by The Consumer's Union ticket prices were one of the most commented issues (17) • Critique on unclear ticket systems and pricing of infrequent passengers (19) • Expensive pricing of single tickets reduce the willingness to use PT (19) • Conditions to pay for PT tickets for person with visual impairments do not have to be the same as for everyone else (14) • Mobile ticket is not enough to guarantee equitable treatment, if ticket machines are unusable with visual impairments (14) • Accessible digital services can not response to the needs of people with limited functionality in digital environments (16) • VR should provide people with disabilities the opportunity to use long-distance trains for the same price as others use regional trains, if they are non-accessible (15)
Data sets	<ul style="list-style-type: none"> • Combining unreasonable housing cost and willingness to use PT more if ticket prices were lower show that unemployed people, conscripts, civil servants, stay-at-home mothers and fathers, people on a family leave, students, and school citizens can be in the need of financial assistance the most

4.3 Decision making and suggestions

This main theme introduces discussions on decision making and suggestions. The results are split into two subthemes: social policy and transport policy, and impact assessments of public transport.

4.3.1 Transport policy and social policy

Many of the experts consider transport policy to be the main focus in PT pricing. This includes reasonable prices, and accessible and easy-to-use services. Since planners lack tools and expertise to consider individuals' financial situation, many suggest that financial support would come from other sources, such as social services. This is seen to be potentially fairer than current discounts. For example, Interviewee 1 states:

“I believe that the possibilities to influence [social issues] in public transport ticket pricing policy versus through social policy systems, for example through Kela [social services of Finland], the social policy systems have better possibilities to support ticket purchases for those who need it compared to a public transport official defining who needs discounts.” – I1

The experts often feel that they are not experts of social policy. In the interviews, it is mentioned that politicians discuss social issues in the context of PT pricing actively and see it as a way to forward their goals. The same topics are present in the documentation. Table 12 below shows the key findings for this subtheme.

Table 12. Key findings for the subtheme transport policy and social policy

Data source	Key findings – transport policy and social policy
Experts (I1 – I9)	<ul style="list-style-type: none"> • Main focus should be on transport policy instead of social policy in PT pricing • Main task is to provide accessible public transport services that are easy to use for everyone and are reasonably priced • People should not be excluded from using PT • Social support should come from other sources than ticket discounts, such as Finnish social services • Transportation experts are not experts in social policy and lack tools to measure income levels and reasonable prices to individuals • Transportation is only one instance of personal finance, and some people could want to spend the money elsewhere • Possibilities to influence social issues through PT pricing is limited • Reasonable pricing of PT is an important goal • Public transport is social transport • The governments understanding of PT varies between parliamentary seasons, such as understanding their role in steering regional PT authorities and goals of regional PT service levels • Societal benefits of PT are hard to prove through calculations and can be seen as costs • Decision makers see PT as a tool to influence social issues in contrast with many experts • Politicians are active in discussing social issues especially when making bigger pricing changes • Different social groups are in the minds of the experts and politicians, but PT should not go in to details of social issues • Politicians make the final decisions on pricing changes • Pricing of PT can have a bigger role in decision making than it actually has in the PT system • Organisations with better resources have the capability to influence decisions better than others • Politicians can try to advocate for specific groups, that can become a problem in the PT pricing system, making it too complex • Politicians can have limited ways to influence their goals, leading to using PT pricing as a mean • Direct support can be fairer than support through ticket discounts • Support for low income people should be done through social services to direct it to the right people and validate the rights to support
Documents	<ul style="list-style-type: none"> • Support for low income people should be done through social services to direct it to the right people and validate the rights to support • Tickets are already subsidised, and additional discounts given with social reasons should not be done through the PT sector (I1) • Decision makers see ticket discounts as a way to reach their parties’ social political goals (I1)
Data sets	-

