

Liveability & Accessibility

In peri-urban Riga



Lennart Nout - September 2010



university of
 groningen

Accessibility & Liveability

Lennart Nout

September 2010

Masterthesis Environmental & Infrastructure Planning

Rijksuniversiteit Groningen / Witteveen + Bos

Keywords:

Accessibility, Liveability, Peri-Urban Areas, Latvia



university of
 groningen

Voorwoord

Voor u ligt het eindresultaat van een half jaar zwoegen op mijn masterscriptie. Na een gezonde vijf jaar studeren in Groningen is de tijd gekomen om mijn studietijd af te sluiten en mijn eerste stappen te wagen in de grote mensen wereld.

In mijn studietijd heb ik alles gedaan wat ik wilde doen, naast een fantastisch bestuursjaar bij AEGEE heb ik ook de kans gekregen om een half jaar in Auckland te studeren, waarbij ik veel van de wereld heb gezien. Dat heeft me op veel manieren verrijkt en gevormd.

Deze scriptie is er niet zomaar gekomen, het feit dat het schrijven van deze scriptie zo vlot is verlopen is voor een groot deel te danken aan de collega's van mijn stagebedrijf, Witteveen+Bos. Met name wil ik Tim van Dijck bedanken voor het bewaken van de grote lijn en het stellen van de juiste vragen op de juiste momenten. Verder wil ik Bas Tutert bedanken voor zijn enthousiasme en de ondersteuning vanuit Deventer. Ook wil ik Roberts Kikulis van Witteveen+Bos vestiging Riga bedanken voor al zijn vertaalwerk.

Naast de collega's van Witteveen+Bos wil ik Paul Ike bedanken voor zijn begeleiding vanuit de Universiteit. Ook Anke wil ik bedanken, het was gezellig in het scriptie-schrijf-schuitje. Last but not least I would like to thank Ruth, for her awesomeness, her endless inspiration and enthusiasm.

Samenvatting

De wereld verstedelijkt in hoog tempo. In 2050 zal 69% van de mensen in een stedelijke omgeving wonen. Deze explosieve groei zorgt voor een grote vraag naar woonruimte in de grote steden. Omdat de ruimte voor uitbreiding binnen de grenzen van de stad klein is zijn steden genoodzaakt uit te breiden. Er worden dan ook veel nieuwe woonwijken in de gebieden rondom steden (de zogenaamde peri-urbane gebieden) gebouwd. De ontwikkeling van banen en diensten in deze woonwijken loopt echter achter bij de ontwikkeling van nieuwe huizen. Om toch werk te kunnen vinden zijn de bewoners genoodzaakt te pendelen tussen woon- en werkplaats.

In deze studie is onderzocht in hoeverre de bereikbaarheid van de leefomgeving samenhangt met de waardering ervan. Vinden mensen de verbinding van hun woonomgeving met het diensten- en banencentrum (de grote stad) belangrijk? In andere woorden: In hoeverre vertaalt bereikbaarheid zich in ervaren leefbaarheid?

Om deze vraag te kunnen beantwoorden is eerst onderzocht wat de termen leefbaarheid en bereikbaarheid in deze context eigenlijk betekenen en hoe ze geoperationaliseerd kunnen worden. Daartoe is een literatuurstudie gedaan naar beide termen. Uit de literatuurstudie is gebleken dat leefbaarheid een zeer breed gebruikte term is met veel betekenissen. Leefbaarheid kan doelen op de biologische geschiktheid voor het ontstaan van leven (de afwezigheid van extremen) of het kan slaan op de sociale cohesie binnen een bepaalde wijk. Zeker in de laatste 10 jaar heeft de tweede betekenis veel aandacht gekregen, maar hij is niet alomvattend. Leefbaarheid heeft vele facetten en kan op vele schaalniveaus en op verschillende tijdstippen onderzocht worden, met verschillende resultaten. Ook de onderzoeker zelf speelt hierin een grote rol. Daarom is het lastig om leefbaarheid objectief te onderzoeken. In deze studie is er dan ook gekozen voor het onderzoeken van de ervaren, subjectieve leefbaarheid door middel van een enquête, waarin gevraagd wordt naar de vijf belangrijkste facetten van leefbaarheid.

Bereikbaarheid is net als leefbaarheid een veelgebruikt woord. Hoewel het vaak verward wordt met mobiliteit heeft het weldegelijk een compleet eigen betekenis. Het verschil in betekenis wordt vooral duidelijk als men kijkt naar het verschil bij infrastructuurplanning. Waar dat vroeger vooral gebaseerd was op het faciliteren van de mobiliteit is een tegenwoordig veel gebruikte vorm van infrastructuurplanning voornamelijk gebaseerd op bereikbaarheid. Dat komt erop neer dat er niet zozeer gekeken wordt naar de mobiliteitsvraag (hoeveel auto's rijden er op de weg) maar naar hoe men mobiliteit zoveel mogelijk kan voorkomen. Dat laatste is mogelijk door de bereikbaarheid van woonlocaties te verbeteren. Hierbij moet niet alleen gedacht worden aan het uitbreiden van de vervoersmogelijkheden maar vooral ook aan het aanbieden van diensten en het ontwikkelen van werkgelegenheid binnen de wijk, waardoor de vervoersvraag afneemt.

Aangezien het verbeteren van de bereikbaarheid echter relatief hoge kosten met zich meebrengt, is het van belang om te onderzoeken of een hoge bereikbaarheid in het peri-urbane gebied bijdraagt aan de leefbaarheid. Met andere woorden: Is de investering de moeite waard of kan er beter op andere manieren in een hogere kwaliteit van de leefomgeving geïnvesteerd worden?

Om dit te onderzoeken is er in het kader van deze studie een enquête uitgezet onder de inwoners van peri-urbaan Riga (Letland). De reden voor het gebruik van Riga als case voor dit onderzoek is dat Witteveen+Bos bezig is met een mobiliteitsplan voor deze regio. In het kader van dit mobiliteitsplan is het extra interessant om te onderzoeken wat de impact zal zijn van de verbeterde bereikbaarheid op de ervaren leefbaarheid.

In de enquête werden bewoners onder andere gevraagd naar hun mobiliteit, hun ervaren bereikbaarheid en naar hun ervaren leefbaarheid (onder andere naar het lokale aanbod van diensten). Deze gegevens zijn vervolgens in kaart gebracht en per postcodegebied opgesplitst. Naast de enquêteresultaten is er ook een model gemaakt van de bereikbaarheid per postcode. Hiertoe zijn de afstanden tot Riga over de snelweg en het aanbod aan openbaarvervoersmodaliteiten alsmede de kwaliteit (frequentie en ritduur) hiervan uitgezet in een GIS model.

Uit dit GIS model is gebleken dat er drie soorten gebieden zijn. Onafhankelijke, afhankelijke en overgangsgebieden.

Onafhankelijke gebieden zijn vaak wat grotere plaatsen in de regio die hun eigen voorzieningen hebben en ook een grotere werkgelegenheid. Deze plaatsen zijn minder afhankelijk van Riga en nemen een slechtere bereikbaarheid (minder frequent openbaar vervoer, grotere afstand) van Riga dan ook voor lief. In onafhankelijke gebieden is de ervaren leefbaarheid op het gebied van sociale kwaliteit en veiligheid hoger dan gemiddeld, de leefbaarheid schommelt rond het gemiddelde.

Afhankelijke gebieden hebben lokaal een minder groot aanbod aan diensten en zijn dus voor een groot deel afhankelijk van werkgelegenheid en diensten van andere steden, voornamelijk Riga. Verrassend is dat de ervaren leefbaarheid in deze gebieden hoger ligt dan het gemiddelde. Kennelijk nemen de inwoners van deze gebieden de afstand tot Riga voor lief. Deze afstand is dan ook bij afhankelijke gebieden niet al te groot.

Overgangsgebieden zijn gebieden die niet in te delen zijn in één van de twee eerder genoemde categorieën. In deze gebieden is de tevredenheid met lokale diensten relatief laag maar er treedt ook minder pendel op dan in afhankelijke gebieden. Deze gebieden balanceren dus een beetje tussen afhankelijke en onafhankelijke gebieden. In deze gebieden zouden ingrepen in de bereikbaarheid het grootste verschil kunnen maken.

Concluderend kan gezegd worden dat het verbeteren van de verbindingen tussen grote steden en de omringende gebieden niet per definitie een verbetering oplevert. Bij nieuwe infrastructurele plannen zal goed gekeken moeten worden naar de behoeftes van de lokale bevolking. Soms zal het een verbetering van de ervaren leefbaarheid opleveren (vooral in afhankelijke gebieden), soms zal het weinig bijdragen en is het beter om het geld te investeren in een verbeterde dienstverlening in de betrokken gebieden. Overgangsgebieden zullen een keuze moeten maken voor afhankelijkheid of onafhankelijkheid en beleid moeten ontwikkelen wat in lijn is met deze keuze. De keuze zal vooral afhankelijk zijn van de afstand tot het dichtstbijzijnde dienstencentrum.

Summary

The world is rapidly urbanising. According to the United Nations, 69% of the earth's inhabitants will live in urbanised areas by 2050. This explosive growth will lead to a large demand for housing within the big cities. Because space for expansion within city boundaries is limited, cities are forced to expand. A lot of new neighbourhoods are being built in the peri-urban areas around cities. The development of jobs and services in these areas lags behind. This means that citizens are forced to commute between house and workplace. Since travel time is usually considered wasted time, this is an unwanted development. Besides travel time, traffic has a lot of negative impact on the environment, but how does traffic and accessibility influence liveability?

In this study, the connection between liveability and accessibility has been researched. How highly do they value and how important do inhabitants of peri-urban areas find the accessibility of services and jobs? In other words: how does the accessibility of jobs and services influence the perceived liveability?

To answer this question, the first thing to do is to investigate the proper meaning of the words liveability and accessibility and how to operationalize them. A literature study has been conducted to gain more knowledge about the current usage of the terms. From the literature study it appears that *liveability* is a term that is widely used and has many different meanings. In some cases the term might be used to state that a certain area is suitable for life. This biological meaning is nothing more than a statement that the mere conditions for life to exist are met. Other studies use liveability in a more sociological sense. These studies aim at social quality and strong social ties as the most important indicator for liveability. Especially in the last decade, the sociological meaning of the term has gained importance, but it's not all-encompassing. Liveability consists of many different aspects and can be researched on different scales and at different times. It is very hard to do objective research in the field of liveability, the researcher plays a role in this as well, influencing the results. Because of these problems, for this study the subjective liveability has been researched, focusing on the opinion of inhabitants. This was done through a survey, asking about people's opinions on five of the most important fields in liveability.

Accessibility is, like liveability, a much used word. Although this word is often confused (erroneously) with mobility, they both have very different meanings. The difference in meaning comes to the surface when different approaches to infrastructure planning are reviewed. While in previous decades infrastructure planning was focused on facilitating mobility, newer approaches take a different course, enhancing accessibility. The difference is that the first approach examines the traffic flows and builds infrastructure with enough capacity to facilitate these flows. The newer approach does not only look at traffic flows, but also examines possibilities to decrease the demand for mobility by placing services and jobs closer to the living environment.

Because improvements in infrastructure are usually costly investments, it is worth researching if these investments actually help improving the living situation in these peri-urban areas. In other words: are these investments worth their money or are there other, more cost-effective ways to improve liveability?

To answer these research questions, a survey was done among citizens of Pieriga (the region around Riga, Latvia). The reason for using Pieriga as a case in this research is that this study was done in the light of a mobility plan, written by the Dutch consultancy firm Witteveen+Bos. In the light

of this project, it is interesting to see the impact of accessibility improvements on perceived liveability.

In the survey, people were asked about their mobility, their perceived accessibility and their perceived liveability (which, among other things, includes service proximity satisfaction). This data have been combined by postcode and entered into a GIS model. Besides the data from the survey, accessibility data has been entered into the GIS model. Public transport connection quality (travel time, frequency) and car accessibility (distance to Riga, distance to highway) have been combined in the model. From this GIS model, three different types of areas appear to be present, independent, dependent and transitional areas.

Independent areas are usually slightly bigger towns that boast their own services and offer more employment opportunities. These places are less dependent on Riga. Inhabitants of these places take a lower accessibility (less frequent public transport, longer travel time) of Riga city for granted. While accessibility might be lower than expected, liveability is higher. These areas score especially good on social quality and safety issues.

Dependent areas have less locally available services and jobs, and are largely reliant on bigger cities like Riga. Surprisingly, liveability in these areas is higher than average. Most of these areas are located within 25 kilometres of Riga, so apparently people do not mind the (short) commute or the short travel time to make use of services.

Transitional areas can't be put under one of the two previous categories. In these areas, the satisfaction with local services is low, but at the same time there is not much commuting. These areas balance between dependence and independence. Improvements of accessibility in these areas would be most influential, making them either dependent by improving connections with Riga, or independent by improving local service availability.

The conclusion of this research is thus that improvements in infrastructure in peri-urban areas do not guarantee an improvement in the liveability of these areas. With every new infrastructure plan it is important to take into account the effects on liveability and the wishes and needs of the local community. Sometimes these improvements will result in a higher liveability (especially in dependent areas), but sometimes the impact will be low and it will be more effective to invest the money in other projects that have a higher impact on the liveability like more locally available services. Transitional areas will need to make a choice to become either a dependent area and invest in good connections with the service centre, or become an independent area and invest in local services. This choice is largely dependent on the distance to the nearest service centre.

List of figures

Figure 1: Schematic representation of research.....	17
Figure 2: Source: Norris & Pittman, 2000	21
Figure 3: The basics of liveability (Leidelmeijer & van Kamp, 2003).....	25
Figure 4: SOURCE: (Leidelmeijer & van Kamp, 2003).....	27
Figure 5: Sustainable Liveability and Quality of Life (Source: Shafer, Lee, & Turner, 2000).....	30
Figure 6: Sustainable Liveability concept (SOURCE: Author)	30
Figure 7: Gasoline use and urban density (source: Newman & Kenworthy, 1989).....	32
Figure 8: Travel Time Budget compared to Income (Schafer & Victor, 2000).....	34
Figure 9: Geurs, Boon, & van Wee, 2009	36
Figure 10: GDP Growth Development Latvia (Source: Eurostat)	43
Figure 11: population projection Latvia (Eurostat, 2010).....	45
Figure 12: Children per woman (World Bank, 2010)	45
Figure 13: Provincial (planning region) boundaries (http://mapsof.net/uploads/static-maps/)	46
Figure 14: Spatial Plans in Latvia (by author)	47
Figure 15: Local administrative boundaries (Wikipedia commons).....	48
Figure 16: Municipalities by the number of inhabitants (SOURCE: TRA (MOT) 2008)	49
Figure 17: Survey composition.....	52
Figure 18: Liveability Factors	56
Figure 19: Liveability results.....	57
Figure 20: Commuting to Riga	95
Figure 21: Frequency of trips to Riga	96
Figure 22: Satisfaction with different services	99
Figure 23: Frequency of usage of different services.....	100
Figure 24: Liveability indicators	101
Figure 25: Liveability indicators	103

List of Maps

Map 1: Responses per postcode	61
Map 2: Train map of Pieriga.....	63
Map 3: Bus stations in Pieriga.....	64
Map 4: Service-satisfaction level.....	65
Map 5: Commuting by people with jobs	67
Map 6: Total (weighed) liveability indicators	67

List of tables

Table 1: Difference in gender between sample and population	54
Table 2: Three types of categories for postcode areas.....	66
Table 3: Factors in independent areas.....	68
Table 4: Factors in transitional areas	69
Table 5: Factors in dependent areas	70
Table 6: Gender	85
Table 7: Household Size	87
Table 8: Crosstab of Household Size and Children.....	88
Table 9: Travel to Riga by Housetype	89
Table 10: ANOVA test for travel to Riga by Public Transport.....	89
Table 11: Employment types	91
Table 12: Commuting for different employment types.....	92
Table 13: Car Ownership in Pieriga	93
Table 14: ANOVA test of Distance to Riga.....	94
Table 15: Car usage for trips to Riga	97
Table 16: Public transport usage for trips to Riga.....	97
Table 17: Opinions on public transport	102
Table 18: Expectations of change in own neighbourhood	104
Table 19: Expectations of change in Latvia.....	104

Contents

1.	Preface.....	13
1.1.	Introduction.....	13
1.2.	Motive.....	14
1.3.	Methodology.....	15
2.	Introduction to part A.....	20
3.	Liveability.....	21
3.1.	The rise of liveability.....	21
3.2.	Liveability through time.....	22
3.3.	Choices in researching liveability.....	24
3.4.	Quality of life.....	28
3.5.	Sustainability is liveability.....	29
4.	Accessibility and mobility.....	31
4.1.	Defining Accessibility.....	31
4.2.	Defining Mobility.....	32
4.3.	Mobility and social cohesion.....	35
4.4.	Accessibility planning versus mobility planning.....	36
4.5.	Accessibility is sustainable mobility.....	38
5.	History of Latvia & Riga.....	42
5.1.	Introduction.....	42
5.2.	Foreign Powers and the strive for independence.....	42
5.3.	European Union.....	43
5.4.	Trends.....	44
6.	Planning Framework.....	46
6.1.	State Structure.....	46
6.2.	Spatial Planning System.....	46
6.3.	Official planning instruments.....	47
6.4.	National level.....	47
6.5.	Municipalities.....	47
6.6.	Regional level.....	48
6.7.	Change in planning law.....	49
7.	Survey Findings.....	52
7.1.	Introduction.....	52
7.2.	Methodology.....	53
7.3.	Demographics.....	54
7.4.	Mobility.....	54
7.5.	Accessibility.....	55
7.6.	Liveability.....	55
7.7.	Conclusions.....	57
8.	GIS Model.....	60
8.1.	Introduction.....	60
8.2.	Methodology.....	60
8.3.	Results.....	68
8.4.	Conclusion.....	70
9.	Conclusions.....	74
9.1.	Introduction.....	74
9.2.	Conclusions.....	74
9.3.	Recommendations.....	76
9.4.	Discussion.....	77
10.	References.....	79
11.	Appendix 1: Complete Survey Findings.....	83
12.	Appendix 2: Complete Survey.....	106

1. PREFACE

The outcome of the city will depend on the race between the automobile and the elevator, and anyone who bets on the elevator is crazy.

-Frank Lloyd Wright, architect

1.1. Introduction

According to the United Nations, in 2050, over 69% of the people on the planet will live in urbanised areas, up from 29% in 1950 according to the United Nations (United Nations Economic & Social Affairs, 2007). Because cities cannot handle this large influx of residents within their original boundaries, cities will have to grow. In some cases this will lead to the emergence of completely new cities, but in most cases it will result in the growth of existing cities. Many new dwellings are being created on the outskirts of cities or in neighbouring towns. Meanwhile, the creation of jobs and services in these areas lags behind, creating a geographical distance between people's work and living environments. This distance causes the growth of transport; people are forced to travel to go to work, to go shopping, to get medical attention, or for their education. Since most people regard travelling as a waste of time, minimising this is high on the list of policy makers' wishes.

Travel time minimisation is nonetheless a costly business. Governments spend billions of Euros each year on mobility and accessibility, building roads, subsidising public transport facilities and decreasing congestion using all kinds of measures. Because of these investments, travel has gotten a lot easier, faster and more comfortable in the last few decades. Meanwhile it didn't influence the amount of travel people undertake, the average number of hours people travel has remained the same.

To defend these large investments policymakers use the argument that mobility is something to be cherished. Higher mobility is linked to higher economic prosperity and wealth, but does higher mobility lead to a higher quality of life and a better opinion of the living environment? Do people prefer to live a little further away from the city, enjoying the extra space in the peri-urban area even though this means they have to travel a longer distance to get to work or to make use of other services? The existence of large suburbs in the USA indicates that this is the case, people in the United States apparently prefer living in bigger houses in distant suburbs and drive to work each day over living in smaller apartments in the more accessible city centre.

It might be different in a European context. Traditionally, European cities have been very compact and even recent city extensions are densely populated compared to their American counterparts. In the so-called peri-urban areas, on the edges of cities, where there are less employment opportunities or services available, people rely on transport for most of their activities. But how important is the accessibility of services and jobs in these areas? Is there a connection between the way people feel about their environment and the accessibility of it?

Considering the increased pressure on peri-urban areas due to expanding cities, sub-urbanisation and the dependency on car transport for many of the new inhabitants of suburban areas, accessibility problems are primarily at hand in the urban fringe. There are not enough people to support an intensive and frequent public transport system in the low-density areas surrounding bigger cities. This introduces a dichotomy in these areas. People who can afford it drive their cars, people who can't afford it are dependent on less reliable and infrequent public transport connections.

At first sight, this seems to be a problem, but is this really so? Some people in peri-urban areas make a conscious choice to live there, knowing that accessibility is not as good as in the city. Other people can't make that choice and are bound by family or work ties. For the first group of people, a lack of public transport accessibility will be less of a problem. They prefer a better living environment over public transport accessibility. Many will have their own means of transport and are thus not dependent on public transport systems. For this group, road accessibility will be more important. This means that there is ample parking space, enough road capacity and a dense road network, so they can get to their desired location as quickly as possible. For the second group, the group who does not have the availability of private transport, public transport availability might be much more important. This group will have more trouble gaining access to the job market and will spend more time travelling to different locations for services or shops. This study will focus on these questions, examining the relationship between accessibility and liveability using the case of the area surrounding Riga, Latvia.

1.2. Motive

So why research accessibility and liveability in Latvia? First of all, this research is done as a master thesis for the master of Environmental & Infrastructure Planning, which focuses among other things on international policy comparison. This makes it more appropriate to find a study subject abroad. Why Latvia? The reason for choosing Latvia is that this research is done in the light of a bigger project that was commissioned by the ministry of transport of Latvia. This project is called the "The Development of Mobility and Action Program for Riga and Pieriga" (RPMP). The RPMP is meant to "answer the traffic and transport problems which the Ministry of Transport is facing, contributing to spatial, ecological, economical, social and institutional optimization." (Witteveen+Bos, 2009). This project is undertaken by the Dutch engineering and consultancy firm called "Witteveen+Bos". The RPMP has the following objective:

'To determine necessary actions in order to promote unified traffic infrastructure development in Riga and Pieriga, thus improving accessibility of the territory'
(Witteveen+Bos, 2009).