4.3.2 Impact assessments of public transport

Distribution of impacts is considered to be essential when discussing PT policies. In addition to assessing general accessibility, it is suggested to assess its distribution. Recognising the most vulnerable is often mentioned, and interviewee 4 states:

“It is important to assess distribution of impacts, and not focus on total surpluses of consumers for example, and after that is essential to ask who benefits, but it is difficult to grasp as the detail level of assessments is general.” – I4

Methods for assessments to understand people better are needed, as the detail level of current methods is general. Optimally impacts on individuals would be measured. Social impact assessments could be done in bigger PT pricing system changes. Measurements for social issues are transport opportunities, costs, and impacts on vulnerable groups. Interviewee 1 states:

“Are pricing issues a barrier for some people? Where is the barrier in prices, and can people use transport with those prices? That kind of information is always needed.” – I1

Many experts want more information on social issues but see that PT pricing has limited impacts on these issues. For example, interviewee 3 notes the different needs of different people:

“Public transport pricing might not be the best way to support socially vulnerable people, because people have different needs. Some might want to go to a physical therapist instead, or get more support to buy medicine” – I3

Table 13 shows different ways to assess impacts and their limits discussed by the experts. The documentation analysed highlight the importance to assess equity issues.

Table 13. Key findings for the subtheme impact assessments of public transport

Data source	Key findings – impact assessments of public transport
Experts (I1 – I9)	<ul style="list-style-type: none"> • Recognising those who are in the most vulnerable position and how they are impacted is essential when making PT policies • When asked if social impact assessments are important when making PT pricing policies, many consider the information to be important, but continue to highlight the limits of PT pricing as a tool to influence social issues • For planners to understand all kinds of people better, there should be an easy-to-use methods to do so • When making bigger changes to PT pricing, it is important to assess social impacts and the distribution of these impacts between socioeconomic groups • All kinds of data is widely available and could be used in impact assessments • Transport modelling works well when assessing current situations, but customer experiences and local price elasticities are more difficult to measure • Models use averages to estimate impacts, and should be complimented with other impact assessments to see distribution of impacts better • In an ideal situation, impacts on individuals would be measured, but these are difficult to do in practice • CBA shows benefits of PT projects poorly compared to private car projects • Long-term impacts can not be measure accurately • Distribution of impacts is an essential question when making assessments • Changes in ticket prices of HSL region are small enough to not cause social issues • HSL mainly looks at impacts of pricing changes to revenue and passenger numbers, but when bigger pricing system changes are made social impact assessments could be done • There is a need to assess impacts on the transport system level • More information could be needed on social issues to have more information to work with
Documents	<ul style="list-style-type: none"> • Impact assessments should be expanded to cover equity impacts, so information on direct and indirect social impacts would be more comprehensive (16) • More thorough equity assessments should be done every time when the question is about essential impacts on equity of different citizen groups when preparing legislation and projects (16) • Social sustainability is evaluated based on the transport system’s capability to provide transport services that are not dependent on socioeconomic status, living location or personal capabilities (9) • There should have been better impact assessments in a local train transport pilot of substitute services, since the trains operated were not accessible (15) • Transportation opportunities and transportation costs are recognised as issues for vulnerable groups of people when assessing wellbeing (12) • Impacts on health and wellbeing are measured with changes in transport behaviour, changes in local emissions, changes in accident numbers, and transport opportunities (9) • Transport opportunities are measure with changes in accessibility levels and with distribution of accessibility (7) • A common way to measure impacts is transport modelling, which is combined with expert assessments (12)
Data sets	-

5 Discussion

To answer the main research question *to what extent are transportation equity issues considered when deciding on public transport pricing in Finland* it can be said that equity issues are in the minds of experts, officials, and politicians. Vulnerable groups of people are often discussed, such as the elderly, people with disabilities, and people with low-income levels. The arguments whether to link the pricing of public transport to equity issues in Finland vary, as the general level of ticket prices are seen to be reasonable from the experts' perspective. Overall, assessments of social issues and equity issues when making pricing changes to public transport seem to be on a very general level or even non-existent, depending on the scale of the pricing change. Without detailed and comprehensive assessments, equity impacts of public transport pricing changes should not be assumed to be limited, even with the current social security system.

When discussing justice on a general level, it is viewed that public transportation should be available for everyone to use, and the most vulnerable people should be considered. Often, the discussions quickly turn from individuals to masses, reducing environmental impacts and other externalities of car transportation, cost-efficiency and total passenger numbers. In addition, public transportation is planned partly based on demand. These goals can be linked to utilitarian sense of justice, which may cause increased inequalities in the society. In the strategies of VR and HSL these issues are also dominant. Accessible vehicles of public transport are focused on to guarantee the usability of public transport for everyone, and this is required in the legislation as well. The goal of providing public transport for as many people as possible is argued to benefit individuals through reduced negative externalities and cheaper ticket prices. Maintaining a good service level of public transport is seen to be essential when discussing equity issues.

Some arguments when discussing long distance public transport can be linked to libertarianism, such as that market-based pricing sets the prices on a fair level if there is enough competition. In Finland, the passenger rail sector is mainly operated by VR, but some competition exists with bus transportation. The government has noted the market failures, that commonly occur in transportation sector (Estache & Gómez-Lobo, 2005), with the purchases of additional public transport in these cases to guarantee accessible public transportation. Intuitionism is mainly present from the politicians' side, as views of the government's role in public transport can shift from parliamentary session to another. The politicians in power can use public transport pricing as a way to forward their parties' current political goals, which can lead to inconsistent public transport policies. HSL's two zone minimum system can answer to some equity issues, as vertical equity increases with pricing systems that have lower dependency on trip lengths (Rubensson et al., 2020).

As mentioned, experts do consider the most vulnerable people and want to provide affordable public transport for everyone. This can be seen as Rawlsian egalitarianism and Sen's capability approach related thinking, which focus on mitigation of inequalities of opportunities and personal capabilities. Accessible ticket systems are focused on, but issues with digital accessibility exist on the current schemes. Simplicity and clarity of pricing systems and ticketing systems are often valued over price by the experts and officials. Ticket discounts given with social reasons are argued against, but the issue seems to be more on who gives the support the people who need them, instead of not providing support at all. The transportation experts interviewed do not consider themselves experts of social policy, so it is fair to ask if the right people are making the decisions on ticket discounts that are based on social reasons, and if financial support is directed through the right organisations.

Overall, the experts see equity issues to be important, but the main goals and strategies of public transport focuses on the masses instead of vulnerable groups. An exception to this is rural areas, where the goal seems to be focused on providing accessible transport options to everyone instead of the masses. This goal in rural areas fits well with the findings of Lunke (2022), that transportation poverty usually occurs when people are dependent of cars.

As for social exclusion, that leads to people not being able to participate in the society involuntarily (Church et al., 2000), links to public transport pricing can be considered to be on a low level in Finland. Accessibility is partly guaranteed by the governments' purchases of additional services of public transportation. For the unemployed and single parents that do not get ticket discounts or do not qualify for social security, there is a risk of exclusion, but this requires further research. Dynamic pricing in long distance public transportation needs further study as well from equity perspective, with the focus on the most vulnerable and people who cannot be flexible with their travels, as dynamic pricing is criticised for the lack of possibility for planning and passenger information that can lead to equity issues (Fournier et al., 2023). VR wants to encourage people to buy tickets as early as possible with this pricing system, but it remains unclear if they consider people who cannot be flexible with their travels. It should be noted that even with current social security system, 6,7 % of Finnish people experience issues with basic livelihood in 2021 (Tilastokeskus, 2023), affecting rural areas the most (Tiikkaja et al., 2018). The topic of social exclusion was rarely discussed in the interviews.