The final goal of this mobility plan is thus to improve accessibility. The goal of improving accessibility is not a goal by itself though. Accessibility for the sake of accessibility is worthless, since most people regard travel time as lost time and thus want to spend as little time in transit as possible. There

must be an intrinsic assumption that improving accessibility has other effects on society. These effects can be either ecological, economical or social. From the objectives of the RPMP and the background, some intrinsic policy goals can be distilled. These goals are: improvement of the road safety, a decrease in congestion, better facilities for non-motorised and public transport, higher air quality and a more efficient institutional framework.

Some of these goals contribute to an improved accessibility; improving accessibility contributes to some other goals. The overall goal of this project is thus higher; it needs to increase the quality of life in the region. Or, as Wachs & Kumagai argue: “accessibility might, therefore, be included as an important component of a “social report” for a city or region” (Wachs & Kumagai, 1973). That’s why, in the light of the RPMP, the link between liveability and accessibility is researched.

Research Questions

To get a better grip on accessibility and liveability, the following research question has been formulated:

Is there a relationship between measured accessibility and perceived liveability in peri-urban Pieriga?

This question is split up in the following sub-questions:

1. What is liveability and accessibility?
2. What is the level of liveability and accessibility in Pieriga?
3. What can be learned from the relationship between these two factors?

To answer these questions, this research is split up in three parts, each answering one of the sub-questions. Part A will deal with the theoretical background of the terms liveability and accessibility and will serve as a framework for this thesis. In part B, the theory will be tested according to empirical research in Riga, Latvia. Part C will draw conclusions on the relationship between both factors and the lessons that can be learned from that.

1.3. Methodology

A schematical overview of the research can be found in Figure 1. From this figure, two fields of research can be distinguished, liveability and accessibility. These topics follow their own line of research, from theory to operationalization, to empirical study. In the following paragraphs, the steps taken are explained. This research is composed of two parts, followed by a third part containing the conclusions and recommendations. To get a better understanding of the matter at hand, part A consists of a literature study, analysing existing literature and theories that underlie the concepts of liveability and accessibility. The true meaning of both concepts will be explored, as will the change in the meaning of the words over time. Besides these terms, other connected concepts like mobility and sustainability will be touched upon. This will result in a definition of the words that will be used throughout this thesis. Besides the theoretical framework, part A will explain the institutional framework of Latvia. This chapter is added to provide the reader with a better overview of the current Lat-

vian situation and trends that are to be expected in the near future. This will also explain the difficulties in Latvian planning.

The result of the theoretical part A will be a good overview over the factors that influence liveability and accessibility and how they are relevant to this research. Besides the theoretical framework, part A will also give an explanation of the Latvian institutional framework giving some insight in Latvian society, history and current trends.

Part B of this research consists of an empirical study into accessibility and liveability in the Latvian region of Pierīga. The first chapter of part B gives the reader a summary of the findings from a survey on liveability and accessibility that was done in the region. The second chapter of part B will explain how a geographical model was produced to compare results from the survey to geographical factors. This will make it easier to identify trends and correlations in different areas surrounding Riga.

Part C of this thesis contains the general conclusions that can be drawn from the geographical data and the survey. The main trends will be identified and an explanation for these trends will be given. This chapter ends with some general recommendations concerning accessibility planning in peri-urban areas and a discussion of the data. The final chapter will give some recommendations for further research.

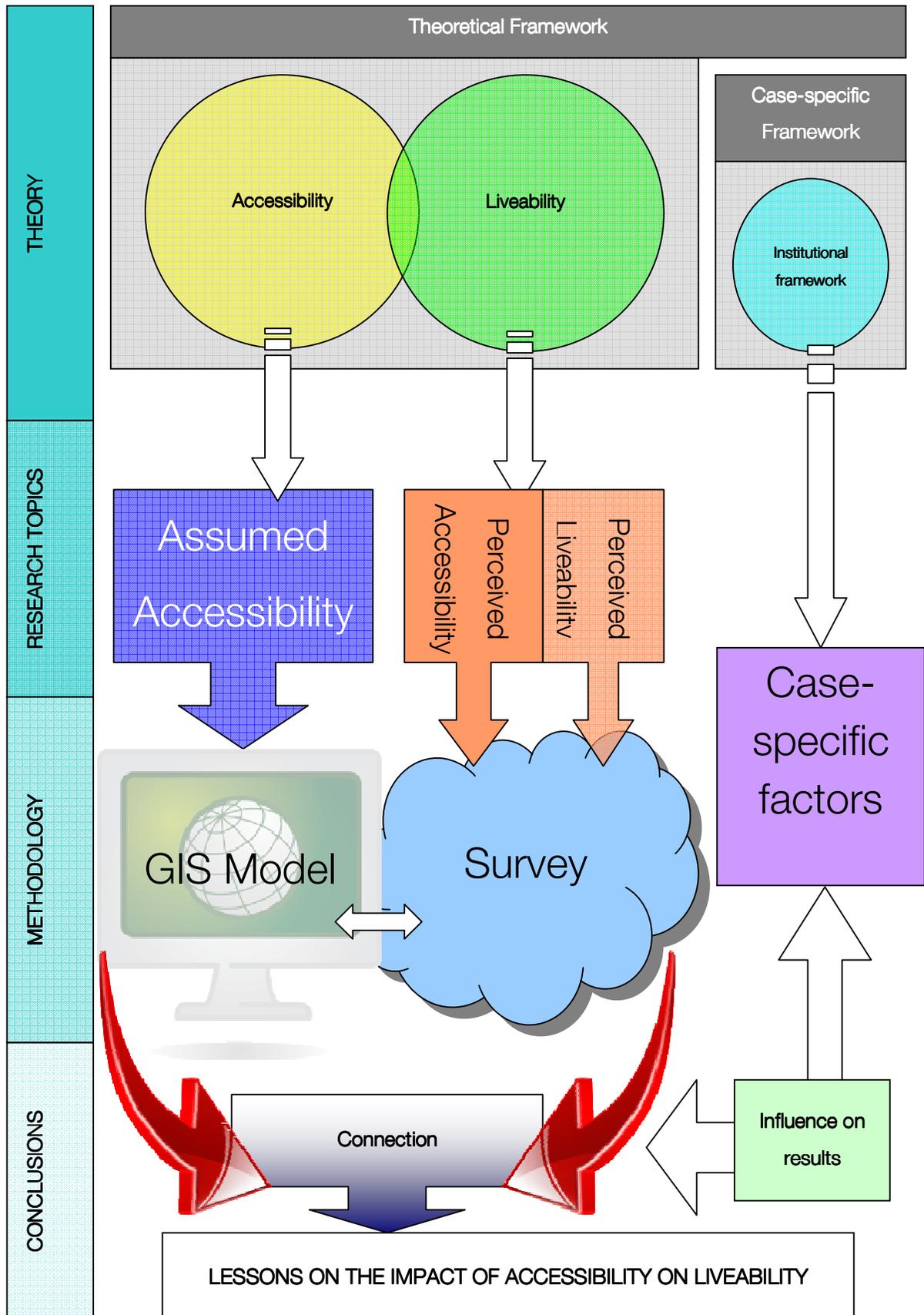
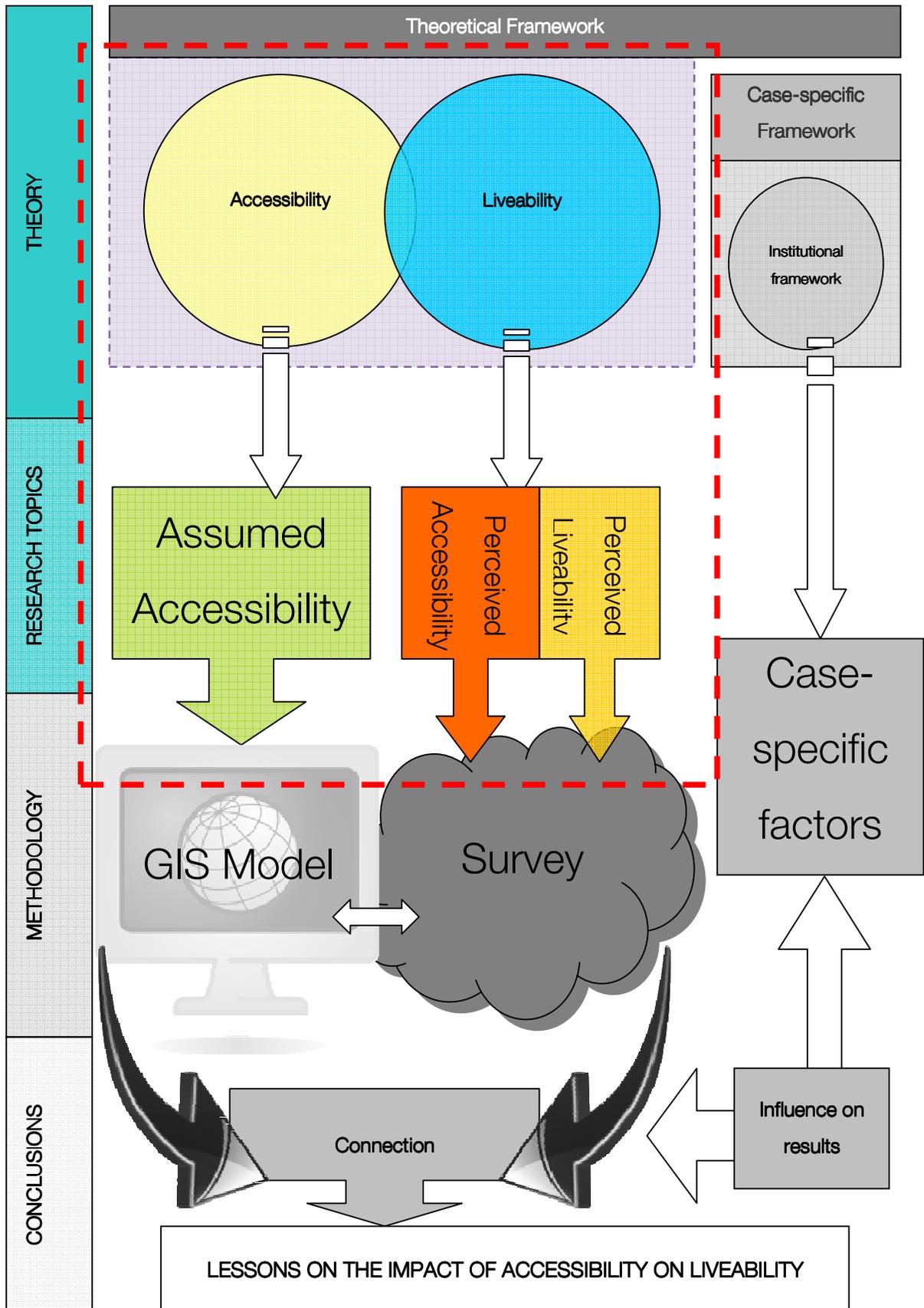


Figure 1: Schematic representation of research



part a1
theoretical
framework



2. INTRODUCTION TO PART A

“Before beginning a Hunt, it is wise to ask someone what you are looking for before you begin looking for it.” - Winnie the Pooh

This thesis is a hunt. A hunt for the answers to my questions, a hunt for the connection between accessibility and liveability. As Winnie the Pooh said, it is important to know what you are looking for before you begin your hunt. That is why part A1 of this thesis is about defining what we are looking for. What we are looking for is also the basis of research question 1: “*What is liveability and accessibility?*” They are familiar and interesting sounding words, but what do they actually mean? A search on Google reports just under a million hits on liveability, 56 million on mobility and over 100 million hits on the word accessibility. At least one can say that the terms are used frequently. But these concepts can be interpreted in many different ways, that’s why part A will explore the different definitions used for these terms and will give an overview over the historical changes that have occurred in the usage of the terms. The main concepts described in this chapter are liveability and accessibility, but the differences with the related and often mis-used concept of mobility are explained as well. The first chapter will identify the trends in the historical and current meaning of liveability. The chapter will focus on describing and analysing previous and current definitions, identifying the change in the meaning over time. At the end of the first chapter, the final definition of liveability that will be used throughout this thesis will be stated.

The second chapter is about accessibility. This term, like liveability, has multiple meanings. In this chapter the different meanings will be identified and the relevant meanings will be highlighted. After that, the influence of the concepts accessibility and mobility on infrastructure planning will be explained, along with the confusion, included in the term mobility and why that sometimes contradicts accessibility.

Part A2 deals with the Latvian institutional framework for this thesis. A short history of Latvia will give a basic understanding of its history and culture. The next chapter will give an introduction into the Latvian government system, after which some interesting aspects of the Latvian planning system will be discussed to give the reader a better understanding of Latvian society and the role of different levels of government in spatial planning in the country.

3. LIVEABILITY

3.1. The rise of liveability

The term liveability is ambiguous in its meaning, but nonetheless, it is very attractive as a policy goal because it is a so-called catch all concept (Veenhoven, 2004). Its meaning is diverse and covers different facets of communities (see Figure 2). A second reason why it is such an attractive policy goal is that the implications of deteriorating liveability are clear. If liveability drops, the people who can afford it will move to other locations, leaving the area to the people who are not in a position to move, causing the start of a potential negative spiral. On the other hand, regions with a high level of liveability will have an (internationally) good reputation, increasing chances of attracting new businesses and citizens. International magazines pay quite some attention to liveability indicators in different cities. (Mercer, 2010).

The reason liveability as a policy goal has gained so much momentum lately is probably the economical *and* ecological implications of the term. You can promote liveability from a competitive economy point of view, attracting international businesses, but you can also promote liveability from an ecological point of view, stressing the fact that sustainable cities are liveable cities, as will be described in paragraph 3.5. This chapter will introduce the concept and it will pay attention to the different factors that are implicitly or explicitly underlying the use of liveability.

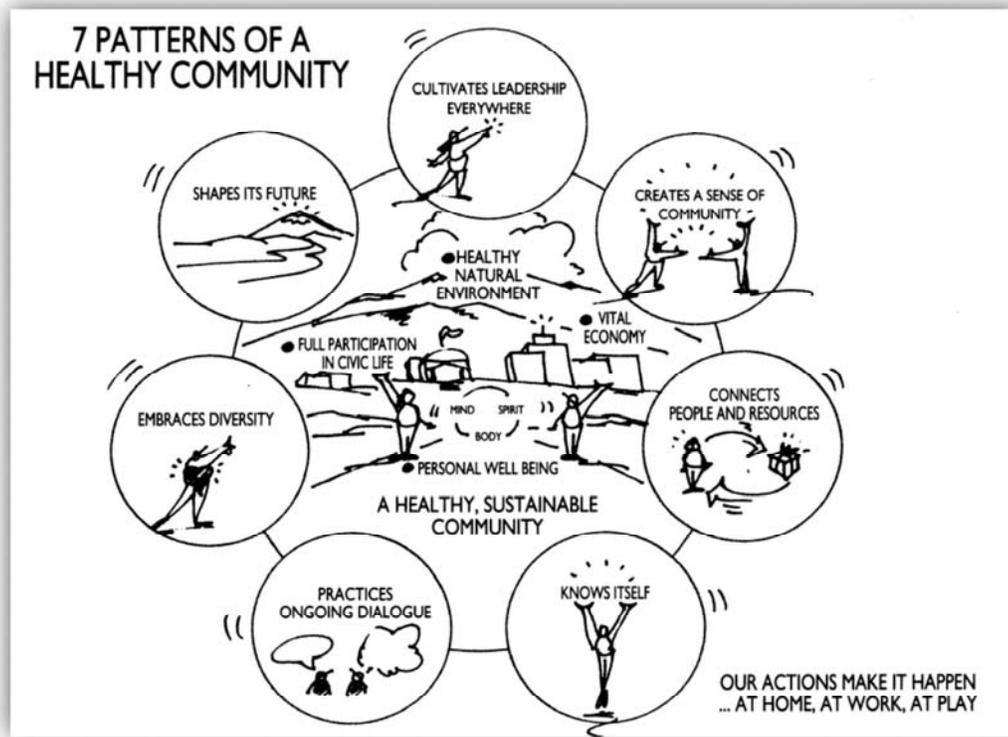


Figure 2: Source: Norris & Pittman, 2000

Especially in the Dutch language, liveability (*leefbaarheid*) is a much-used term. Every second year the Dutch Ministry of Housing, Spatial Planning and the Environment (VROM) does a survey and reports the liveability of every single neighbourhood in the Netherlands. This tool is then used to identify problem areas and monitor their progress. (Ministerie van Volkshuisvesting Ruimtelijke Ordening en Milieubeheer, 2008). Besides being a popular word in policy documents from (central) government, it's also used a lot in the media. The word liveability has even been adopted by a political movement in The Netherlands which has attracted a lot of voters, especially in local elections, stressing the popularity of the concept among citizens. A search in the Dutch national newspaper archives by this author resulted in 519 articles mentioning the word liveability published in the last 12 months. The topics of these articles differ from matters of global sustainability (Koorstra, 2010) to a strike at a local trash handling company (Haighton, 2010). This illustrates the different meanings the word liveability has.

●→ *Liveability as a policy goal is gaining momentum, but there is no universal definition of the word. A further exploration of the term is necessary*

3.2. Liveability through time

In the true technical meaning, the word means no more than “suitable for life”. Biologists use this term for determining if life is feasible at a certain location (Veenhoven, 2000). In that sense, the term liveability only means that the mere conditions for life, like the availability of oxygen and water and the absence of extremes, are met. According to this meaning, practically every location on earth is liveable. In real life, this is of course not the case. So what defines “real” liveability as it is being used?

Research on the topic of liveability indicates a change over time in the meaning of the word. In the second structural scheme for traffic and transport, published by the Dutch ministry of transport in 1986, liveability is described in environmental, quite technical terms of greenhouse-gas emissions, noise pollution, and traffic safety. Besides these factors some ecological factors, like the fragmentation of nature reserves and agricultural land are taken into account. The negative effects of mobility on these factors are mitigated by technical innovations, like the use of catalysts in automobiles and in design factors like the way a new road is integrated in existing landscapes (Ministerie van Verkeer en Waterstaat, 1986)

Over the years a paradigm change is noticeable. Since 1986, the focus shifted more and more from a technical-biological perspective to a social perspective. In the Dutch fifth spatial strategy, as decided by the government in 2004, but not accepted by the parliament, liveability is no longer a matter of air quality and living standards. Liveability is about the segregation between poor and rich people, about social structures in the cities and about networks (Ministerie van Volkshuisvesting

Ruimtelijke Ordening en Milieubeheer, 2001). This indicates a clear move away from quantitative methods of defining liveability towards subjective, qualitative methods. In the liveability survey, which has been held in several Dutch cities (mentioned before), questions asked are not about air pollution or about noise disturbance. Questions asked are about the urban amenities in the neighbourhood. Are there enough streetlights, are there enough playgrounds? Questions asked are about more social indicators like “do you feel at home in your neighbourhood?” or “Are the people in your neighbourhood friendly towards each other?” (Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer, 2006)

The reasons for this change are not entirely clear, but it is quite probable that improved attention for environmental deterioration of the living environment caused a rapid increase in environmental quality. Technical innovations and different policy measures caused a steep drop in noise and air pollution in the early 1990's, reducing the attention to the subject. While less attention was paid to environmental problems, more attention was given to social segregation and immigration problems, which might have caused the change in paradigm in the Dutch approach to liveability.

The Netherlands is not the only country with a long history in liveability research. International scientific journals have given the topic quite a lot of attention in the last two decades. In 1995, American political scientist Robert Putnam published an article on the decline of American civil society. This influential article links social capital to liveability with the sentence “life is easier in a community blessed with a substantial stock of social capital” (Putnam, 1995). Putnam argues that mobility (by disconnecting people from their neighbourhoods) is one of the factors contributing to the decline of social capital, leading to a decrease in quality of life. This article indicates the start of increased attention to the role of social networks to the quality of life and including these factors when defining liveability.

In the late 1990's, liveability gains momentum, also in the United States. The Clinton administration published a liveability agenda which focuses on improving sustainable growth and to safeguard a high quality of life. The tools used in this agenda are large investments in public transport, subsidies for the promotion of improved transportation planning and grants to develop smart growth strategies. Furthermore, \$9.5 billion was made available for enabling state and local governments to reserve green space and restore parks (Sustainable Communities Network, 2000). This indicates that the Clinton administration specifically links liveability to transport and green space.

In the year 2000, an extensive study by Ruut Veenhoven examined the proper meaning and usage of the word. This research found that while the real meaning of the word is a matter of “existential necessity”, the word is used in a context of personal taste in most policy documents. It has gained a whole new semantic meaning in different settings. In a natural setting, the word is associated with

natural values and creating a place where nature can develop by itself. In a political context, the word is usually used as a denominator for a lot of terms that deal with social coherence and feelings of safety and connectedness. In a healthcare context, liveability means that a certain level of services is available, guaranteeing a certain amount of choices for each individual that is in need of care (Veenhoven, 2000).

The Netherlands Institute for Social Research has also done comprehensive research into the concept of liveability. In their report on social coherence, liveability and safety called “*Zekere Banden*” (certain ties), they explore the term liveability. According to their research, liveability is constructed from three factors: safety, social coherence and the physical quality of the living environment. Each of these factors is built up from different aspects, resulting in a very comprehensive and diversified definition of liveability (Sociaal en Cultureel Planbureau, 2002). The main idea in this publication is nonetheless that social cohesion is considered to be one of the main contributors to liveability.

In recent years, the Dutch government shows a lot of interest for the concept, but usually in a socio-economic context. Notable is the study by the ministry of transport, spatial planning and the environment called the “*Leefbaarometer*” (Liveability barometer). This study uses a survey of 49 indicators in six different categories to test the liveability in every postcode area in The Netherlands. The definition of liveability used in this research is: “Liveability is the extent to which the environment is consistent with the requirements and desires of the people” (translation from Dutch by author) (Ministerie van Volkshuisvesting Ruimtelijke Ordening en Milieubeheer, 2008).

The historical evolution of the concept of liveability reveals some issues in defining the concept of liveability that are raised by several different authors. In the next few paragraphs, these questions will be dealt with, identifying some critical dilemma’s when talking about liveability. Nonetheless, from the previous paragraphs it is clear that liveability is a very subjective term that should be used with care.