According to Tiikkaja et al. (2018), low income households should be the main focus in Finland when discussing transportation poverty, especially in the Helsinki region. Some of the current public transport ticket discounts are based on socioeconomic groups, which can lead to unwanted distribution of benefits to people with higher incomes. As Lucas et al. (2016) argue,

housing costs and transportation costs need to be considered together. Comprehensive analysis of total costs of housing and transportation should be done when making changes to either of them for a more holistic view. Opinion surveys show that the unemployed, civil servants, conscripts and stay-at-home mothers or fathers that consider their housing expenses to be unreasonable would use public transport more if it were cheaper. The ticket discount schemes used by VR and HSL do not consider these groups at the moment, who could be in the need for discounted prices. Other opinions show that people over the age 64 are the most satisfied with current public transport ticket prices in local public transportation, combined with the experts' opinions on issues with discount distribution, can bring into question the need of discounts for *all* pensioners, instead of pensioners with low incomes. This can apply to other citizen groups as well, and the focus should be shifted to low-income people and vulnerable groups instead of socioeconomic groups.

Changes in transport behaviour after COVID19 and increases in digital connectivity requires subsidised ticket types that fit the travel needs of the most vulnerable. As noted by Jones & Lucas (2012), low income people are at a risk of buying non subsidised tickets. It should be guaranteed that the lowest priced subsidised ticket fits transport needs and is affordable for everyone. Otherwise, there is a risk of accessibility poverty. According to Rawls, inequalities can be accepted, if they benefit the least well off (Rawls, 2003), which supports the argument by Tiikkaja et al. (2018) that price discrimination should be focused towards the ones who need them, referencing ticket discounts. Subsidies play a major role in affordable public transportation in Finland (Tiikkaja et al., 2018). Terms such as reasonability and affordability were mentioned often in the interviews, which demonstrates understanding of social issues to some extent.

More information on social issues is considered to be needed, but impacting social issues through public transport pricing is seen to be limited. Questioning the role of ticket discounts based on social reasons is often present, and suggestions for the financial support to come from other sources such as the social services are made. The public transport experts view that they are not experts of social policy, and lack the tools to assess individual financial situations, and argue that others could direct the support better without distributing it to the ones who do not need it. Considering distribution of financial support, some people might have other urgent needs that transportation, as mentioned in the interviews. This highlights the importance of clarifying roles between social services and public transport officials. If the current systems are kept, experts of public transportation pricing would benefit from education on social issues. Discounts given with transport policy reasons, such as fluency of operations and increasing total passenger numbers, are generally accepted. Maybe the conversation should shift from giving public transport discounts to specific groups, to giving financial aid

or other forms of support to specific groups and individuals for their transportation needs and guaranteeing a number of trips for everyone.

The focus should be shifted from masses to individuals and the most vulnerable groups of people when considering equity issues in public transport pricing. In practice, tools for doing so are lacking. Current usage of price elasticities shows *what happens* but not *why it happens*. Deeper knowledge of the transportation behaviour of vulnerable groups is needed, and impact assessments should cover individuals' perspective better. Tools such as transportation modelling can help with considering to what extent vulnerable groups switch to alternative modes of transport, and if their travel times become unreasonable, when changes are made to public transport pricing. Unreasonable travel times are linked to transportation poverty (Lucas et al., 2016). Detailed equity assessments should be used to compliment the general level information of transport models, as many experts consider distribution of impacts essential when discussing equity. Data in Finland is widely available and can be used to investigate these issues. As some experts argue in the interviews, impact assessments should be done on a transportation system level rather than in smaller silos. The arguments of Banister (2008) including social elements to transport planning, multicriteria analysis instead of economic analysis, and accessibility instead of mobility, can be beneficial to public transport pricing policies as well.