The definition of liveability has changed over time. Environmental, social and economical factors all play a role. The definition used in this thesis is “the extent to which the environment is consistent with the requirements and the desires of the people”

3.3. Choices in researching liveability

As can be concluded from the previous paragraph, liveability is a complex term with a lot of facets. To comprehend such a faceted term, it is easier to conceptualise it into a schematic representation, a *liveability matrix*. Figure 3 is such a schematic representation of the different scales and domains (factors, for example social quality) that make up the indicators when researching liveability. Each domain can be researched on different scales and for each scale/domain of choice, one can re-

search objective or subjective liveability. Besides these choices, liveability changes over time, so the results will change over time.

Each of these aspects will be discussed in this chapter, starting with the difference between objective and subjective liveability. After that, the geographical scale will be discussed, finishing with the level of specificity of the domain.

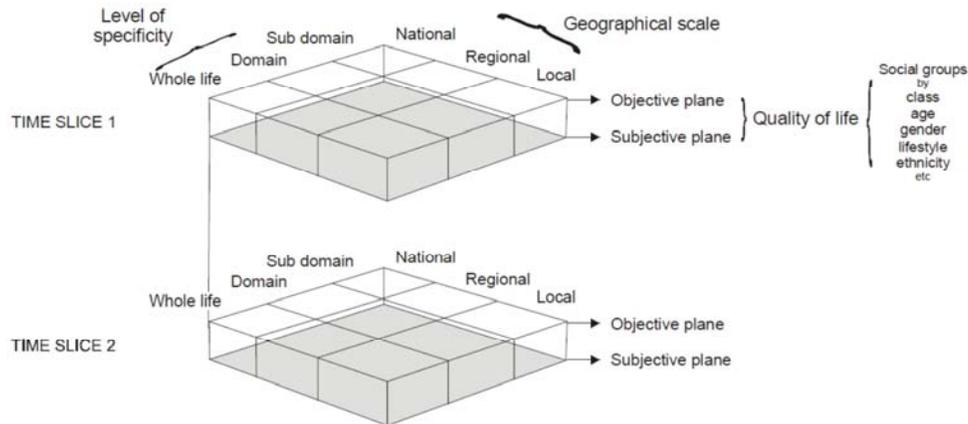


Figure 3: The basics of liveability (Leidelmeijer & van Kamp, 2003)

When speaking about liveability factors, there is a big difference between the subjective, or perceived liveability, analysed in surveys and interviews, and objective, or assumed, liveability. The first one is mostly described in qualitative measures, testing how much people like their living environment and how they appreciate certain characteristics about their neighbourhoods. Measuring objective liveability is testing the level of access to services, facilities and amenities in a certain geographical area, calculating the minimum level of access to services needed for human life and analysing the assumed level of liveability a certain area has. Both approaches have their advantages and disadvantages.

Perceived liveability, according to Rybczynski (cited in (Moore, 2000)) is like an onion. On the outside, it appears to be simple, but when you dissect it, there are many layers. Each layer by itself doesn't tell you much about the entire onion, but it's hard to describe all the layers together. This makes it difficult to come up with a general definition of the term 'perceived liveability'. Different authors have tried to make the concept concrete and measurable (van Kamp, Leidelmeijer, Marsman, & de Hollander, 2003; Diener & Suh, 1997; Hooimeijer, Kroon, & Luttik, 2001) but there is no real consensus on the meaning.

Another problem is that perceived liveability is in multiple ways subjective. It is not only dependent on the person surveyed but also on the surveyor, who designed the questions and decided on which indicators to use. These choices are determined by your (subjective) view of the concept, introducing bias in every research. Nonetheless, researching perceived liveability can be very valuable, since

it provides you with information about the opinion of the citizens, which in the end is the most important for policy makers, because it determines political and social success.

Objective liveability is often used in an architectural setting, linking urban design to social theory. Smith et al. have done an extensive review of physical elements influencing the quality of life in an urban environment (Smith, Nelischer, & Perkins, 1997). In their study, they identified six domains with several sub-domains that define urban quality. One of the domains is liveability. The authors use a very narrow definition of liveability: “Livability represents the basic qualities that must exist for a community to be successful, consisting of survival, personal health and development, environmental health, comfort, and safety and security.” (ibid). Nonetheless, their list of factors influencing liveability gives us some idea of an architects’ approach to the term.

When researching objective liveability, every researcher has to make assumptions to what is necessary to make a certain neighbourhood liveable. To make a good assumption, a lot of information is needed about the demographics, culture and of the area you are researching, and even then, some facilities that are assumed to be necessary but are not available might not be deemed necessary by the inhabitants. Especially in a cultural different environment, it is hard to make the right assumptions. That’s why this research will focus on perceived liveability, looking for people’s opinion on their living environment instead of calculating the number of services and making assumptions about their importance.

Another important factor in every research, but especially in addressing liveability issues, is the *scale* of the research. It’s possible to research liveability on a micro-, meso- or macro-scale. Every scale has a different approach and a different result. At the micro-scale, it results in several interviews over time with the same resident or a survey of a household, resulting in the description of a personal opinion. On the meso-scale, liveability can be researched within a certain geographical area. You can assess the liveability of a neighbourhood, a town or a census area. This is the kind of liveability research conducted in the Dutch liveability barometer, the “Leefbaarometer” (Ministerie van Volkshuisvesting Ruimtelijke Ordening en Milieubeheer, 2008). Result of this kind of research is a comparison of liveability between neighbourhoods or towns. On a macro scale, liveability is usually understood as the level of quality of life. On this scale it is possible to compare different cities or countries.

One more issue to consider is that when conducting liveability research it is important to decide whether you assess the liveability *by place, or by people*. When researching liveability over time, it makes sense to assess the change in liveability. Several surveys at different times are appropriate. Since places are (relatively) static, but people are not, one has to decide whether it is useful to interview the people who live in one area several times over a period of time or to interview the same

people several times regardless of their current living environment. People might have moved, influencing the outcome of the survey.

Finally, one of the most important questions in the light of this research is the question *which domains to include* in a liveability study. A lot of literature research has been done in this field, resulting in several schematic visualisations of the entire field of liveability. Although each scholar has identified their own indicators, there are some indicators that should be included in any research on liveability. These indicators can be divided into several different domains, visualised in Figure 4. This list of domains is not extensive, since every study of liveability uses different variables. Nonetheless, this scheme is the result of a very elaborate study into the concept, resulting in the best representation so far.

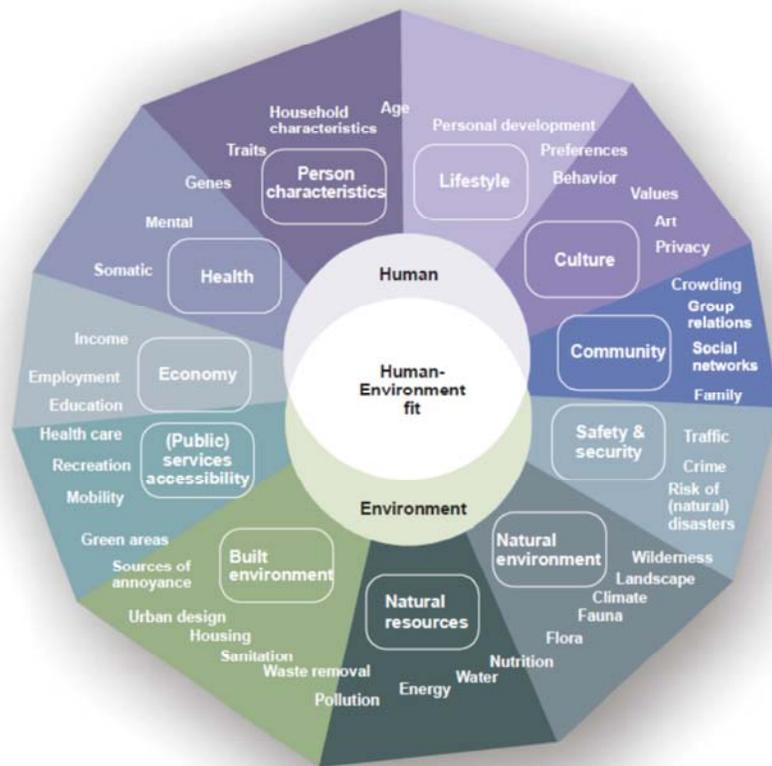


Figure 4: SOURCE: (Leidelmeijer & van Kamp, 2003)

Because of the wide range of indicators, it is impossible to make a complete, comprehensive description of the liveability situation. Therefore it is important to make choices about which indicators to use. This research is conducted in the light of the Riga – Pierīga Mobility Plan, a project to improve the traffic and mobility situation in the area around Riga, Latvia. Because this is a peri-urban area that is highly dependent on Riga city for its services, the most sensible indicators to use in this

research are therefore in the field of public services accessibility. One of the goals of this research is thus to weigh the importance of accessibility in relation to the total liveability.

One example for the choice of indicators is the research done by the University of Latvia. They have researched sustainability indicators in Riga City to see whether or not Riga was on the pathway to being a sustainable city in the future. These researchers used the European Common Indicators, defined by the European Commission. One of the most important indicators within the list of eleven indicators used is “Citizens’ satisfaction” (University of Latvia, 2005). They operationalized the satisfaction indicator into a survey, asking questions about their satisfaction with cultural possibilities, health and social services, education facilities, public transport and safety issues, among others. The results of this survey will serve as a benchmark for this thesis.

●→ *The meaning of the term liveability depends on whether perceived or assumed liveability is meant, which scale is being used and which domain of liveability is researched*

3.4. Quality of life

In the literature, liveability is often used as another word for quality of life. The definitions of both concepts have a lot in common, but they are not always the same. While liveability is generally defined as the match between the environment and the preferences of the inhabitants, quality of life has three main definitions according to Brock:

The first definition is about living life according to certain ideals or norms. These can be religious or philosophical norms. Quality of life is then defined by how well one adheres to these norms. This definition of quality of life can be useful for philosophical, religious or humanitarian studies; it will not be of much use in studying accessibility. The second definition is about the fulfilment of needs. This approach is largely influenced by economical theories, which state that people are always looking for the best way to satisfy most of their needs. This approach has many advantages, mainly that it's possible to monetarise quality of life. This makes it easy to compare results and to make a list of places with the highest quality of life. The third approach is more linked to behavioural sciences. This approach uses the subjective measurement of personal satisfaction. If a person perceives their life as enjoyable, it is believed to be so (Brock, 1993). When researching liveability, the third approach is the most useful one.

One of the problems when measuring quality of life is that the manner in which quality of life is measured is, just like liveability, by definition subjective (Leitmann, 1999). While there are many examples of researchers looking for the city with the highest quality of life, none of them use the same indicators to define quality of life. Some researchers use very basic human needs indicators or focus on health issues; other researchers have a completely different scope, including indicators like “fun factor” in their research (Diener & Suh, 1997). This makes different quality of life studies incomparable. Nonetheless, within the study, the different results can be compared without any problems.

Leitmann argues that although quality of life is very subjective and it has a lot of bias, it can still be used in three different ways. The first is to compare between cities or regions. Although tempting, this is not very relevant since most people are not completely free to choose the city of their residence, but are bound to jobs, houses and family location. A comparison between cities or regions might be a novelty, it does not have a lot of scientific value. The second use of quality of life comparisons is to identify problems. With the right set of indicators it is possible to identify problem areas within cities, enabling policies to counter them. This makes it a useful tool for local policy makers. The third way to use quality of life indicators is to evaluate the implementation of interventions (Leitmann, 1999).

Because spatial sciences are about human interventions in the environment, and this thesis is about spatial sciences, Leitmann's third use of quality of life indicators is the most suitable one for this research. This research will be about evaluating the effects of the implementation of interventions on the subjective measurement of human satisfaction. This excludes all other kinds of philosophical or religious definitions of quality of life and focuses on the best use of the term quality of life in spatial sciences.

● → *Liveability and quality of life can be interchanged. The term liveability will be central to this thesis, defined as a tool to evaluate the implementation of spatial interventions.*

3.5. Sustainability is liveability

The generally accepted definition of sustainability is "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). Liveability on the other hand is about meeting the needs and preferences of inhabitants now and in the future. One cannot go without the other. Unsustainability leads to decreased liveability and vice versa. Combining these two factors teaches us some valuable lessons. We can partially integrate the extensive literature on sustainability with the literature on liveability. Since sustainability is about the combination of environmental, social and economical factors, liveability must be about the same. Shafer, Lee, & Turner (2000) combine the three fields of sustainability (people, planet, profit), with the concepts of liveability and quality of life, as is illustrated in Figure 5. They put quality of life in the centre of the three circles and put liveability on the overlap between Environment and Community. Although correct in a technical sense, recent literature on liveability suggests that liveability is not just about the environmental fitness for living. Liveability is more about the living environment meeting the needs and desires of the population. This must include economical factors.

For a schematic representation of liveability as it is being used in this thesis, the scheme in Figure 5 doesn't suffice. Liveability is not just about the link between the environment and society. That is a

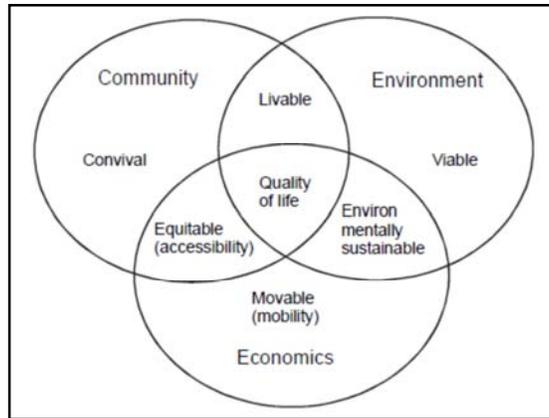


Figure 5: Sustainable Liveability and Quality of Life (Source: Shafer, Lee, & Turner, 2000)

very narrow, technical description of liveability. Because a healthy economy is vital for an environment to match the living requirements from society, now and in the future, real liveability means that there is a match between the environment, society and economy. In modern society, sustainable liveability in the long run means that the place where you live fits the environment, the economical situation and the societal qualities necessary for a long and happy life. Shown in Figure 6, is the sustainable liveability model as proposed in this thesis. It puts liveability at the centre of environmental, communal and economical values. Within this thesis, liveability and accessibility will be linked and their relationship will be researched, assessing the influence of accessibility on the policy goal of optimal liveability.

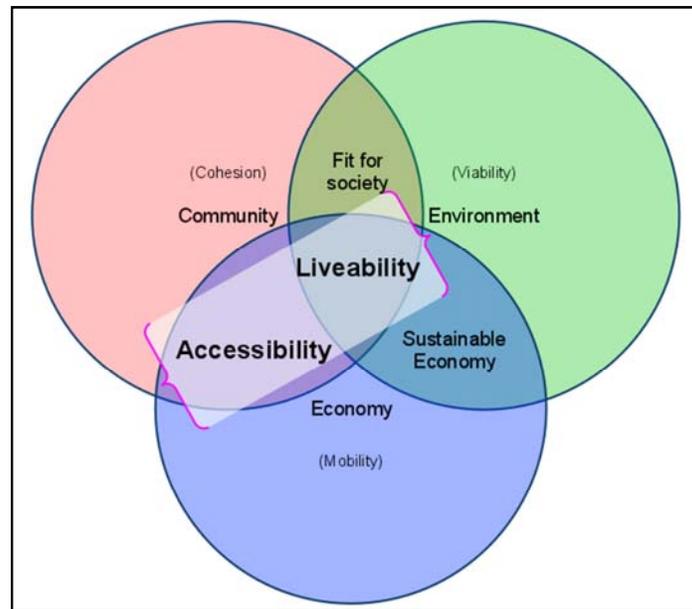


Figure 6: Sustainable Liveability concept (SOURCE: Author)

There are strong links between liveability and sustainability. Sustainability indicators can be translated into liveability indicators. A sustainable neighbourhood is a liveable neighbourhood and vice-versa.

4. ACCESSIBILITY AND MOBILITY

4.1. Defining Accessibility

Accessibility, at first sight, is a very unambiguous concept. In plain English, it means no more or less than how easy it is to get somewhere. The MacMillan English dictionary describes accessibility as ‘an accessible place is easy to find or get to’ (MacMillan, 2007). In science, the term accessibility is not so easily defined or understood. A lot of authors have tried to come up with a universal, generalised definition of the term, without much success. Hansen describes accessibility as ‘the potential of opportunities for interaction’ (Hansen, 1959). This means that accessibility is different for every person, business or service. Because it doesn’t make a distinction between the locations where this interaction takes place, this definition makes it possible to use accessibility both on the supply side and the demand side. It can mean either the accessibility of a business or the accessibility of a house, neighbourhood or town.

Other notions of accessibility include the definition by Dalvi & Martin, they focus on the transport side, by describing it as how easy it is to go from location A to location B using a specific transport system (Dalvi & Martin, 1976). This means that accessibility is largely defined by the capacity of the transport system between two specific locations. This definition sounds easy and is still used as the basis of transport planning, but a proper explanation of how to operationalize the term and how to make it measurable is not given.

Schoon, McDonald, & Lee argue in their study in 1999 that there is no clear definition of the term accessibility. Instead, they focus on the operational indicators used to measure accessibility. In their opinion, travel time and travel costs should be the main indicators in transport planning, leading to increased accessibility (Schoon, McDonald, & Lee, 1999). They build upon the definition by Dalvi and Martin and operationalize the term in terms of time travel budget and travel money budget. These concepts are more related to the concept of mobility and will be addressed later in this chapter.

A more theoretical approach on accessibility is taken by Geurs. In his article he argues that ‘accessibility should relate to the role of the land-use and transport systems in society’ (Geurs & van Wee, 2004)

While this stand is value-laden, it’s true that there is a strong connection between land-use and transport systems and that this relationship is under-appreciated in a lot of western societies. A better use of very accessible locations near transportation corridors can greatly enhance accessibility levels of neighbourhoods and businesses. Since a lot of transportation systems have reached their limits, there is more and more focus in this line of thought. This is also reflected in the smart growth, new urbanism and TOD movements (Katz, Scully, & Bressi, 1994) (Calthorpe, 1993) which place a lot of emphasis on infrastructure and transport planning and on creating less car-dependant and more walkable neighbourhoods, which in turn, create a safer, more social community. A study on new urbanist neighbourhood planning and the implications for accessibility and mobility concludes

that the effects of planning new towns in a human scale, promoting walking and cycling, can increase the number of trips undertaken using non-motorised transport, but there is no evidence that the number of trips using motorised transport decreases. There are even signs of an increasing number of motorised transport (Crane, 1996).

In their paper on congestion pricing, Levine and Garb chose to use a very basic definition of accessibility, namely 'ease of reaching destinations' (Levine & Garb, 2002). Although maybe a bit blunt, this definition forms the core of the concept and will be used as a basis throughout this thesis.

Accessibility is the ease of reaching destinations. This can be expressed in travel time spent or money spent on travel. This definition makes it possible to address accessibility on a neighbourhood scale, calculating generalised accessibility.

4.2. Defining Mobility

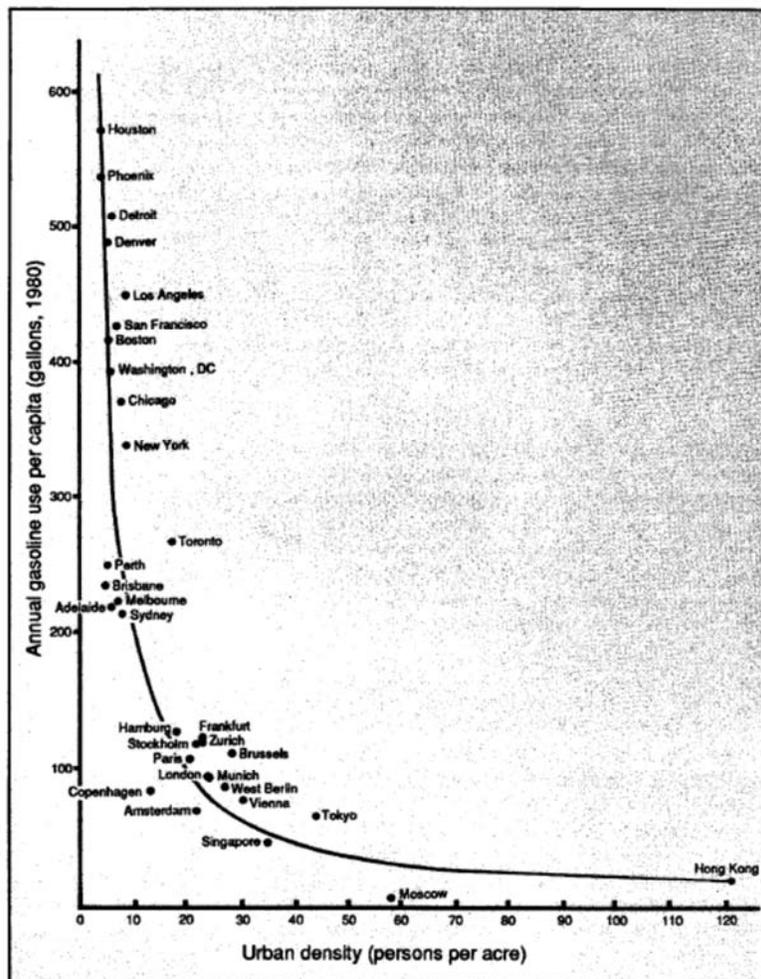


Figure 7: Gasoline use and urban density (source: Newman & Kenworthy, 1989)

Unlike accessibility, which has very strong links to transportation, the concept of mobility is not that clearly founded in one discipline of science. Most scholars agree on the term, although the implications of the definition vary from research to research. In the dictionary, it is defined as 'the tendency to move between places, jobs, or social classes' (MacMillan, 2007). This means mobility is not just about physical movement, going from A to B, but also about moving between jobs or social classes. Because this research focuses on physical, spatial mobility, the definition in Kaufmann et al's research on 'mobility as capital' is much more appropriate (Kaufmann, Bergman, & Joye, 2004). They quote a German research by Schuler, Lepori, Kaufmann, & Joye (1997) that identified four different kinds of mobility.

1. Residential mobility
2. Migration
3. Travel
4. Day-to-day displacement

This definition is still quite broad, it includes residential location choice theories, international migration flows and tourism and travel. Since by far the largest part in mobility patterns are in the fourth category, day-to-day travel, this research will focus on these displacements. This kind of mobility is often operationalized by amount of kilometres per capita per unit of time (Ross, 2000), the main indicator for mobility is automobile dependence. This figure differs quite a bit from city to city as can be seen in Figure 7 produced by Newman and Kenworthy.

Besides kilometres per person per day, mobility can be expressed in different indicators. Namely Travel Money Budget (TMB) and Travel Time Budget (TTB). Interesting to see in this respect is the fact that both the TMB and the TTB have been stable over time and place. Even when we are comparing different societies with different levels of development, people on average still spend around 1,1 hour a day and 10-15% of their money on transport (See Figure 8) (Schafer & Victor, 2000).

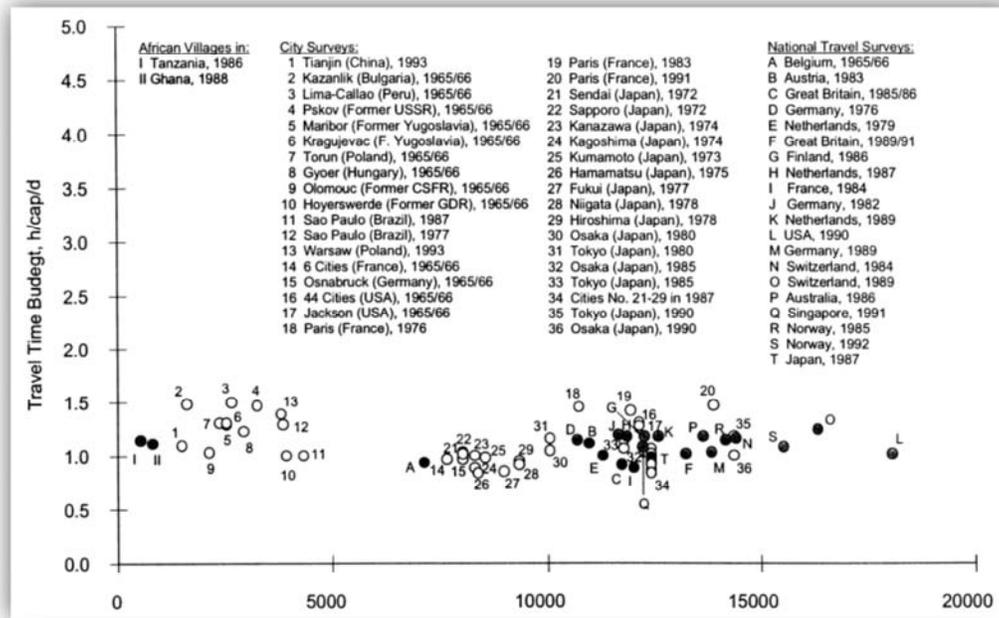


Figure 8: Travel Time Budget compared to Income (Schafer & Victor, 2000)

This fact has huge consequences, since it proves a direct connection between increased passenger kilometres, growth of the BBP per capita, and a higher quality traffic system. Although a lot of studies have been done researching this subject, the matter is not considered resolved. Mokhtarian & Chen argue that the TTB might be constant on a very aggregated level; significant differences can be observed on a more disaggregated level. They dispute the constant TTB at a level of 1.1 hours per day and claim that TTB is dependent on several indicators like socio-economic status, household composition and income (Mokhtarian & Chen, 2004)

Sager (2005) points out the complications that come up when talking about mobility. He defines mobility as the potential transport rather than revealed transport. Potential transport is valued highly, it increases freedom of choice. Revealed transport is usually seen as a necessary evil, and the unlimited growth hereof (hypermobility) will induce a lot of environmental problems. It puts too much stress on the transportation system and makes people dependent on their cars, disconnecting them from their neighbourhoods. Hypermobility has thus been described as “too much of a good thing” (Adams, 2005). Although Sager calls both concepts mobility, great similarities can be seen between potential mobility and the definition of accessibility used in this thesis. Both are based upon possible destinations within reach of a certain place.

➔ *Mobility and accessibility are different concepts. Mobility is explained by time-travel budgets or time-money budgets. These have remained the same over time. Potential mobility is closely linked to accessibility.*

4.3. Mobility and social cohesion

There is more and more attention to sustainable transport planning. As we have noted before, sustainability has economical, environmental and social aspects. The link between transport and economical and environmental issues is clear. The connection between transport demand and GDP rise has been proven. The impact of transport on the environment and how to mitigate these effects is also obvious. The links between transport and social issues is less obvious, but nonetheless existent.

On one hand, the availability of transportation options influences people's ability to develop their potential. Access to employment, education and cultural facilities increases the standard of living in certain neighbourhoods. Research in the UK shows that people 40% without a job have found a lack of transportation crucial in not finding a job. This directly links transportation issues to social wellbeing (UK Social Exclusion Unit, 2003)

On the other hand, an increase in mobility can lead to a decrease in social cohesion. This is important for this research because social cohesion is one of the factors in liveability. Among others, (Doi & Hayashi, 2002), (Ray, 2002), (Sager, 2005) and (Geurs, Boon, & van Wee, 2009) have researched the connection between increased mobility and developments in society. Doi approaches it from a practical side, arguing that highway construction has had a great impact on local societies. Ray identifies the shift from industrial society to post-industrial society, or "informationalism". In an informationalist society, people's social structures are changing, but not society itself.

As can be seen in Figure 9, Geurs et al explain the impact of mobility on society in a schematic way, where interventions in transport policy step by step lead to differences between groups. Finally, Sager argues that the ultimate mobile society means that transport is no longer predictable, which will have a large impact spatial planning, which relies heavily on forecasts and traffic and mobility predictions. Of course this is only a hypothetical problem, but increasing mobility does decrease predictability of spatial developments and social interaction.

●→ *Increased mobility may lead to a decrease in social cohesion, which is one of the factors of liveability. Policy intervention on each level is needed to influence and mitigate these effects*

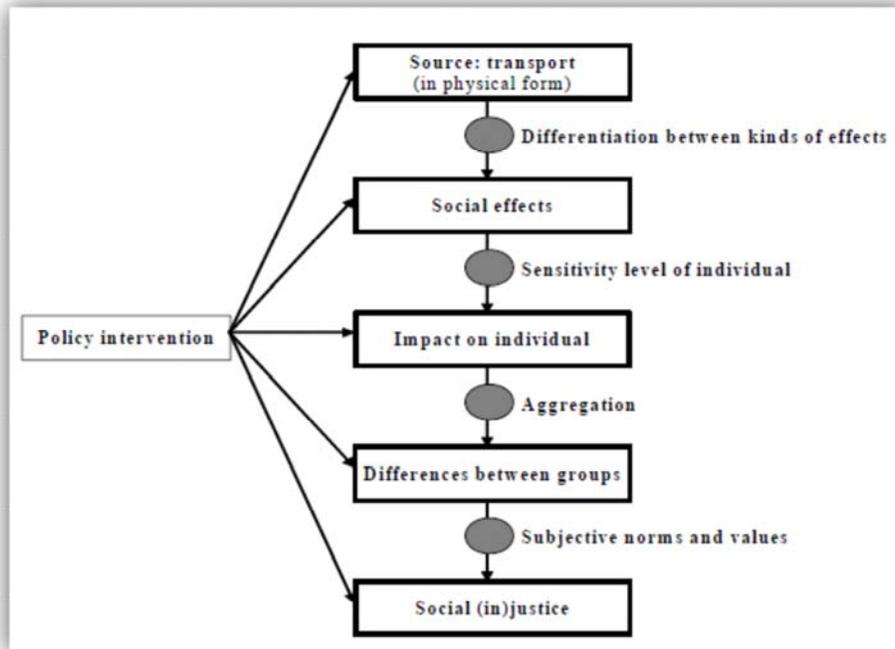


Figure 9: Geurs, Boon, & van Wee, 2009

4.4. Accessibility planning versus mobility planning

Planning of the automobile city focuses on saving time. Planning for the accessible city, on the other hand, focuses on time well spent.

- Robert Cervero, Professor at University of California

This quote by Robert Cervero, the director of the University of California Transportation Centre and professor of city & regional planning describes the central dilemma in this chapter. The first option, planning for the automobile city, is the same as planning for mobility, regarding mobility as a common good. Planning for an accessible city, on the other hand, requires a more holistic approach in transportation planning, which will be explained in the following paragraphs.

The relationship between accessibility and mobility is quite complex. In traditional transport planning, mobility has always been the key issue. Mobility was seen as a primarily good thing and transportation planning was focussing on facilitating as much mobility as possible. Because developments in mobility and economic growth have always had a strong correlation in western society, the strife for increased mobility has been high on the political agenda. Increased mobility means 'a reduction in the generalised (i.e. time-plus-money) cost of travel per *kilometre*' (Levine & Garb, 2002). Since it is not beneficial for governments to lower the financial costs of travel (in practice this would mean lower taxes on cars and fuel), focus is usually on pushing for less time spent in traffic. In practice this

comes down to decreasing congestion, usually by increasing the capacity of the transportation networks.

Traditionally, American cities have grown outwards, sprawling over the countryside, disregarding space or mobility constraints. Fuelled by a sense of unlimited resources and accommodated by the interstate highway system, there was no need to contain sprawl or to accommodate other means of transportation than the car. This resulted in immense suburban, low-density areas without access to public transport and no commercial or public services within walking distance. Sometimes even sidewalks are missing, making it virtually impossible to use any other means of transportation but the car. Rising gasoline prices and increasing concern about climate change and the use of natural resources gave way to a new perspective on planning and a realisation that land-use patterns can greatly influence resource usage and vehicular miles travelled.

In reaction to this growing awareness, combined with uneasiness about social detachment, new planning concepts New Urbanism and Transit-Oriented-Development were developed in the beginning of the 1990's. Both put accessibility at the core of their planning theories. The guidelines on Transit Oriented Development (TOD) stated by Calthorpe indicate a switch from urban sprawl to more condensed neighbourhoods. His answer to both the mobility and social problems is the development of Transit Oriented neighbourhoods, called pedestrian pockets, where every dwelling is located within easy walking distance from a transit station and local services, greatly diminishing the need for the use of a car, which in turn increases liveability and social (Calthorpe, 1993). This indicates the need to decrease mobility, but at the same time increase accessibility for American metropolis to survive.

Increasing accessibility though requires a different approach, if you want to improve accessibility for a certain service or business, a 'reduction in the generalised cost *per destination*' (Levine & Garb, 2002) is necessary. Increasing mobility means making places more easily accessible, which means that central locations, with good public transport connections are preferable for services that generate a lot of traffic. This is not yet accepted in mainstream transport planning and requires a paradigm shift. Some authors have done research in this field, concluding that the shift towards accessibility planning instead of mobility planning has a lot of advantages. The Dutch ABC location policy is a good example of planning for accessibility. In the Fourth Physical Planning Memorandum (Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer, 1991), three different categories of locations are defined. A-locations are locations that are easily accessible by public transport. These are usually in city centres near central train stations. B-locations are fairly well connected by public transport and by car, C-locations are not so well connected by public transport but are close to motorway exits. Public services and new jobs were meant to be planned at A and B-locations. The result of this planning system was nonetheless quite different. Because of an underestimation of the demand for new office space, a lot of new jobs and services have been developed at C-locations, which, together with new greenfield development, led to increased car usage (Schwanen, Dijst, &

Dieleman, 2004). Although considered laudable in other countries, the ABC policy has at least partially failed in the Netherlands.

In the UK, accessibility planning is adopted as the centre of transport policy. The cabinet office published a report on transport and social exclusion, stressing the importance for accessible services for all income groups (UK Social Exclusion Unit, 2003). One of the authors advocating accessibility planning in the UK is Derek Halden. He argues that accessibility should play a significant role in location choice for (semi-)public services like hospitals and post-offices. This means that visitors of those services don't have to spend as much money on transport, because these services are located more conveniently, but it will affect real-estate prices for these services because they need to be located in more central, thus more expensive places. Halden calls this the internalisation of external transport costs caused by relocation of semi-public services (Halden, 2009). The advantage of this approach is that services pay more attention to location-choice factors and the need for transport (desired mobility) doesn't need to grow. Since the cost of extra transport facilities, interventions in local infrastructure, is very high, there is a lot to gain for society if these interventions are unnecessary because of careful accessibility planning.

➡ *Traditionally, transport planning was focussed on facilitating mobility. The current trend is to look at accessibility instead of mobility. This means a more integrated approach, internalising external transport costs for citizens.*

4.5. Accessibility is sustainable mobility

Levine & Garb (2002) distinguish mobility improvement measures from accessibility improvement measures. The difference, according to them, is that:

“A mobility improvement is a reduction in the generalized (i.e. time-plus-money) cost of travel *per kilometre*; an accessibility improvement is a reduction in the generalized cost *per destination*” (Levine & Garb, 2002)

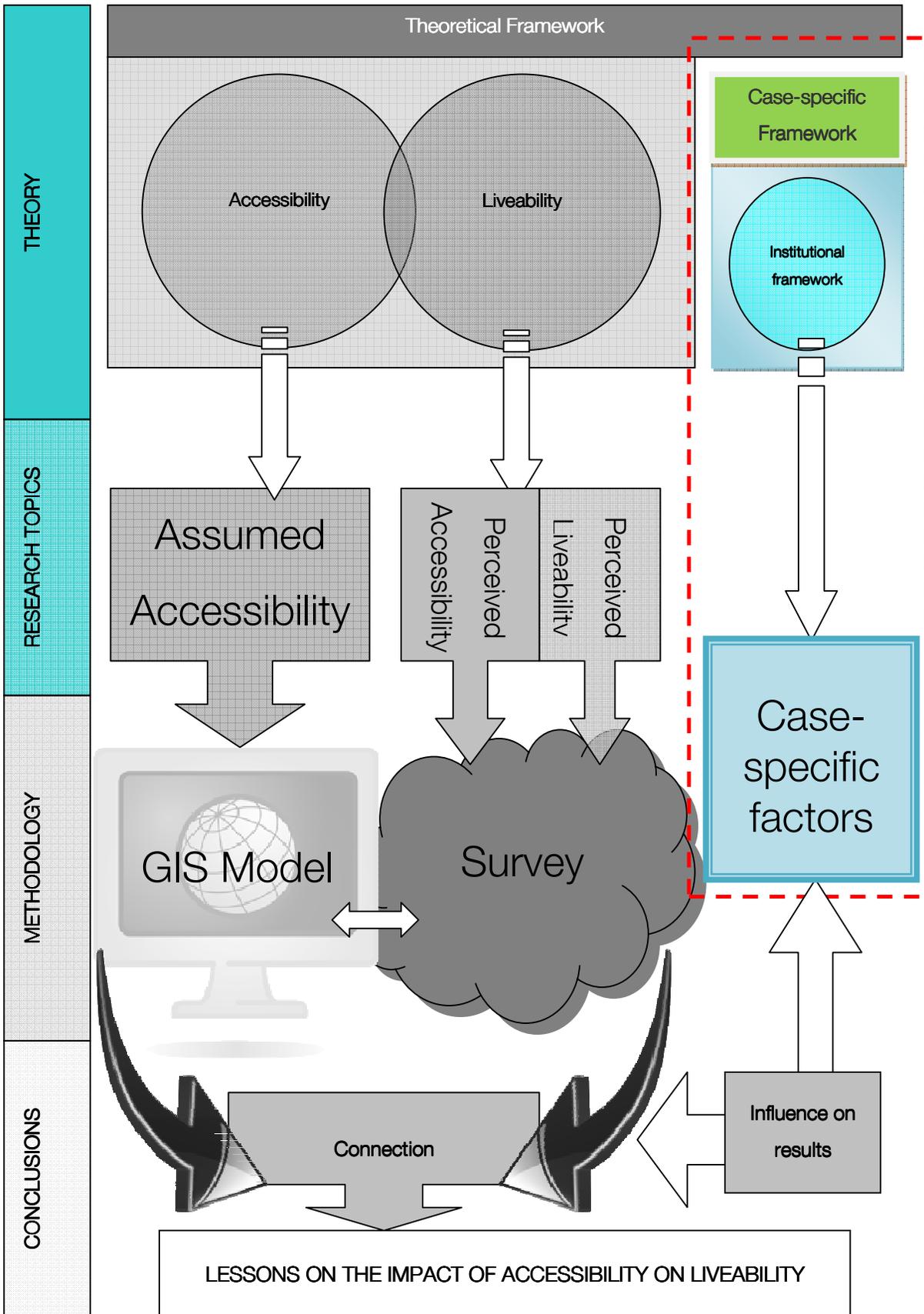
Thus, improving transport capacity to relieve congestion might trigger businesses to move to cheaper locations, further from the urban centres, increasing the generalised cost for that specific location, thus *decreasing* overall accessibility. This process clouds the fact that while location costs decrease for businesses, total transport costs increase, but are externalised. In a paper published by Derek Halden, this process is illustrated in British planning practice. Here, the concept of accessibility planning has been widely introduced, not only in transportation and land-use planning, but specifically in the planning of (semi-)public services (Halden, 2009).

As mentioned before, in traditional transport planning, the focus is on facilitating mobility without keeping an eye on the (negative) side-effects of this policy. Because of increased interest in sustainable development, there is a shift in traditional transport planning towards sustainable mobility. This means that transport planners don't just look at the best or cheapest way to facilitate certain transport flows, but they include environmental quality and involve the people in the planning considerations (Banister, 2008). This way transport planning is less technocratic and pays more attention to societal values and environmental considerations. This so-called sustainable mobility paradigm will be central to this thesis because it defines the match between transport planning and society, with an eye on environmental values (Bertolini, le Clercq, & Kapoen, 2005).

● → *Accessibility planning means planning for an overall reduction of transport cost. Not only monetary costs, but also environmental and social costs. Accessibility is thus another word for sustainable mobility.*

An aerial photograph of a city, likely Tallinn, Estonia, showing a mix of historic and modern architecture. A prominent feature is a large church with a dark, rounded dome and a spire, situated near a river. The city is densely packed with buildings, many with red-tiled roofs. A bridge spans the river in the background. The sky is overcast. An orange diagonal line runs across the image from the bottom left to the top right. An orange rectangular box is overlaid on the right side of the image, containing the text 'part a2 institutional framework' in white lowercase letters.

part a2
institutional
framework



5. HISTORY OF LATVIA & RIGA

5.1. Introduction

This chapter does not directly answer one of the research questions. The goal of this chapter is to give the reader some background information about the turbulent past of Latvia and to explain where the country is coming from and what is currently happening. Latvia has been subjected to foreign rule for most of its history; furthermore, the country's complex institutional framework makes it difficult to cope with the country's current trends.

The first paragraphs are about Latvian history, about the struggle for independence and about EU membership. Paragraph 5.4 focuses on current trends in demographics and economy. The next chapter deals with the planning framework and about the power of different levels of government in the field of planning.

5.2. Foreign Powers and the strive for independence

Since the 13th century, Latvia has been ruled by foreign powers for most of the time. From 1201 until 1561, the territory was part of the German empire, where the Teutonic knights ruled. Although Riga city became more and more powerful and wealthy after joining the Hanseatic League in 1285, the original inhabitants did not benefit from this increasing wealth. From 1561 until 1629, Latvia was occupied by Polish forces, who took advantage of the dissolving of the Teutonic order of knights. In 1629 the Poles were defeated by the Swedish, who took control and remained in power until Sweden sold a great part of their territory in the Baltics and Finland for two million "riksdaler" as a part of the Swedish-Russian peace treaty to end the Great Northern War in 1721. From 1721 to 1917, the Baltic states became a Russian province, but the Russian revolution of 1917 sparked the independence movement which resulted in the foundation of the Latvian republic in 1918. Because the new country was politically unstable, it turned into a dictatorship and was occupied again in 1939. In 1940, the country became a part of the Soviet Union. Apart from the occupation of Latvia in the Second World War, the country remained a Soviet province until the collapse of the Soviet Union in 1991. Since then, Latvia became a member of the United Nations in 1991 and joined NATO and the European Union in 2004. (Minahan, 2000)

During the Soviet occupation, a lot of the current outskirts of Riga were built up, this means that many of the dwellings in Pieriga consist of big apartment buildings.

●→ *Latvia has had a long history of foreign occupation, but has always had a strong urge for independence. Since 1991 they are independent from the Soviet Union and joined the EU and NATO*

5.3. European Union

The quick ascension of Latvia in the EU is understandable, but in a country that has been occupied for so many years, giving up their “independence” one more time after only 13 years of real independence can be called surprising. The fact that they did join the EU already in 2004 had a lot to do with the threat of increasing influence of Russia on Latvia. Latvia was searching for strong allies and found them in NATO and the EU (Henderson, 1999). Joining the European Union has been very beneficial for Latvia. Besides increased security from Russian influence and access to the European structure and cohesion funds, gaining access to the European market dramatically improved the economical situation in Latvia.

After accessing the European Union, the Latvian economy skyrocketed. It has shown the highest economical growth figures in the entire European Union in 2004, 2005 and 2006 (see Figure 10).

This explosive economic growth came to a sudden halt in 2007, when the international economic crisis made the Latvian real-estate bubble burst and caused a sudden drop in housing prices. This caused the Latvian GDP to drop from a growth of 12,2% in 2006 to a decline of 4,6% in 2008 and a staggering decline of 18,0% in 2009 (Eurostat, 2010). Although the forecast is that the economy will recover a bit within a few years, the collapse of the economy has had its impact in society. Unemployment is high, and there is not a lot of money available for investments in infrastructure.