Finding ways to guarantee low-income people and other vulnerable groups affordable public transportation is essential. Social support, which is meant to be a last resort assistance to those with most need for it, can be late considering social problems that result from the lack of transportation opportunities. Public transport pricing policies can have a role in preventing social issues earlier. Future pricing changes should be considered in a multidisciplinary group of transportation experts, economists, and social policy experts

5.1 Future research suggestions

The focus of this thesis was leaning towards local public transport pricing due to various limitations, and the dynamic pricing system and its impacts need to be further studied from the equity perspective. The focus should be on the most vulnerable groups, that are in risk of transport poverty or social exclusion. This includes people who cannot be flexible with their travels. Tools and methods, that are easy to use, are needed for more detailed equity assessments. Currently the methods in use provide general level information and can be reliant on expert assessments. In addition, impacts of public transport pricing on the groups of people that do not get discounts or qualify for social security needs to be further researched from the perspective of equity. These groups include the unemployed, single mothers and

fathers, civil servants, and the possible low-income people that are not yet recognised.

5.2 Recommendations for policy-making

Equity assessments should be included in processes of significant public transport pricing changes, such as adding or removing public transport zones or adding new levels to dynamic pricing, since impacts on different groups of people can be expected from them. The assessments should include housing costs as well. Equity assessments can be considered to be mandated in legislation when making significant changes to transportation pricing systems. In addition, complimenting economic analysis with multicriteria analysis is recommended.

Policies that would result in low-income people buying non-subsidised public transport tickets should be avoided. The lowest cost subsidised ticket needs to be affordable for everyone. From the equity perspective, financial support for public transportation should be given to vulnerable groups such as low-income people either through affordable ticket prices or direct financial support. Directing support to people in need better than currently can be considered, as the current discount system benefit others as well. Clarity of the ticket systems should not be compromised while doing so and it should be noted, that other than social policy reasons can justify the current discounts. In addition, public transport pricing schemes that have lower dependency on trip lengths are encouraged from the equity perspective.

Adding education of social issues for public transport experts is essential, as the decisions made by them impact various vulnerable groups. People who decide on discounts based on social reasons should be qualified in social policy, at least to some extent. Further co-operation between public transportation experts, social policy experts and economists is highly encouraged when making public transport pricing changes. Clarifying the responsibilities between organisations, such as local public transport officials and the social services is needed, since discussions on who should be responsible for transport related social support is present.

6 Conclusions

This master's thesis explored the relation between social policy and transport policy in public transport pricing. It expands on the current research in Finland on transportation poverty and accessibility issues, with a deep-dive into the social aspects of public transport pricing. The results provide valuable information on the extent to which equity issues are discussed in this context, what social justice views can steer public transport pricing policies, and highlight the need to clarify justifications for ticket discounts and the responsibilities between transport and social policy organisations. Understanding the reasons behind ticket discounts and public transport subsidies—whether they are based on transport policy, social policy, or market-based policy—is essential when considering which organisations and experts make the decisions. Affordable prices for low-income people can be mutually beneficial to public transport officials and the people themselves.

Equity issues are in the minds of transportation experts but influencing them through pricing is seen to be less effective than through other aspects of accessibility. Even if affecting social issues through public transport pricing is limited in Finland, detailed equity assessments should be conducted when making large-scale changes to the public transport pricing system, as the current level of equity assessments is general, if done at all, and contains uncertainties. Shifting the focus from total impacts and masses to detailed distribution of impacts for individuals and vulnerable groups is essential when considering equity. If impacts on different groups of people are expected, the experts responsible for the pricing changes or financial support must understand the equity implications of the changes considered. In practice, if the suggested equity assessments are included in the processes of public transport pricing changes, additional resources and experts specialising in equity issues of transportation will be needed.