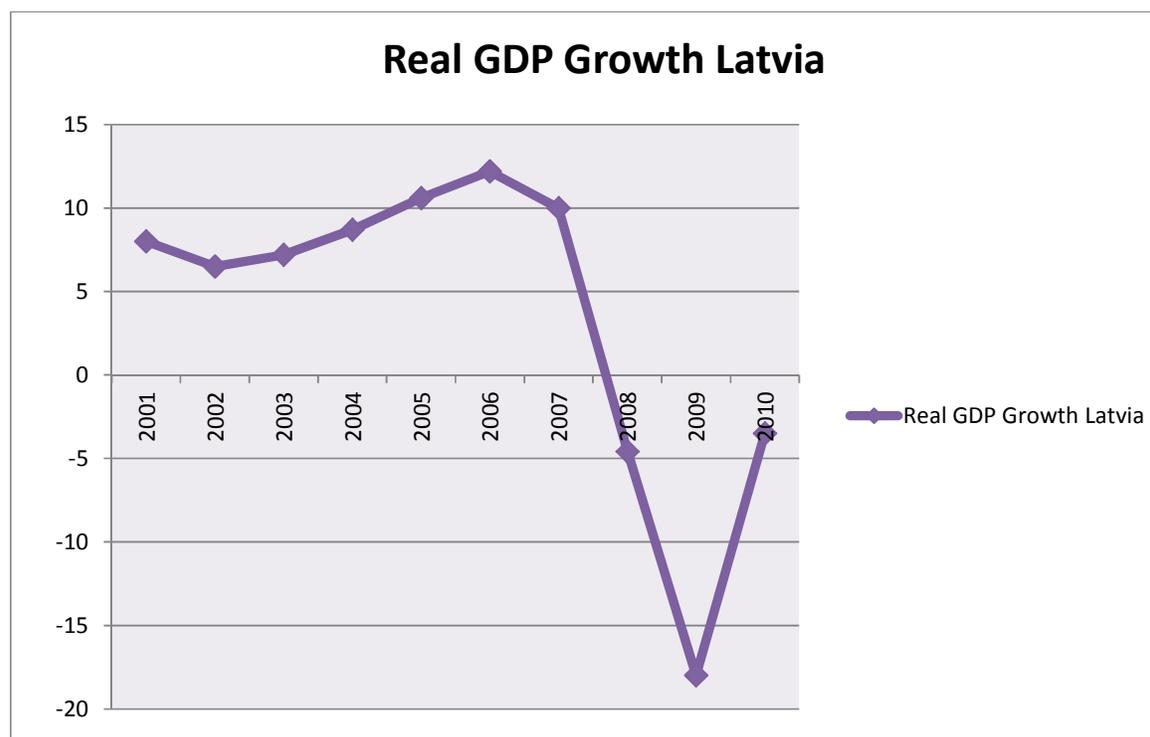


Figure 10: GDP Growth Development Latvia (Source: Eurostat)

➔ *After joining the EU, the Latvian economy boomed, with double-digit growth rates, but it has plummeted in the recent credit crisis.*

5.4. Trends

Latvia is subject to some interesting trends. First of all, there is the demographic trend of a negative growth. Latvia has a low fertility rate, especially since regaining independence in 1991. As you can see in Figure 12, the birth-rate was only 1.45 children per woman in 2008, which is lower than replacement level. This, together with a net out-migration of 4700 people in 2009 (Latvijas Statistika, 2010) results in a decline in population numbers. According to the CIA World Factbook, the net population decline in Latvia is one of the largest declines in the world (Central Intelligence Agency) . This figure might even be underestimated, because a substantial part of the Latvians are working abroad, but don't change their registered place of residence. Since this is unofficial migration, it is not counted in official migration figures. This portion of the population might be as high as 43 thousand people in 2007. This is a significant percentage of the working population and caused a shortage in workforce. Although the economical crisis has solved this problem for now, in the long run this might be a serious threat to the Latvian economy. Easing the rules for immigrants is not an easy solution. Wages in Latvia are relatively low, so potential immigrants would be from countries with even lower wage levels. Because Latvia is an EU member and signed the Schengen treaty, immigration rules are strict. The few western immigrant workers are usually highly skilled representatives of western European companies, they don't stay for longer periods of time and make up only a very small percentage of the working population. That is why Latvia is looking in to attracting skilled migrants from countries where standard of living is lower than in Latvia. Examples are the Ukraine and Moldova. (Fihel, Kaczmarczyk, & Okolski, 2006)

Besides the international migration and fertility trends, there is the case of internal migration. Within Latvia, there are big regional differences in welfare, income level and economic strength. Latvia is a very monocentric country, with Riga as it's by far most important city. Riga City has over 700.000 inhabitants, the second city in Latvia is Daugavpils, a city with just over 100.000 inhabitants, of which a great part is of Russian descent (Latvijas Statistika, 2010). This monocentric character also reflects in the average salary. Average salaries in Riga City are no less than 65% higher than in the region with the lowest average income, Latgale, in the east of the country. Although job vacancy numbers have plummeted since 2007, there are still much more vacancies in Riga and Pieriga than in the rest of the country. This has caused a flow of work-seeking people from all Latvian regions to Riga. At the same time, Riga is suburbanising, causing a flow of migrants from Riga city to the region surrounding Riga, Pieriga (Latvijas Statistika, 2010). These contradictive trends make it hard to identify the main flows within the country. On one hand there is the trend of people moving from other regions to Riga, on the other hand there is the flow of inhabitants of Riga moving to more suburban areas, resulting in a numerical de-urbanisation which in effect is a combination of multiple migration flows.

Latvia is a very mono-centric country, with a strong focus on the capital, Riga. The country is suffering from a decline in residents, but trying to open up to skilled migrants. The only growth in resident number is to be found in the Riga peri-urban area (Pieriga).

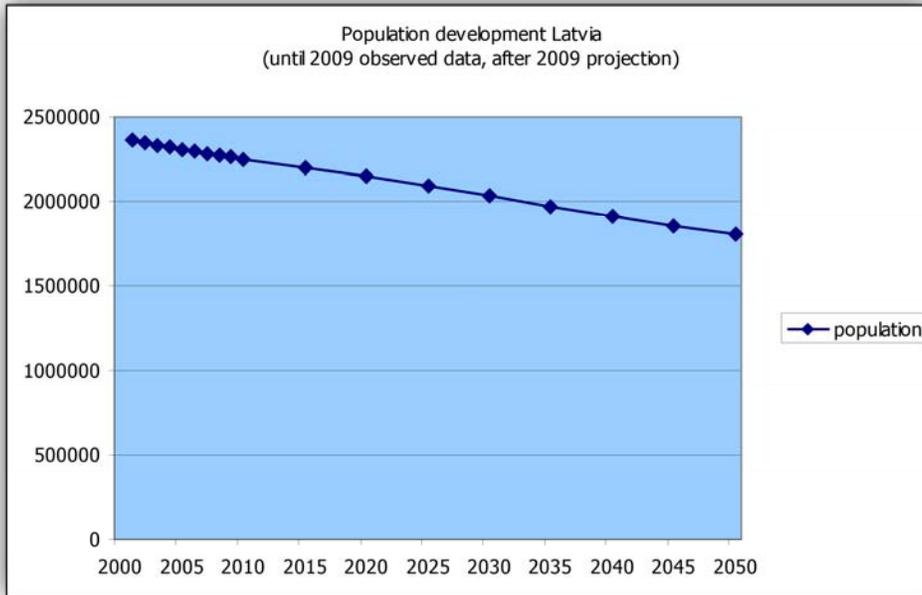


Figure 11: population projection Latvia (Eurostat, 2010)

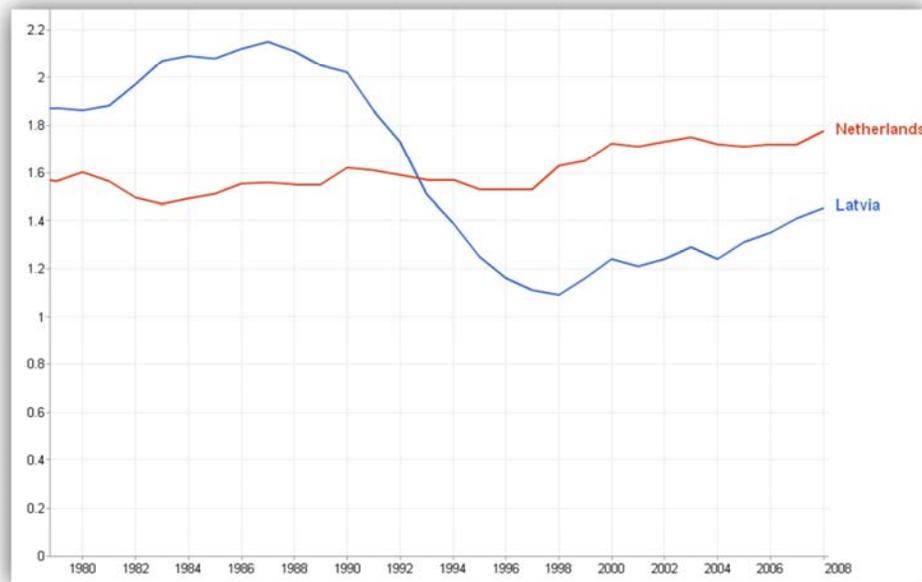


Figure 12: Children per woman (World Bank, 2010)

6. PLANNING FRAMEWORK

6.1. State Structure

The republic of Latvia is a parliamentary democracy with the prime minister as head of government. The president is elected by the parliament and has solely ceremonial functions. He acts as the head of state. The parliament (Saeima) consists of one hundred members, who are elected for a four year term. The government structure has three layers, state, (planning) regions and local government. On local government level, there is a separation between city/town regions and rural regions. City regions are geographically smaller regions, confined to the edges of the town. Rural regions (novads) are larger in area, but usually smaller in number of inhabitants. (See Figure 15: Local administrative boundaries (Wikipedia commons)).

In 2009, planning regions were introduced in the Latvian system. Some are loosely based on the historical cultural regions, but they follow the municipal borders that have been set during the administrative territorial division of 2009. These planning regions should result in a more coherent spatial planning system and more inter-municipal cooperation. The five planning regions are Riga, around the capital, Kurzeme in the west, Latgale in the east, Vidzeme in the north and Zemgale in the south, see Figure 13.

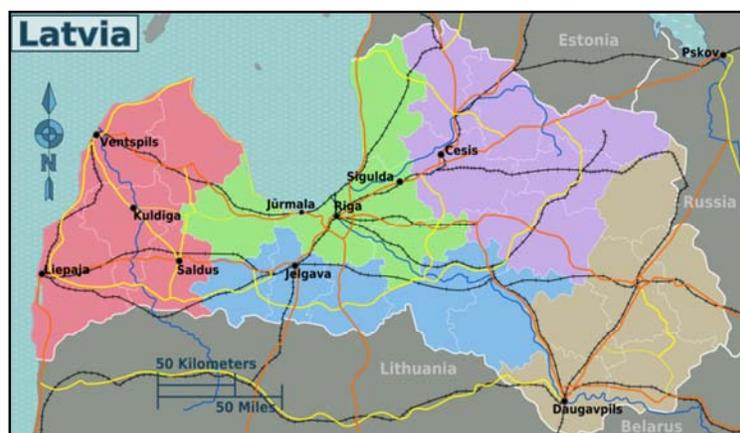


Figure 13: Provincial (planning region) boundaries (<http://mapsof.net/uploads/static-maps/>)

6.2. Spatial Planning System

Every national planning system has their own characteristics. The Latvian planning system is no exception. The power balance within the Latvian planning system is very different from the power balance in for instance the Dutch planning system. Furthermore, the way things are done officially might differ quite a bit from the way things are done in practice. Especially on the local level, things might be done in a different way than the official way, as described in the planning laws. Finally, the Latvian planning system is very dynamic. Latvia is still a very young country that gained independence not earlier than 1991, so in a lot of policy fields, they are still searching for the right direction. In the following paragraphs some of the typical characteristics will be explained.

6.3. Official planning instruments

Officially, Latvia has a 5-tiered planning structure. Spatial plans are developed on the national, regional, district, city and local (town) level. The Latvian national spatial plan is a strategic plan that is binding for other bodies of governments and municipalities. The regional plans are written for each of the five planning regions (see Figure 13) and are indicative for the direction of development in the region. District plans are written for each of the newly formed district authorities (see Figure 15). Besides these district plans, there are spatial development plans for each of the 9 republican cities, which are similar to district plans, but have a special status because they consist of mostly urban areas. Each district is made up of several municipalities, which also have their own, legally binding spatial plans.

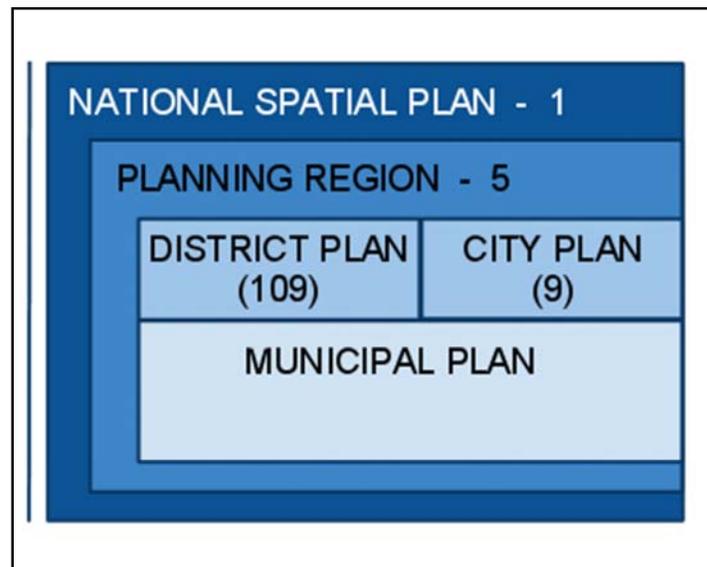


Figure 14: Spatial Plans in Latvia (by author)

6.4. National level

The national spatial development plan has a very specific role in Latvia. In many countries local governments have the responsibility to make their own land-use plans but they have to adhere to the national or provincial structure plans. In Dutch planning law for example, local development plans are tested by the provincial government to check for discrepancies with the provincial structure plan and the national structure plan. In Latvia, local plans officially have to correspond with national plans. In reality, the national government doesn't have any tools to enforce this rule, resulting in a high level of independence of local government bodies. This has some positive effects on the decision making process, but it can also foster unhealthy competition between neighbouring municipalities.

6.5. Municipalities

In the Latvian planning system, all legally binding planning decisions are taken on a municipal level. This has some advantages and some disadvantages. The biggest advantage is that municipalities

have a lot of influence on the spatial development on their own territory. They have the best knowledge about their own territories and know best what's good for their town. The decision making lines are in most cases short. The head of the spatial planning department is the one who makes the local land-use plan and that plan is then approved by the municipal council. Since most of the municipalities in Latvia are quite small, cooperation is easy. The disadvantage of delegating so much power to local municipalities is that each municipality is interested in generating the most growth in their own territory. Cooperation between municipalities is often lacking, resulting in contradictory (infrastructure) plans. Cooperation between municipalities has been formalised in the planning region, but the power to enforce planning decisions when municipalities do not agree doesn't exist.



Figure 15: Local administrative boundaries (Wikipedia commons)

6.6. Regional level

The regional level in Latvia is not as strongly represented as it is in other parts of the Baltics. Although according to the COMMIN study done in 2007, the Latvian regional plan is binding to subordinate plans (Kule, 2007). According to the director of the Riga Planning Region (the main planning authority in the Riga region), the power of the regional planning authority is very limited. Municipalities are mostly operating on their own, trying to attract more citizens. The reason for this is that the Latvian tax system operates in such a way that municipal tax income comes straight from residents, much more than it comes from real-estate (like in the Netherlands) or from the taxation of local businesses. For this reason municipalities are competing with each other instead of cooperating. Efforts to cooperate have been successful in the past, leading to the formation of the Riga Planning Region, a NGO focussing on development of the whole region instead of each single municipality. In 2006, the NGO was nationalised, making it a state-run agency. Unfortunately, there is still no legislation

giving the plans produced by the Riga Planning Region any legal status. Instead, it just gives direction to local development planning but their plans can easily be ignored by municipal councils (Puzulis, 2010).

6.7. Change in planning law

In 2009, the Latvian government implemented the Administrative Territorial Reform law. The reason for administrative reform was increase efficiency and to strengthen local governments. Before 2009, the country was divided in 525 local government bodies. Every single town and village had their own administration. Of these 525 municipalities, 388 had less than two thousand inhabitants. (See Figure 16)

The small communities lacked specialist knowledge and resources to function in an efficient way. That's why central government started the process of local government reform in 1996. This lengthy project was completed in 2009. The new administrative subdivision has generally led to positive responses, although some municipalities are not happy about the new boundaries. For instance the city of Tukums, west of Riga, would have preferred to have been designated the status of state city, since their institutions were very much focused on the urban environment. After the territorial restructuring, the municipality of Tukums (Tukums Novads) has control over large agricultural zones, with which it has no experience (Skruzkalne, 2010)

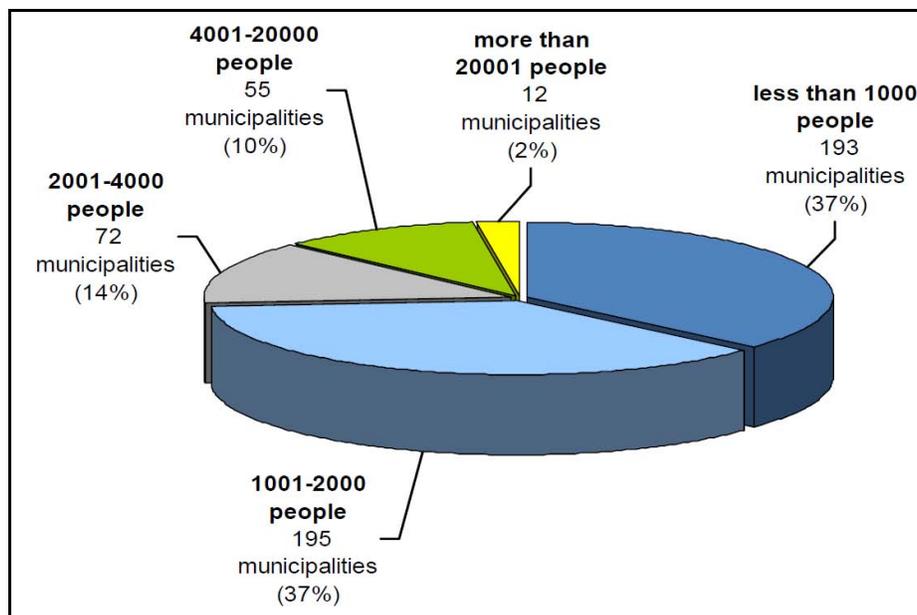
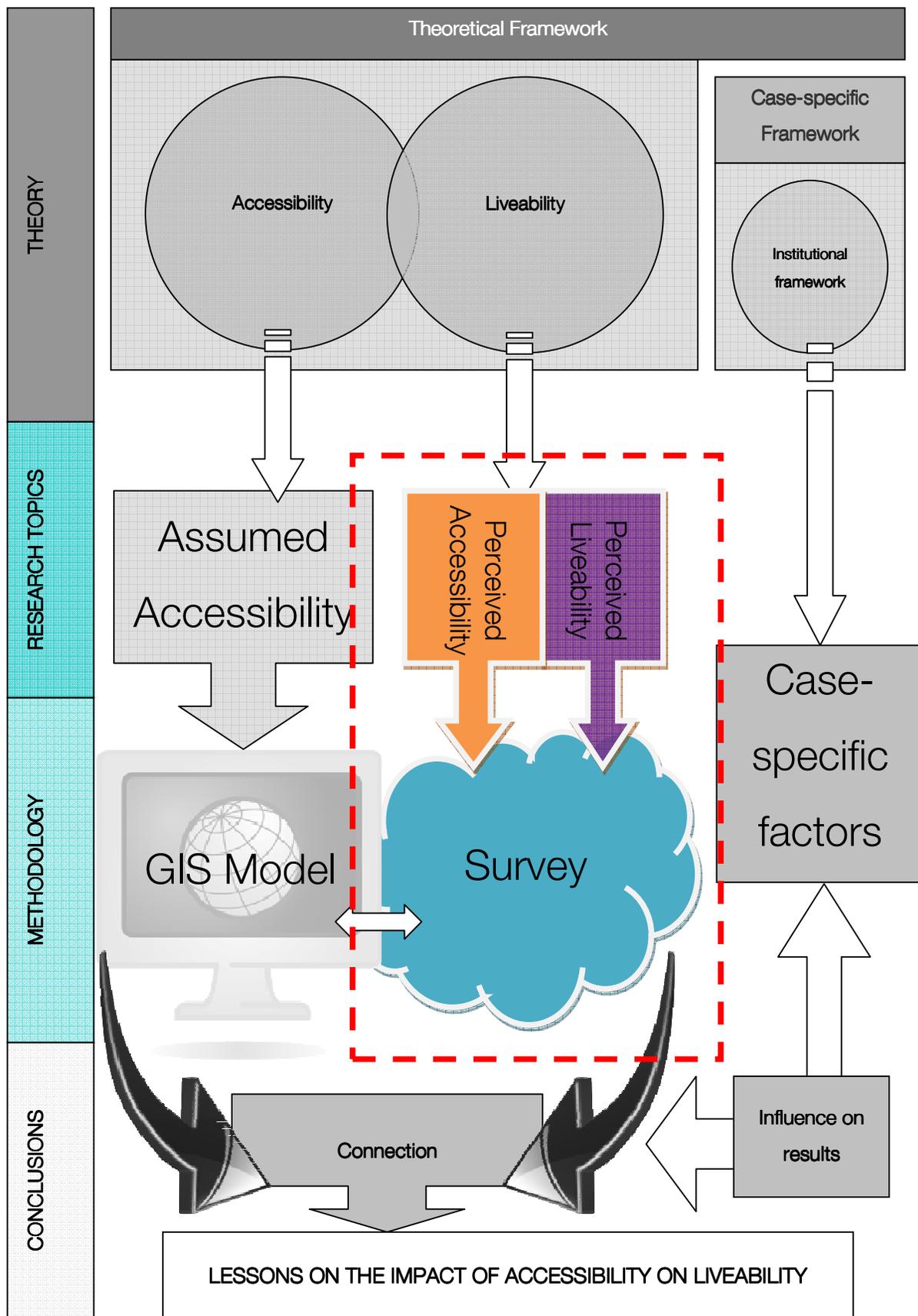


Figure 16: Municipalities by the number of inhabitants (SOURCE: TRA (MOT) 2008)



part b1
survey
results



7. SURVEY FINDINGS

7.1. Introduction

The true meaning of liveability and accessibility was clarified in the previous chapter, giving an answer to research question number one. This chapter will give an answer to research question number two: “*What is the level of accessibility and liveability in Pieriga?*”. As can be read in part A liveability is a term that can be used in many ways, but is always a gathering of many different factors that influence the condition of a neighbourhood. In this case, it is operationalized by asking questions on availability of services, the physical condition, safety, social quality, the quality of their own house and public transport availability. Accessibility is, as mentioned in part A, the ease of reaching destinations. In this case, accessibility is operationalized in the ease of reaching services and jobs. When researching accessibility in relation to liveability, it is important to know peoples *opinion* on accessibility. That is why this chapter will research the perceived accessibility of services and jobs, in other words, “How do people feel about the proximity of services”?

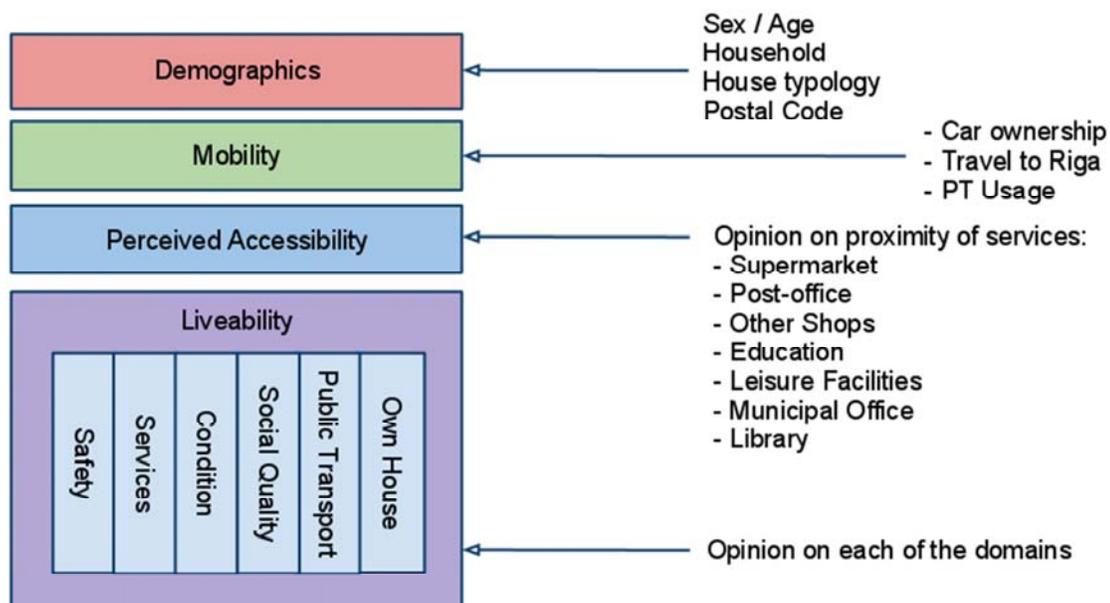


Figure 17: Survey composition

As described in the theoretical framework, there are two kinds of liveability, objective and subjective liveability. Because objective liveability is not very reliable, since it introduces a lot of bias on the side of the researcher, this research focuses on finding the level of subjective liveability, also known as *perceived liveability*. The only way to find the level of perceived liveability and perceived liveability is to question people about their opinion. This can be done through interviews or through a survey (Flowerdew & Martin, 2005). For this research, the tool of a survey was chosen. This chapter will

start by explaining why and how the survey was conducted. Afterwards, the results of the four modules of the survey (demographics, mobility, accessibility and liveability, see Figure 17) will be discussed.

This chapter does not cover all of the results of the survey, it covers only the ones deemed most relevant. For an extensive coverage of all of the results from the survey, see appendix 1: survey results.

7.2. Methodology

The survey was conducted between the 16th of June and the 5th of July 2010 and was held through the use of online survey software using the portal of Witteveen+Bos. Out of all the methods for doing a survey (by phone, door-to-door), the online survey was chosen for multiple reasons. First of all: the language barrier. A lot of people in Latvia do not speak, or are weary of speaking English. Even if they do speak English, they will be reluctant to answer questions from a stranger in English. Conducting a door-to-door or phone survey in Latvian turned out to be impossible due to practical and financial reasons. Secondly, an online survey creates a great advantage in the processing of the data. There is no need for digitalising every survey, which saves a lot of time and diminishes digitalisation errors. The final reason for using an online survey was to increase the geographical scope. Surveys done in person have a limited geographical scope due to (travel-)time and money constraints. Online surveys don't have this problem, they can be conducted anywhere in the world without any extra costs.

There are of course downsides to an online survey. One of the problems is that people are more inclined to stop a survey when it's taking too long, so it is important to keep your questions and your survey short and interesting. Another problem is that an online survey makes it impossible for people without internet to fill out the survey. This introduces a bias by excluding people without an internet connection, mainly the older generation. This bias is exaggerated by the fact that the survey was promoted using the biggest Latvian social network, draugiem.lv. This website was chosen as a platform to acquire respondents because it is the most used website in Latvia, 2,6 million people have an account and it has 1,6 million unique visitors per month. This website has the option to display an advertisement solely to visitors from a specific geographical area, making it possible to focus the research on Pieriga, excluding Riga city. Furthermore, the survey was only visible for people of the age of 18 years or older. This limits the bias, since a lot of teenagers use the website draugiem.lv. Excluding them (by the date of birth they have registered with the website) from the target population results in a higher data-quality. The survey was promoted during two weeks, which generated a total of 529 results, of which 519 were complete surveys. This makes the sample representative for the total population, being internet users in Pieriga, which means that over 60% of the population is covered.

7.3. Demographics

The average age of the respondents to the survey is quite low, around 31. This is especially low considering the average age in Latvia is 39 (Council of Europe, 2004). An explanation for this is that the survey was promoted via the internet, more specifically via a social networking website. While this website has a very large reach, most of its visitors will be younger of age. Furthermore, the survey was filled out by a lot more women than men. There is no clear reason for this besides the fact that social networking websites are probably used more frequently by women than by men.

Table 1: Difference in gender between sample and population

	Sample	Latvia
Age	31	39
Gender	30,6% male	46,1% male
Unemployed	11,9%	25,4%

21% of the respondents reported a household size of 2 or less, while 28,3% of the respondents report a household size of 4. 164 respondents report a household size of more than two without any children. The reason for this high number of untraditional households might be that many students still live with their parents.

Of the respondents, 57,9% live in an apartment building. This says something about the urban form in the Pieriga region. Large parts of that region are made up from small villages, but the percentage of apartment buildings is still quite high. Interesting to see is the correlation between house typology and public transport usage. People living in apartment buildings use significantly more public transport than people in detached houses. The higher density plays a part in that, but lower income/housing prices might also be a factor.

52% of the respondents report working for an employer, 23,1% are students and 11,9% are unemployed. Especially the unemployment number is lower than expected. The official unemployment figures for Latvia show a much higher rate or around 25% (OECD, 2010). This low percentage of unemployed people shows that Pieriga is a relatively wealthy area, with higher average income.

Another interesting fact from the demographics is the correlation between distance to Riga and car ownership. People who live further away from Riga tend to have more cars than people who live closer to Riga.

7.4. Mobility

The second part of the survey was focused on mobility. How mobile are the inhabitants of Pieriga and how dependent are they on Riga for their services and jobs? Of the people that work for an employer, 60% travels to Riga on a regular basis (more than a few times a week). Considering the average distance from Riga is about 49km, this is quite a high percentage. 22,1% of the respondents travel to Riga more than a few times a week for education purposes. This is exemplary for the de-

pendency on Riga for higher education purposes, since 67,5% of all students travel to Riga for education purposes a few times per week or more. Especially for this group, good public transport is necessary, since 56,4% does not have a licence or does not use a car.

In total, 36,9% of all people drive a car to Riga at least 5 times a week, furthermore, 37,9% of all people travel to Riga by public transport at least 5 times a week. These figures are very high, so that means that the region is quite dependent on Riga city. As has been said, mostly for jobs, but also for shopping, leisure activities and education. Question is if this high demand for mobility puts pressure on the perceived liveability.

7.5. Accessibility

From the questions on the satisfaction with local services, it's possible to draw conclusions on the accessibility of services for inhabitants of Pierīga. The overall image of accessibility of services in Pierīga is quite good. Most people answer quite positively when asked about the satisfaction with the proximity of different services. Least satisfied are respondents with the availability of leisure services, non-daily goods shops and medical services. If these figures are compared to the importance of certain services (how often they are used), the highest percentage of people that do use a certain service but are unsatisfied with the location of this service can be found with leisure services. No less than 41,4% of the people who do use this service are not satisfied with the location of these services. After leisure services follow the non-daily goods shops and the medical care. For these services, people are still very dependent on Riga.

7.6. Liveability

From the literature, the following factors influencing liveability have been distinguished (see Figure 16), these factors have been used in the survey to gather information on the perceived liveability in the Pierīga region. Questions asked were on the importance of each of these factors and how respondents feel about them.



Figure 18: Liveability Factors

From the results it appears that liveability in Pieriga is higher than can be expected based on previous research (Riga City Council, 2005). People in general are quite content with their living environments. In Figure 19 the results of the liveability questions can be seen. The opinions on the different factors of liveability do not differ a lot. They are all quite positive. The only thing that stands out in a negative way is the satisfaction with social quality. More people are neutral on this topic. This indicates that people have a generally positive attitude towards their living environment and that a short survey is not quite enough to expose the real differences in opinions on liveability factors. Nonetheless, these answers do give a good indication of the general attitude, which will be used in the following chapter.

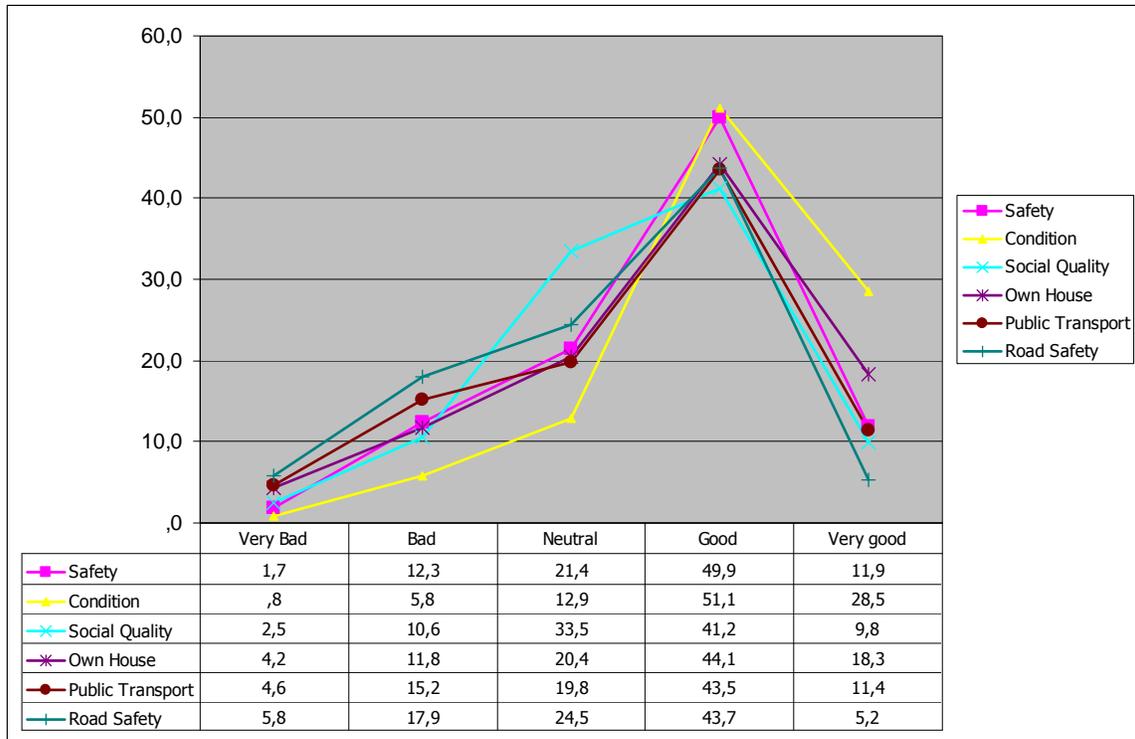
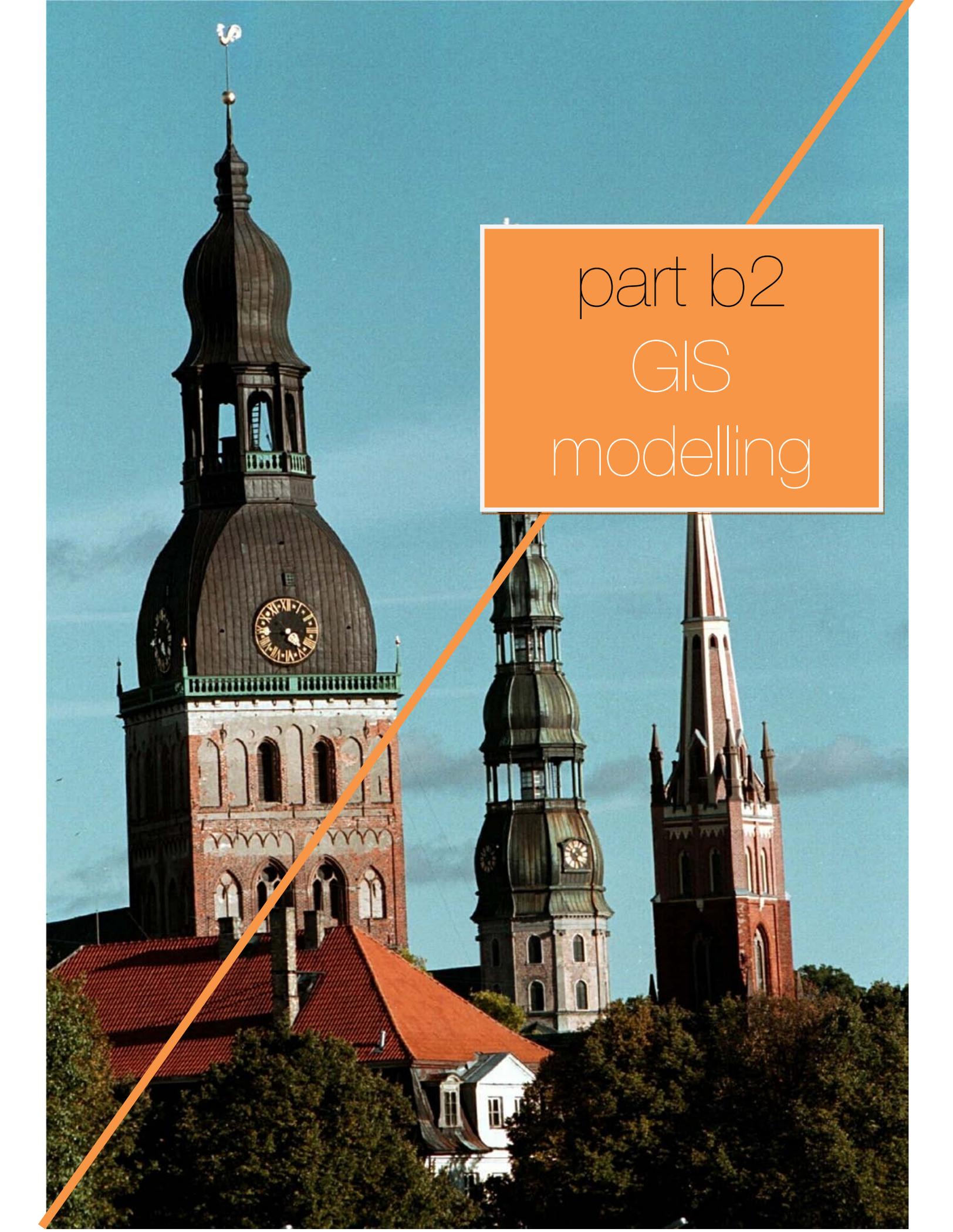


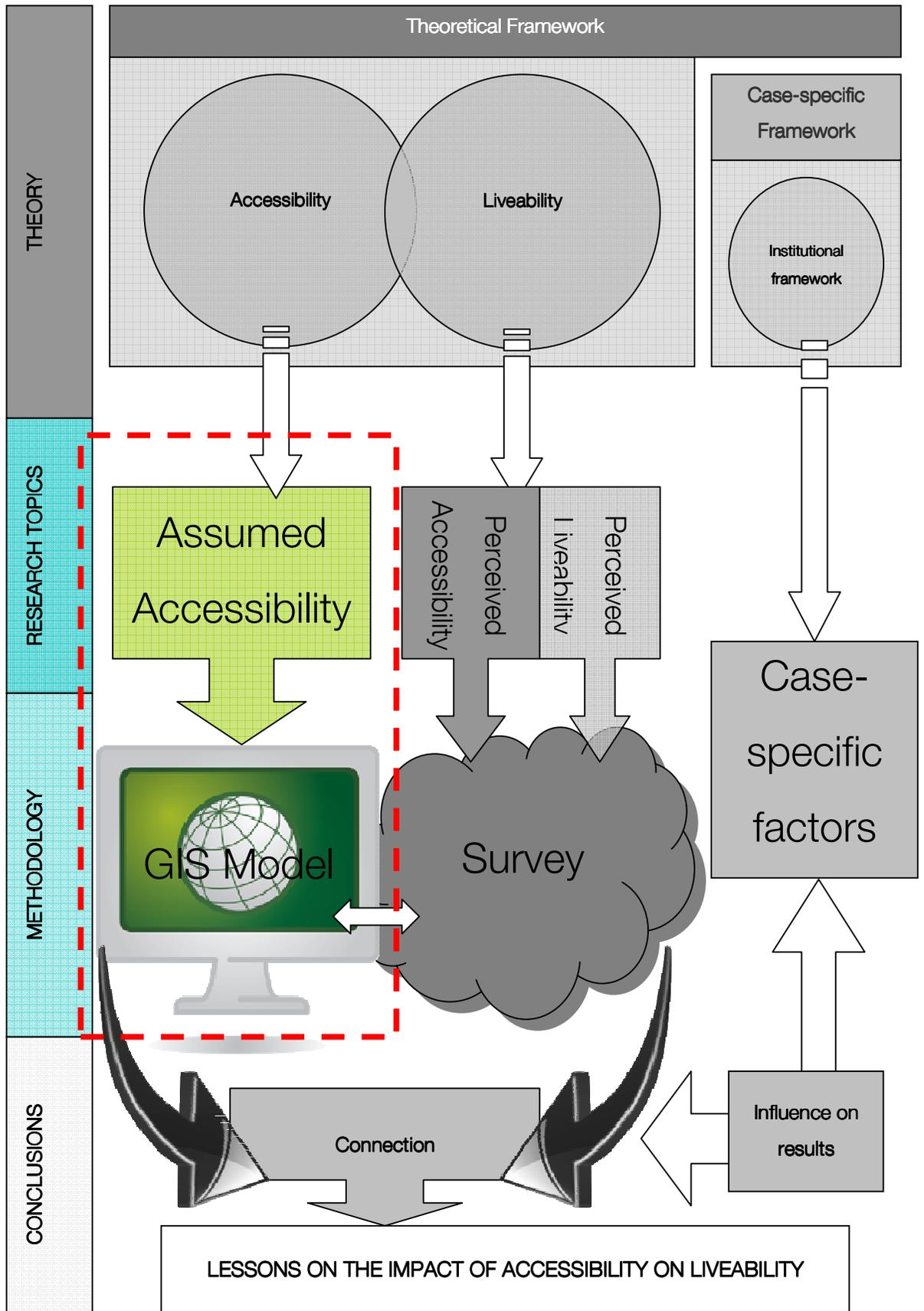
Figure 19: Liveability results

7.7. Conclusions

The overall image is that the levels of liveability and accessibility are pretty good, although large differences can be observed. Distance to Riga may prove to be a very important factor in liveability indicators. The next chapter will combine geographical data with the empirical data from the survey. This will make it possible to review because it is not possible to identify the geographical factors from just the surveys. Furthermore, the following chapter will compare different areas and take into account the availability and quality of public transport and the car accessibility for each region.



part b2
GIS
modelling



8. GIS MODEL

8.1. Introduction

The previous chapter focused on statistical relationships within the survey and comparing it by post-code area and driving distance to Riga. Because accessibility is, as can be read in part A, more than just driving distance, a more comprehensive look at the transport system is necessary. This cannot be done in a purely statistical manner. It is necessary to relate liveability figures to geographical locations of public transport stops and the location of highways and provincial access roads.

To do this, the data was entered into a Geographical Information System (GIS). Within this GIS it is possible to display the data from the survey in a geographical sense (in maps). This makes it easier to identify spatial differences between results and it makes it possible to compare results from different geographical areas with each other and with other geographical features like the existence of a highway or availability of a public transport service (like a bus or a train connection).

This chapter starts with the methodology, how was the GIS model constructed and which steps were taken to combine public transport and road accessibility with the results from the survey. The paragraph after the methodology focuses on the results that can be identified from the GIS model. The final paragraph summarises the relevant conclusions.

8.2. Methodology

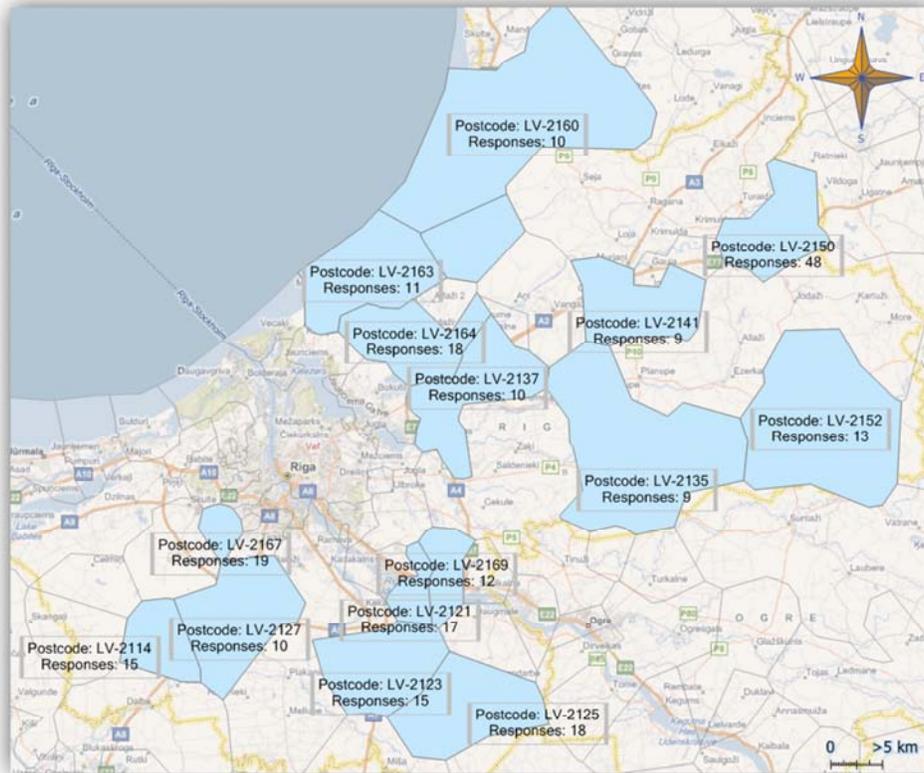
The software used to make a geographical representation of the results and the accessibility model is called Manifold. The reason for choosing Manifold over the usual industry standard, ArcGIS is that in some ways, Manifold is easier to use and it does not need as much computing power, which makes processing results in Manifold faster compared to its main competitor, ArcGIS.