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Appendices

Appendix A – Interview Form in Finnish

Esittely

Haastattelu tehdään diplomityötä varten, jonka alustavana aiheena on joukkoliikenteen hinnoittelun sosiaalisten vaikutusten ymmärtäminen Suomessa. Yliopisto on Aalto-yliopisto ja pääaine on maankäytön suunnittelu ja liikennetekniikka. Asiantuntijahaastattelut ovat yksi osa tutkimusta. Tavoitteena on ymmärtää, minkälaisia sosiaalisia vaikutuksia joukkoliikenteen hinnoittelulla on, keihin tai mihin ihmisryhmiin tunnistetut vaikutukset kohdistuvat, ja miten oikeudenmukaisuus huomioidaan joukkoliikenteen hinnoittelupolitiikassa.

Haastattelun tietoja käytetään anonymisti ja se nauhoitetaan, jos suostut siihen. Nauhoituksesta ja haastattelusta saatuja tietoja käytetään vain tätä tutkimusta varten. Mahdollinen nauhoitus tuhoetaan työn valmistuttua.

Avainsanojen tarkoitukset tässä yhteydessä ovat:

- **Oikeudenmukaisuus**
 - o Ytimessä on kysymys: mikä on reilua? Tämän tutkimuksen yhteydessä tarkoitetaan myös, että ihmisillä tulisi olla yhtäläiset mahdollisuudet henkilökohtaisista kyvyistään ja paikallisesta ympäristöstä riippumatta.
- **Sosiaaliset vaikutukset**
 - o Muutokset ihmisten hyvinvointiin, terveyteen ja / tai erilaisiin mahdollisuuksiin (työ ja vapaa-aika) sekä palveluiden saavutettavuuteen.

Aloituis

Mikä sinun tittelisi on?

Kuinka kauan olet työskennellyt liikennealalla?

Mitkä ovat työsi päätehtävät?

Keski-osa

Oikeudenmukaisuus joukkoliikenteessä

Miten sinä ymmärrät joukkoliikenteen oikeudenmukaisuuden?

Miten oikeudenmukaisuus huomioidaan joukkoliikennepolitiikassa?

Joukkoliikenteen tavoitteet

Mitkä ovat sinun mielestäsi joukkoliikenteen päätavoitteet Suomessa?

Liittyvätkö nämä tavoitteet sosiaalisiin ongelmiin?

Pitäisikö joukkoliikennepolitiikan tavoitteiden keskittyä enemmän sosiaalisiin ongelmiin?

Miksi?

Joukkoliikenteen hinnoittelu

Millä tavalla joukkoliikenteen hinnoittelusta päätetään tällä hetkellä?

Huomioidaanko päätöksissä sosiaalisia vaikutuksia? Jos huomioidaan, niin miten?

Minkälaisia vaikutustenarviointeja joukkoliikenteen hinnoittelun muutosten pohjaksi tehdään?

Minkälaisia vaikutuksia näissä vaikutustenarvioinneissa on tunnistettu?

Huomioidaanko joukkoliikenteen hinnoittelun sosiaalisia vaikutuksia mielestäsi riittävästi?

Koetko sosiaalisten vaikutusten arvioinnin tärkeäksi osaksi joukkoliikennepolitiikkaa?

Keneen tai mihin ihmisryhmiin joukkoliikenteen hinnoittelu vaikuttaa mielestäsi eniten?

Kohdentuvatko joukkoliikenteen lippujen alennukset sinun mielestäsi reilusti?

Lopetus

Haluatko lisätä jotain joukkoliikenteen hinnoitteluun tai sen oikeudenmukaisuuteen liittyen, johon ei keskitytty mielestäsi tarpeeksi tässä haastattelussa?

Tiedätkö muita henkilöitä, joita voisi haastatella samasta aiheesta?

Tiedätkö dokumentteja, selvityksiä, tai dataa, joita voisi analysoida tästä aiheesta?

Appendix B – Translated Interview Form

Introduction

The interview is conducted for a master's thesis, which working topic is understanding the social impacts of public transport pricing in Finland. The university is Aalto University, and the programme is spatial planning and transportation engineering. Expert interviews are one part of the study. The aim is to understand what kind of social impacts public transport pricing has, who or which groups of people are affected by the identified impacts, and how equity is taken into account when considering public transport pricing policy.