To display the results of the survey in a geographical way, it is necessary to have a geographical component in every respondent. This component is the *postcode*. Each respondent was asked about his or her postcode, by linking the postcode to a coordinate system, it is possible to display each result on a map. The data used was supplied by GeoPostcodes.com, a company specialised in geographical postcode data. In this case, their data consists of a database with town/city names, street names, the corresponding postcode and their respective latitude and longitude. This data is presented in points on a map. In reality, postcodes are of course areas. To change the postcode points to areas and filling the areas with the averaged results of the survey, the following steps were taken:

- Plotting all of the postcode data. (from GeoPostcodes)
- Combining all the postcode data by finding the common centroid for each different postcode value.

- From the centroids (using a Voronoi diagram¹) the postcode areas can be approximated.
- Cleaning the data by cutting out the border of Latvia
- Calculating means of the answers on the Likert scale by postcode value
- Linking postcode data to the means
- Displaying postcode areas with the means of different variables
- Combining the different variables with public transport data and highway locations.

Because the 520 responses are not evenly spread over the postcode areas, some postcode areas have only a few results. These cannot be considered significant. To be able to identify trends and correlations, only the top 15 postcodes (in number of responses) were selected. This number was chosen to give a good overall image of a number of different types of areas (varying in size, typology and distance to Riga) but to still be able to process each postcode individually. This does mean that only postcodes with 9 or more responses are counted in the research. This is not a significant enough amount to identify numeric differences between the postcode groups, but it is enough to compare trends between the areas. In Map 1, these postcodes, their geographical location and the number of responses per postcode can be seen.



Map 1: Responses per postcode

¹ A Voronoi diagram is composed of areas by which all points within that area are closer to the point in their respective area than to any other point in the drawing (Aurenhammer, 1991).

Public Transport

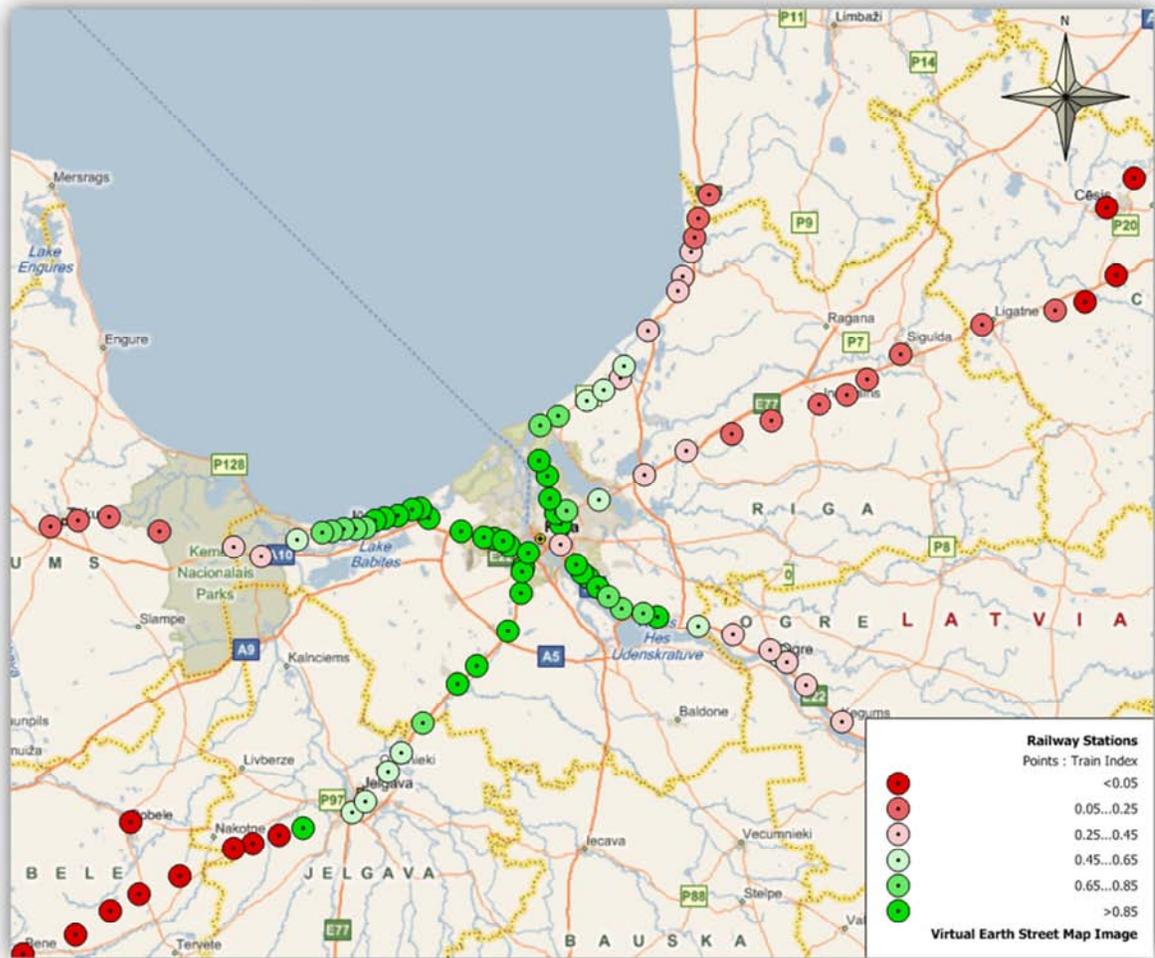
The procedure to calculate the public transport availability is as follows. Two factors were taken into account. First of all the frequency of the public transport connection, secondly the time it takes to travel from each location to Riga central station. Although factors that influence the modal split in favour of public transport are diversified and dependent on situational characteristics (Beirao & Sarsfield Cabral, 2007). These factors were chosen because they are the most influential to the availability and attractiveness of public transport. Fare costs have intentionally been left out of the research. Fares are changeable and are not directly influencing the accessibility. They do influence attractiveness of public transport and might thus affect the modal shift but because the costs of car usage are unknown, it doesn't make sense to take public transport prices into account but not car usage costs.

The public transport system of Pieriga is composed of two modalities, busses and trains. No usage statistics are available, so for this research they will be considered equally important. For each of these modalities, the frequency (n) and travel times (in minutes) to Riga have been recorded to get a good image of the strength of the public transport connection between the respective areas and the city centre of Riga.

For the *train* connections, a database containing the geographic locations of all the train stations in Latvia was used. The stations that are not passenger stations or are not in use were filtered out. For every station in the Pieriga region the travel time to Riga and the number of trains per day was looked up using the time-table of the Latvian rail company ("Latvijas dzelzceļš"). Using the following formula, a so-called "Train Index" was calculated.

$$\frac{1}{\text{traveltime}} * n = \text{TrainIndex}$$

This train index was added to the dataset within the GIS model. This makes it possible to make a graphic representation of the quality of the train connection for each station. The result can be seen in Map 2. As can be seen in this map, there are multiple train lines running from Riga city to the surrounding areas. A strong connection exists between Riga and Jurmala in the west, Ogre in the south-east and Jelgava in the south. The railway connection running due north is pretty strong until Carnikava, with only few trains going further than that. To give an example of the relativity of the strength of the train connection, the most frequently served train station is Imanta, with 41 trains going into Riga city per day. The least frequently served train station is Brenguli, with 3 trains a day in the direction of Riga.



Map 2: Train map of Pieriga

Besides the train, the *bus* also plays an important role in the public transport system in Pieriga. Most towns in the region have a direct bus connection with the central station of Riga. The connection strength of these busses was calculated using the same method that was used for the train, using the following formula:

$$\frac{1}{\text{traveltime}} * n = \text{BusIndex}$$

The data was gathered using the intercity bus trip planner on the Latvian website www.1188.lv. Because the location of the specific bus terminals is unknown, the town centres were used as departure points. The location of the town centres was located using geographical data from an online database. This results in the following “bus map of Pieriga” (see Map 3).



Map 3: Bus stations in Pieriga

Road Accessibility

Besides public transport accessibility, car accessibility plays a very important role in the region of Pieriga. As learned from the survey, the number of people using public transport is about the same as the number of people using the car to travel to Riga. Following these figures, car and public transport accessibility will be treated as equally important.

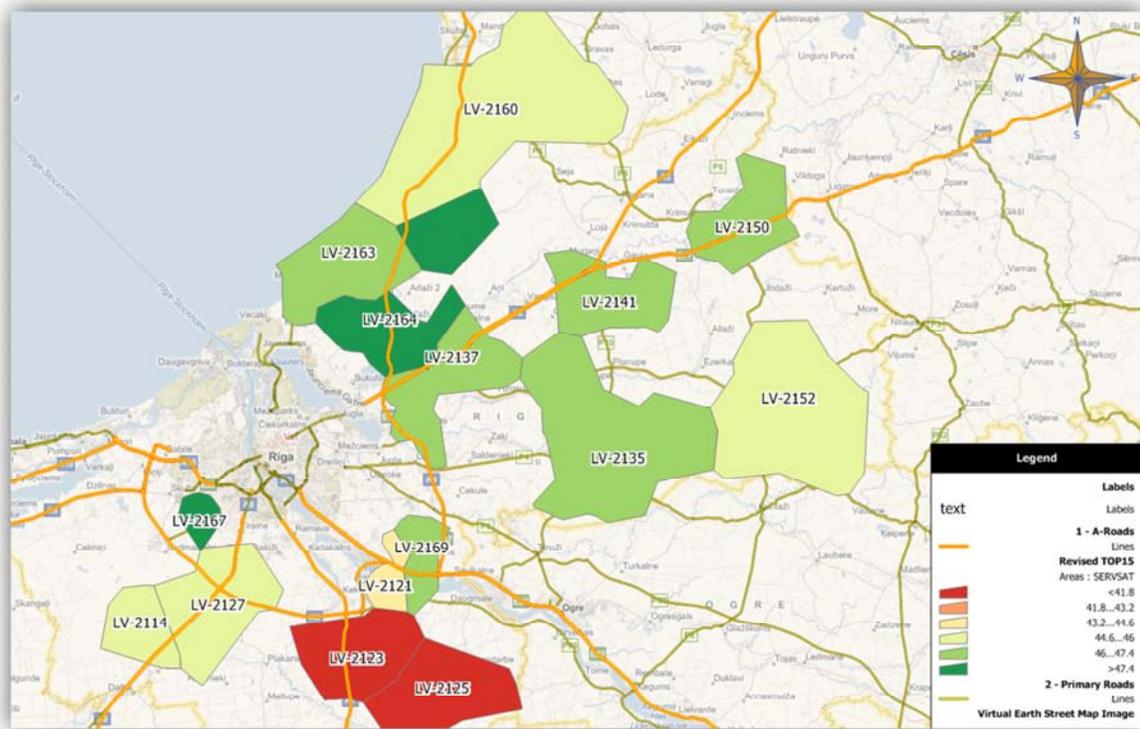
Car accessibility is modelled by measuring the distance to Riga plus the distance to the nearest highways leading into Riga. This means that some municipalities which are located relatively close to Riga, but do not have easy access to a highway have a lower accessibility than places that are located a little further from Riga but are located in the close vicinity of a highway. Onramps are not taken into account, since the Latvian highway system is easily accessible from virtually any location, there are no motorways with specified on- and off ramps. The result of modelling the highways and the provincial roads in Pieriga were added to the maps, it is possible to see the national highways in yellow/red and the provincial roads in darker yellow in each map.

Survey results

To get a better feeling for the connection between perceived liveability and accessibility, it is necessary to combine the two factors and display them together in one geographical representation. The perceived liveability is derived from the survey results, the accessibility from the above mentioned maps of public transport accessibility and car accessibility. The total perceived liveability (which is a combination of the satisfaction on each aspect of liveability multiplied by their importance) in the top 15 of postcodes with the most responses to the survey is displayed in Map 1.

Describing all of the cases would not contribute to the result of the research and it would not be good for the readability of this thesis, so instead a selection of interesting cases was made. The selection is made on a number of cases that are exemplary for all the cases and illustrate the conclusions. To do this, a distinction was made between independent towns and dependent towns. Some areas will be highly dependent on other cities or on Riga for their services, while other areas are highly independent and have all the services within their own region. To make this distinction, respondents to the survey were asked about their satisfaction of the proximity of different services. This gives a good indication if the necessary services are in the vicinity.

In Map 4, the service-dependency is visualised, where the darker green, the higher the satisfaction with local services is.



Map 4: Service-satisfaction level

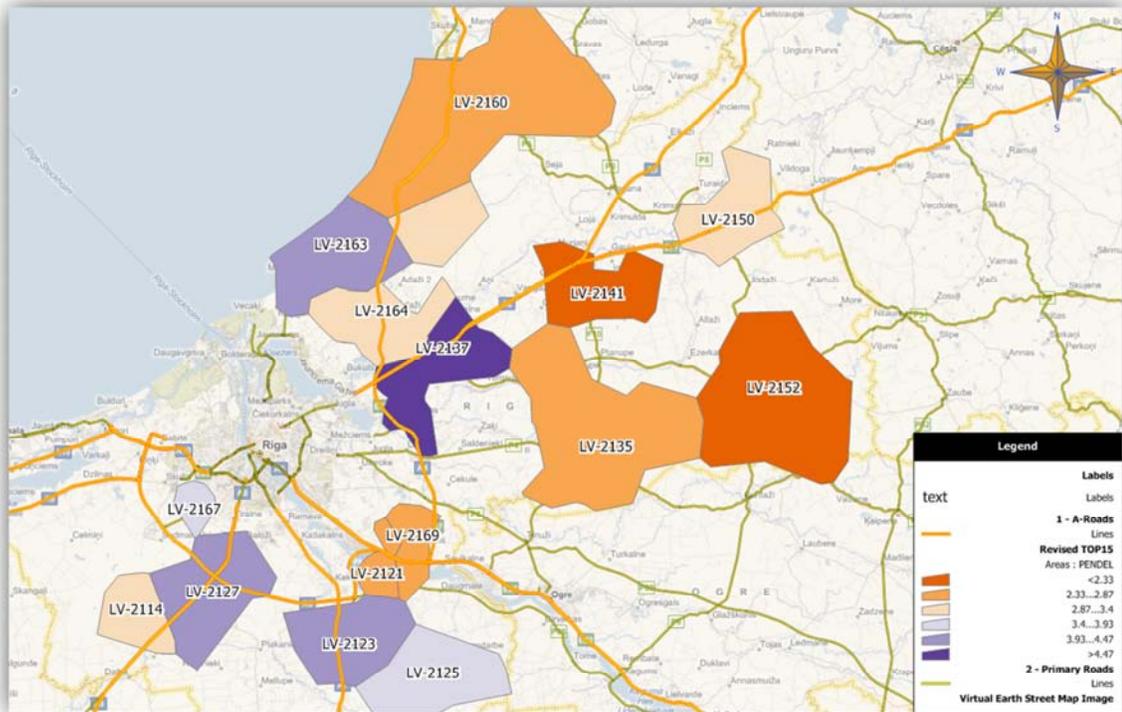
The red colour means a lower satisfaction with local services. People will still be wanting to use those services, so that means they have more reason to travel. As can be seen, the areas south of Riga are less satisfied than the areas north of Riga. This is a sign that these areas are more dependent on Riga city for their services. A second indicator of dependency on other municipalities (mainly Riga) can be identified by examining the frequency of trips to Riga for work. This can be seen in Map 5, respondents (with jobs) in the areas directly surrounding the city of Riga report more trips per week to work in Riga. Considering service dependency and job dependency, it appears to be that the areas with the postcodes LV-2123 and LV-2125 (south of Riga) are much more dependent on Riga city than other areas like the areas with postcodes LV-2152 and LV-2160. Other areas are dependent on Riga for jobs, but do sustain their own services, resulting in a higher service satisfaction but still a lot of commuters to Riga. This makes it possible to identify three types of areas:

1. Independent areas (own jobs, own services, not much travel to Riga)
2. Intermediate areas (most jobs in Riga, most services by itself, some travel to Riga)
3. Dependent areas (jobs in Riga, services in Riga, lots of travel to Riga)

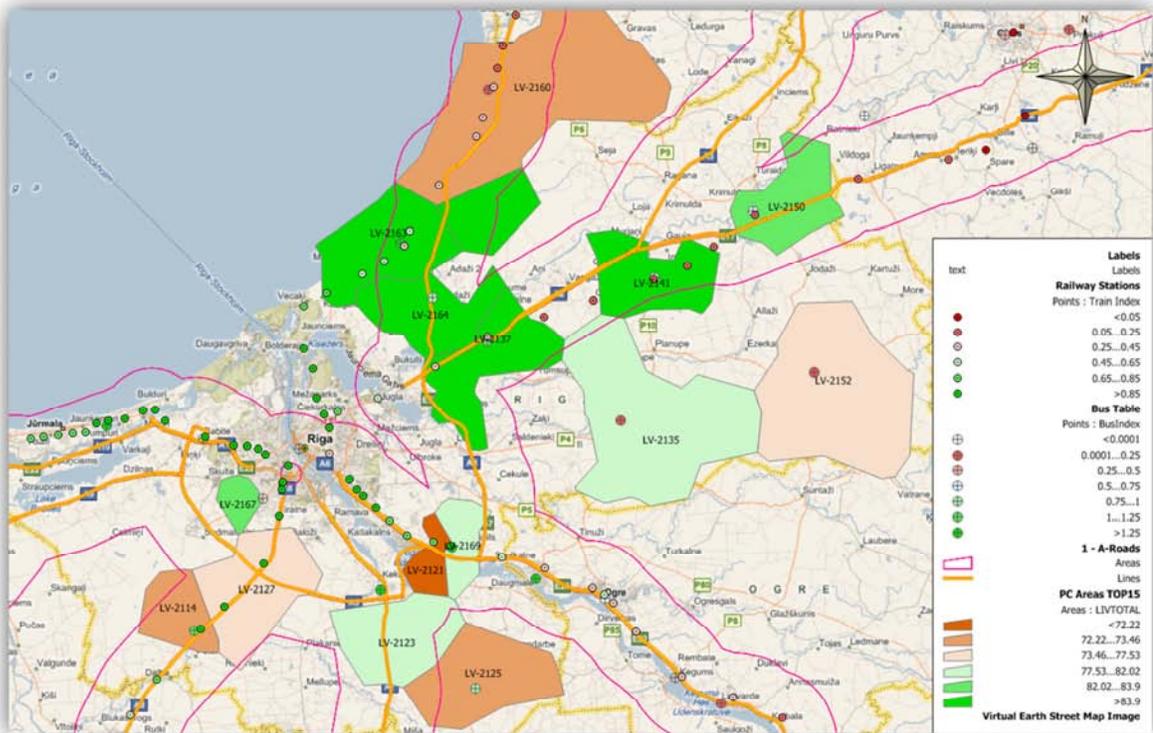
The postcodes have been separated into these groups by distinguishing their level of commuting and level of service satisfaction. The results can be seen in table 2:

Table 2: Three types of categories for postcode areas

POSTCODE	Services	Commuting	Liveability	Category
LV-2114	Below Average	Below Average	Below Average	TRANSITIONAL
LV-2121	Above Average	Below Average	Below Average	INDEPENDENT
LV-2123	Below Average	Above Average	Below Average	DEPENDENT
LV-2125	Above Average	Above Average	Below Average	TRANSITIONAL
LV-2127	Above Average	Above Average	Below Average	TRANSITIONAL
LV-2135	Above Average	Below Average	Above Average	INDEPENDENT
LV-2137	Below Average	Above Average	Above Average	DEPENDENT
LV-2141	Above Average	Below Average	Above Average	INDEPENDENT
LV-2150	Below Average	Below Average	Above Average	INDEPENDENT
LV-2152	Above Average	Below Average	Below Average	INDEPENDENT
LV-2160	Below Average	Below Average	Below Average	TRANSITIONAL
LV-2163	Below Average	Above Average	Above Average	DEPENDENT
LV-2164	Above Average	Below Average	Above Average	INDEPENDENT
LV-2167	Below Average	Above Average	Above Average	DEPENDENT
LV-2169	Above Average	Below Average	Above Average	INDEPENDENT



Map 5: Commuting by people with jobs



Map 6: Total (weighed) liveability indicators

8.3. Results

To draw generalised conclusions on the connection between liveability and accessibility, these maps don't suffice. That's why this paragraph will take a closer look at a case from each of the three categories and see if there are locality factors that influence the outcome or that there are common factors underlying the relationship between liveability and accessibility.

“Independent area”

Accessibility

A good example of an independent area is the area with postcode LV-2141. It is located to the north-east of the city of Riga, around the town of Incukalns, at a distance of 62 km from the Riga city centre. This area shows a high level of service satisfaction and a low level of people commuting to Riga. A possibility is that a lot of people commute to the town of Sigulda, which is much closer than the city of Riga but has much less job opportunities. The town of Incukalns has a pretty good bus connection to Riga city, with a bus index score of 0,88. While there are two train stations around the city, the value of this connection is not as high, since only 10 trains a day service the station. With a travel time of 60 minutes to Riga Central Station, this results in a train index figure of 0,17. Car connectivity is quite good, since the town is located in the direct vicinity of highway A2, connecting it to Riga. Car ownership is a little above average, with 56% of the respondents answering positively to the question if they own a car.

Liveability

Incukalns has a relatively high level of overall liveability. Respondents report a high level of satisfaction with the physical condition of the area, the social quality and the safety of their neighbourhoods. This supports the hypothesis that people choose to live in an independent town because of the social quality and relative safety in comparison to living in the big city. People in this area also have bigger households and more children than the average, which supports the hypothesis of child-friendly village life as well.