The information from the interview will be used anonymously and will be recorded if you consent to it. The recording and information obtained from the interview will only be used for this study. Any recording will be destroyed upon completion of the work.

The meanings of keywords in this context are:

- **Equity**
 - The core question is: what is fair? In this research, this also means that people should have equal opportunities regardless of their personal abilities and local environment.
- **Social impacts**
 - Changes in people's well-being, health and / or various opportunities (work and free time) and access to services.

Start

What is your job title?

How long have you been working in the transport sector?

What are the main aspects of your work?

Centre

Equity in public transportation

How do you understand transportation equity?

How is equity considered in public transport policy?

Public transport objectives

In your professional opinion, what are the main objectives of public transport in Finland?

Are any of these objectives related to social issues?

In your opinion, should the objectives of public transport policy include more attention to social issues? Why?

Public transport pricing

How are public transport prices currently decided?

Are social impacts considered when deciding on the prices? If so, how?

What kind of impact assessments are usually conducted when planning changes to public transport pricing?

What kinds of impacts have been identified in the impact assessments?

Do you think that the social impacts of public transport pricing are sufficiently assessed?

Do you consider social impact assessment to be an important part of public transport policy?

In your opinion, which groups of people will be most affected by public transport pricing?

Do you think discounts of public transit tickets are allocated fairly?

Ending

Would you like to add something about public transport pricing or equity issues that you think was not focused enough on this interview?

Do you know other people who could be interviewed on the same topic?

Do you know any documents, reports, or data that could be analysed on this topic?

Appendix C – Exhaustive list of documents analysed

Public Transport Officials and Authorities Strategies and Plans

1. Plan for Equity and Gender Equality for the years 2023 – 2025. The Ministry of Transport and Communications, 2023.
2. Responsibility Report. The Ministry of Transport and Communications, 2022.
3. Responsibility Report. VR Group, 2022.
4. Report from Board of Directors and Financial Statements. VR Group, 2022.
5. HSL Operation and Financial Plan 2023 – 2025. Helsinki Region Transport, 2022.
6. Responsibility of HSL, Webpage. Helsinki Region Transport, 2024.

Assessments

7. Guide for Impact Assessments of Regional Transport System Plans. Traficom, 2023.
8. Public Transport Ticket Subsidies and Pricing. The Ministry of Transport and Communications, 2008.
9. National Transport System Plan Assessment Report. The Ministry of Transport and Communications, 2024.
10. Price Elasticities of Public Transport Ticket Types. Helsinki Region Transport, 2021.
11. Public Transport Ticket Discounts Justifications and Impacts. Ramboll, 2021.
12. MAL 2023 Plan Impact Assessment Report. Helsinki Region Transport, 2023.
13. Helsinki Region Congestion Charge Assessment Report. The Ministry of Transport and Communications, 2011.

Statements

14. Statement on HSL Travel Card Use by a Person with Visual Impairment. The National Non-Discrimination and Equality Tribunal, 2016.
15. Statement on Tampere Region Pilot on Local Rail Transport. The Non-Discrimination Ombudsman, 2020.
16. Statement on National Transport System Plan Impact Assessments. The Non-Discrimination Ombudsman, 2023.
17. Statement on Rail Transport System and Pricing. The Consumer's Union of Finland, 2023.
18. Statement on Pori Region Bus Transport in Rural Areas. The Consumer's Union of Finland, 2023.
19. Statement on the Clarity of Ticket Systems and Senior Rights. The Consumer's Union of Finland. 2023.

Appendix D – Codes used in the qualitative content analysis

Equity In Transportation	Transportation System	Public Transport Operations
Accessibility	Active Mobility	Barriers
Accessibility Poverty	Car Dependency	Capacity
Affordability	Congestion	Causality
Basic Goods	Congestion Pricing	Clarity
Distribution of Resources	Different Trips	Competition
Employment	Land-Use	Cost Efficiency
Equality	Less Cars	Covid
Equity	Less Mobility	Demand
Equity Assessment	Limits of PT Policies	Efficient Mode
Equity Measurement	Location	Funding
Essential Needs	More Cars	Government Regulation
Exclusion	Municipalities Differences	HSL Main Goals
Fairness	National System	HSL Main Tasks
For Everyone	Negative Impacts of Cars	HSL Strategy
Housing Prices	Social Policy	Local Transport
Inclusive	Space Efficiency	Marginal Cost
Income Levels	Sustainable Transportation	Market Failures
Job Opportunities	Tampere Example	Market Share
Least Well-off	Transfer Time	Markets
Low Income	Transport Behavior	Money
Low-Income Areas	Transport Economics	Options
Need To Move	Transport Modes	Government Purchases of PT
Noting Public Transport Equity	Transportation Behaviour	Priorisation
Opportunities	Transport System Planning	Pressure to Increase Prices
Reasonability	Travel Time	Previous Knowledge
Regional Equity	Trip Chain	PT Business
Responsibility	Trip Length	PT Competitiveness
Segregation	Trip Type	PT Flow
Social Policy	Urban Areas	PT Modal Share
Social Problems	Urban Development	PT Reliability
Social Responsibility	Urban Structure	PT Service Level
Social Security	Work Trip	Public Transport System
Social Services	Working From Home	Regional Transport
Social Support		Rural Areas
Social Sustainability		Sales Increase
Societal Perspective		Service Design
Societal Responsibility		Service Level
Sufficiency		Stakeholders
Transport Opportunities		Subventions
Transportation Poverty		Total Customers of PT
Unemployment		Total Passengers
Unfair		Total Societal Benefits
Utilitarianism		Usability of PT

Voice Heard
Wealth
Non-Discrimination Ombudsman

VR Main Goals

Public Transport Pricing

50/50 Model
Big vs Small Price Changes
Clarity
Costs of PT
Covid Subsidies
Dynamic Pricing
Efficient Pricing
Government Subsidies
HSL Area
Limits of PT Pricing Policies
Market Based Pricing
Government Purchases of PT
Price Changes
Price Discrimination
Price Elasticity
Pricing Change Experience
Pricing Changes
Pricing Systems
Priorisation
PT Pricing
PT Pricing Goals
PT Pricing Strategies
PT Tickets
PT Zones
Responsible Pricing
Social Pricing
Social Services
Subventions
Taxes
Ticket Revenue
Ticket Accessibility
Ticket Discounts
Ticket Prices
Ticket Pricing
Ticket Revenue
Ticket Subsidies
Ticket Systems
Ticket Types
Trip Cost

Public Transport Users

Customer Experience
Customer Feelings
Customer Groups
Customer Satisfaction
Customer Service
Customer Understanding
Customer Preferences
Disabilities
Elderly
Envy
Feedback
Groups of People
Less Mobile People
Low Income
Masses
Middle Class
Participation
Pensioners
Personal Abilities
Physical And Mental Health
Students
Studying
Young People
Children

Impact Assessments of Public Transport Pricing

CBA
Distribution of Impacts
Distribution of Resources
Emissions
Environment
Equity Assessment
Externalities
GIS
Health
Impact Assessments
Impacts
Impacts Timescale
Income Levels
Individual Benefits
Individual Vs System Impacts
Information
Long Term Impacts
Measuring Societal Responsibility
Modal Share
Modal Shift
Pollution
PT Accessibility
Safety
Segregation
Social Impact Assessment
Social Impacts
Traffic Safety
Transport Models

Decision Making

Decision Makers

Governance

Legislation

National Goals

Political Goals

Politicians

Politics

Public Transport Policy

Regulation

Social Policy vs Transport Policy

Sustainability

Transport Policy

Working Together