Table 3: Factors in independent areas

Factor	Value
Bus Index	High
Train Index	Low
Car Accessibility	Above average
Liveability	High

“Transitional area”

Accessibility

The area with postcode LV-2160 is an example of a transitional town. It is located approximately 60 km north of Riga city. There is a low level of satisfaction with local services, but at the same time, there is also a low percentage of commuters. This means that people are not satisfied with local services, but Riga is too far away to commute. The percentage of respondents that report owning a car is relatively high, at around 70%, but this doesn't lead to a high number of trips to Riga. Although the train has no less than six stops in the postcode area, the frequency of the train is very low, resulting in a relatively bad train connection. The quality of the bus connection is very low as well, leaving the area quite isolated. Nonetheless, more people than average report travelling to Riga by public transport, but they are quite unhappy about the availability of public transport. Car accessibility is above average, the distance to Riga is quite far, but it's well connected by highway.

Liveability

Overall liveability in postcode area LV-2160 is relatively low. The respondents are most displeased about public transport availability and the condition of the neighbourhood. They are more positive about the safety in their neighbourhood. When considering services, by far the most displeased are people with the proximity of leisure services.

Table 4: Factors in transitional areas

Factor	Value
Bus Index	Low
Train Index	Low
Car Accessibility	Above average
Liveability	Low

“Dependent area”

Accessibility

The postcode LV-2163 shows all the signs of a dependent area. It is located 21 km north of Riga city. This area has a low satisfaction with local services and it has a high percentage of people commuting to Riga. This results in a relatively high average number of trips to Riga. The area is pretty well connected by train, but the bus connection is weak. The satisfaction with public transport in the area is relatively low, this might have something to do with the unpopularity of the train and the weak bus connection.

Road accessibility is good, with Riga at only 21 km away and an A-road running through the area. This results in a high rate of car ownership. This also means that people travel to Riga by car much more often than on average in the population.

Liveability

Liveability in the postcode area LV-2163 is higher than average. The only problems are found in areas of public transport and personal safety, which score lower than average. On the other hand, satisfaction with the own house, the condition of the neighbourhood and the social quality is higher than average. This indicates that people take the extra distance to Riga for granted, this distance is not too high, so they prefer travelling for a little while to have access to the entire spectrum of services and job opportunities in Riga.

Table 5: Factors in dependent areas

Factor	Value
Bus Index	Low
Train Index	Average
Car Accessibility	High
Liveability	High

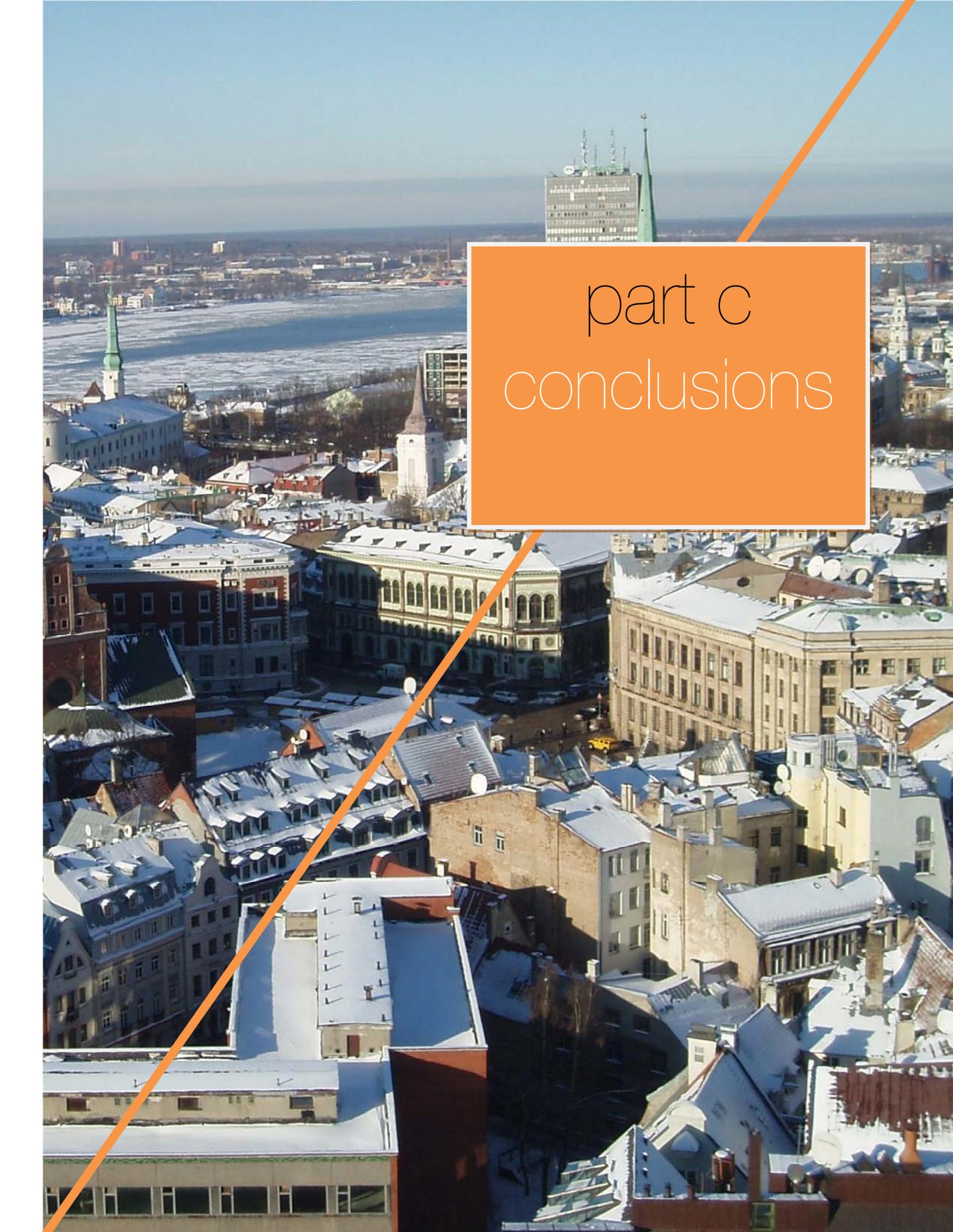
8.4. Conclusion

At first sight, the results from the data seem a bit ambiguous. Because there are many factors underlying the total level of liveability, it is not easy to capture it in a short survey. Nonetheless, it proved possible to identify three types of areas or towns, being the independent, the transitional and the dependent areas. By distributing the cases over the three types of areas it's easier to spot trends.

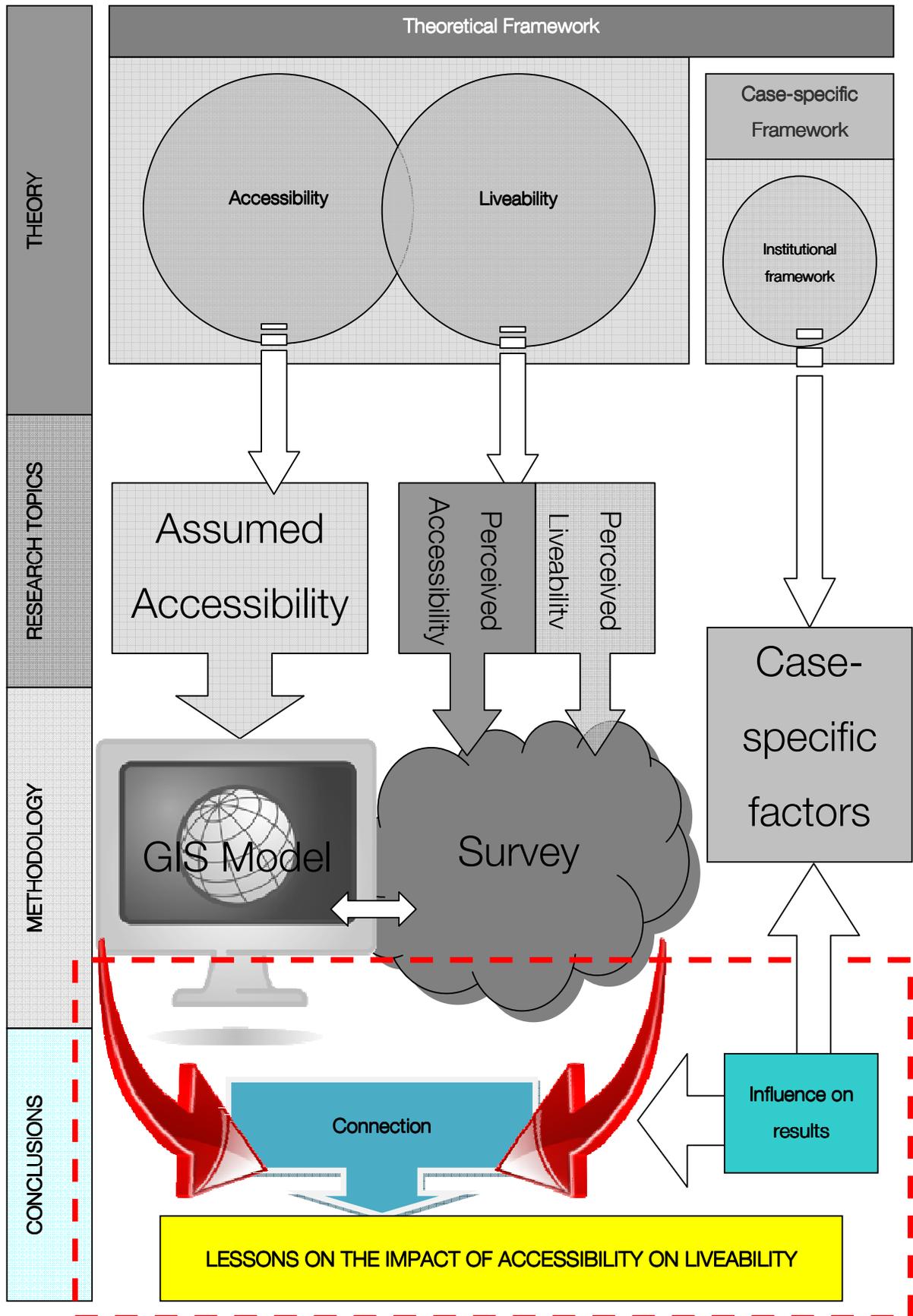
Independent towns are more self-sufficient. They are usually slightly bigger towns that have their own supply of shops and services so they depend less on Riga city. That results in less people who frequently commute to Riga and that they have a relatively high level of satisfaction with the locally offered services. People who live in these towns (usually located further away from Riga city) report a high level of satisfaction with safety and social quality. Because of this combination of factors (higher safety and social quality, more locally offered services), they take a lower level of accessibility to Riga for granted. Because they have relatively many jobs within their own neighbourhood, the accessibility of their neighbourhoods with respect to jobs and services is good. Overall liveability in these areas is average.

Transitional areas are areas where the local community does have local access to the most important services, resulting in a high level of satisfaction. Nonetheless, many people still commute to Riga. This commute might be the result of either a lack of jobs in the local area or a mismatch between workforce and labour market. Transitional towns are often characterised by a high car ownership rate and accompanying high car usage. Because of this, they are less dependent on public transport and consider this less important. Access to local services is relatively good, access to local jobs is not. Liveability in transitional areas is generally lower than average.

Dependent areas do not support their own services, so they are highly dependent on other cities, mostly Riga. This dependency is not only for local services, but also for jobs. Surprisingly, dependent towns show the highest liveability indicators. Apparently, people in dependent areas are more content with their neighbourhood, even though there is a lack of local services and jobs. An important factor is that these areas are generally close to the city of Riga, which makes the commute short and the relative accessibility of services high. The amount of services available in Riga is so much higher than in other towns that people apparently prefer to live a little further away from the city, where there is more space and less of the “big city problems”.

An aerial photograph of a city in winter. The foreground and middle ground are filled with buildings whose roofs are covered in a layer of snow. The architecture is a mix of older, multi-story buildings and more modern structures. In the background, a wide river is frozen, and the city extends to the horizon under a clear blue sky. A prominent green spire is visible on the left side of the image. A large orange square with white text is overlaid on the right side of the image, and a diagonal orange line runs from the bottom left towards the top right.

part c
conclusions



9. CONCLUSIONS

9.1. Introduction

This thesis was set out to answer the question if there is a measurable relationship between perceived liveability and measured accessibility in peri-urban Pieriga. Unfortunately, but not entirely unexpected, there is no yes or no answer to this question. Nonetheless, a lot can be learned from the research. In the following paragraphs the main conclusions drawn from this research are highlighted. After that, some recommendations will be made to the appropriate policy makers, describing ways to improve infrastructure planning in peri-urban areas. Finally, some remarks and recommendations are made to improve future research.

9.2. Conclusions

Liveability and accessibility are used in many different ways. Liveability is a popular word in current policy documents, and usually refers to the quality of life level within a neighbourhood. Recent literature shows that liveability is a combination of several factors being safety, condition of the neighbourhood and social quality. Liveability is a subjective term, which covers both perceived and measured liveability. The difference between the two is the way in which the term is operationalized. Perceived liveability is measured in terms of opinion and is usually researched through a survey. Measured liveability makes assumptions on what is necessary for an area to be liveable and values each of these factors. This research focused on perceived liveability. Mainly because less assumptions have to be made about which services are necessary and which are not. This reduces bias and has a more open approach, which is especially convenient when doing research in a foreign country with different a different culture.

Accessibility is a term that is used in many different ways as well, its core meaning comes down to either how easy it is to get from place A to place B or how many services are within reach, depending on the point of view. Accessibility is often erroneously used instead of the term mobility. Both terms are very different. Where mobility is about the size of transportation flows, accessibility is about level of access, or how well connected a neighbourhood is to a centre of services and jobs. Traditional infrastructure planning is focused on mobility, facilitating flows of transport, while modern infrastructure planning approaches, mainly practiced in the United Kingdom, use accessibility as the most important indicator. While objective (measured) accessibility can be calculated using data from road networks or public transport routes, it is also important to look at the perception of accessibility. This makes it possible to map how important the proximity of certain services is and how easily accessible people regard them. So because accessibility and liveability have an objective and a subjective component, this research was split up in two parts, a survey researching subjective liveability and accessibility and a GIS model that focused on objective accessibility. Because of the large geographical scope of the research, to reduce bias and because of the cultural differences between what is considered important, objective liveability was not included in the study.

An earlier study on perceived liveability in the whole of Latvia indicated that people in Latvia are quite unhappy about their living environments. This study shows that the contrary is true for the region of Pierīga. People from within the Pierīga region are generally quite content. Although this fact seems strange, it is in line with some of the developments in Latvia. Pierīga is the only region in Latvia that still shows a positive population growth, meaning that people from Riga and other regions move to Pierīga because of the positive living environment. Furthermore, Pierīga has the second highest average income of Latvia after Riga city (Latvijas Statistika, 2010). This information explains some of the differences between perceived liveability in Pierīga and in the rest of the country.

In the results of this survey, large differences can be observed between different areas within Pierīga. People closer to Riga are more dependent on services and jobs in the city and show lower levels of perceived accessibility of local services, but show higher levels of liveability. People who live further away from Riga show higher levels of perceived accessibility, but lower levels of liveability. Although this might seem contradictory, it indicates that people in the direct vicinity of Riga do not mind travelling to Riga for the better services that are offered there. People who live further away have access to the most important services and a lot of these services can be found locally, increasing perceived accessibility. At the same time, they have to travel longer distances for some services unless a town in their direct vicinity offers that service.

As a final conclusion can be said that the connection between liveability and accessibility is a difficult one. As has been mentioned in chapter 8, there are three types of areas, dependent, independent and transitional. Each type of area requires a different approach. In dependent areas, it is wise to invest in infrastructure, connecting the area to the nearest centre. People in these areas don't have local access to all the services necessary. They are used to travelling, but because they need to travel frequently, they use the car more often than other areas. Increasing public transport availability and reliability can improve their quality of life. In independent areas, there is less of a need for good connections with Riga, since most people don't travel to Riga that often and are happy to stay in their own towns. The benefits of large investments in infrastructure will probably not outweigh the costs, so it would be wise to focus on keeping the necessary services available at the local level, reducing the need for travel to Riga. Furthermore, these areas should focus on the creation of local jobs, so they can be even more independent from Riga. Transitional areas have to make a choice. They can stay small, relying heavily on Riga for services but cherishing the blessings of a small community, or they can grow bigger, taking in more new citizens. In the first case, it is wise to invest in proper public transport connections, reducing the need for car travel and improving accessibility. In the last case it is advisable to pay more attention to the creation of local jobs and services so the need for mobility diminishes.

The lesson to be learned from this research is that there is no direct connection between accessibility and liveability. What is meant by that is that there is no clear causal relationship between the level of accessibility and the level of liveability. Many people are happy about their situation without having

good connections with Riga. Nonetheless, some areas show a high dependency on Riga without proper connections, these areas need to improve their accessibility by either growing and attracting local services and jobs or by improving connectivity to Riga.

9.3. Recommendations

Based on the results of this research, taking into account the institutional framework in Latvia, the following recommendations are made concerning infrastructure planning in the Pieriga region:

- Expand efforts to plan for accessibility

In a monocentric country like Latvia, most new infrastructure plans will be focused on improving the connection between Riga and the rest of the country. The Riga-Pieriga mobility plan is thus focused on mobility in and around the capital as well. Considering the state of the Latvian economy it is important to set priorities in new development plans. A good way to set these priorities is to check which plans will contribute to a significant improvement of the liveability and quality of life of a certain area. It is for instance more useful to improve connections between places that are highly dependent on each other than between relatively independent towns. This type of planning is more focused on accessibility, giving inhabitants of dependent towns better access to services and jobs that are necessary, thus improving their liveability.

- Include liveability studies early in the process of infrastructure plans

To examine the need for improved accessibility and to get a better understanding of the wishes and needs of the local population it is useful to do a survey in the concerned areas. From this survey, it's possible to examine the needs of the local population. If the survey shows that people are not satisfied with for instance road safety, it makes more sense to improve road conditions than to improve the connections with Riga. This might in the end cause a bigger raise in liveability rates. This is a different approach in infrastructure planning but has a potentially bigger effect on liveability.

- Make a strategic choice for growth or remain small

A lot of towns in Pieriga are small and cannot sustain an appropriate level of services. These towns need to consolidate their position and maintain their village-like atmosphere, with good housing and social quality, which are appreciated by the inhabitants. Growth centres need to focus on either good connections with Riga, or work on the availability of local services, especially leisure services. This way, the accessibility of local services is guaranteed, which has a positive impact on the overall liveability.

- Increase power of regional planning authorities

As learned from part A2, the region in Latvia is not a very powerful planning institution. The Riga Planning Region is not capable of enforcing their planning visions on lower levels of government and it cannot perform as an umbrella institution to supervise planning efforts. Most power lies within municipalities. This results in fragmented planning efforts and a lack of appreciation of local strengths. Liveability will not improve in each community if accessibility measures are taken. Each community is aiming for their own growth and ensuring their own competitiveness. Regional collaboration will improve the opportunities for making use of local strengths. This way it is possible to improve liveability in all areas.

9.4. Discussion

During this research, several factors have influenced the outcomes. In this chapter, the most important factors will be identified, with recommendations on how further research in this field may be improved.

First of all, the fact that the survey was done in the form of an online survey, promoted amongst users of a social networking website, introduces a bias. Not all of the responses were valid and useful, since some respondents were not actually from the Pieriga region. Furthermore, the responses were spread out over many different postcodes, making it harder to draw conclusions on single postcodes and decreasing the statistical significance. In future research, it would be recommendable to pick a few postcode areas, preferably with a different typology, and do a more in-depth study with a more specialised (door-to-door) survey and some in-depth interviews. The language barrier and money and time constraints made it impossible to do that kind of study in the light of this thesis.

The language barrier proved to be another difficulty. It was hard to find English literature that described the local situation in Latvia. A lot of data was only available in Latvian. This made it hard to get a good understanding of the situation in Latvia and Pieriga. It makes the researcher dependent on other people for information and it makes it impossible or very hard to approach citizens. Luckily, with the help of local Witteveen+Bos employees, it was possible to get in touch with some local experts, which was very helpful in gaining an overview. Nonetheless, the time spent in Riga was not quite enough to gain full insight into the situation.

Another problem was the lack of reliable geospatial and public transport data. It was impossible to find the right geographical postcode data that was affordable, that's why it was necessary to make an approximation of the postcode areas, which are not as specific. Public transport data (frequencies and travel times) were available, but usage statistics were not. Usage statistics would make it easier to make a reliable estimation of the importance of public transport.

In future research it is thus recommended that a more in-depth approach is taken into one of each of the types of postcode areas that have been identified in this research. This makes it possible to further distinguish differences and identify problems and possible solutions.

10. REFERENCES

- Adams, J. (2005). Hypermobility, a Challenge to Governance. In C. Lyall, & J. Tait, *New modes of governance: developing an integrated policy approach to science* (pp. 123-138). Aldershot: Ashgate Publishing Ltd.
- Banister, D. (2008). The Sustainable Mobility Paradigm. *Transport Policy*, 73-80.
- Beirao, G., & Sarsfield Cabral, J. (2007). Understanding attitudes towards public transport and private car: A qualitative study. *Transport Policy*, 478-489.
- Bertolini, L., le Clercq, F., & Kapoen, L. (2005). Sustainable accessibility: a conceptual framework to integrate transport and land use plan-making. Two test-applications in the Netherlands and a reflection on the way forward. *Transport Policy*, 207-220.
- Brock, D. (1993). Quality of Life Measures in Health Care and Medical Ethics. In M. Nussbaum, & A. Sen, *The Quality of Life* (pp. 95-132). Oxford: Oxford University Press.
- Calthorpe, P. (1993). *The Next American Metropolis*. New York: Princeton Architectural Press.
- Central Intelligence Agency. (sd). *CIA - The World Factbook*. Opgeroepen op August 18, 2010, van <https://www.cia.gov/library/publications/the-world-factbook/>
- Council of Europe. (2004). *Demographic Yearbook*. Brussels: Council of Europe.
- Crane, R. (1996). Cars and Drivers in the New Suburbs: Linking Access to Travel in Neotraditional PLanning. *Journal of the American Planning Association*, 51-65.
- Dalvi, M., & Martin, K. (1976). The measurement of accessibility: Some preliminary results. *Transportation*, 17-42.
- Diener, E., & Suh, E. (1997). Measuring Quality of Life: Economic, Social and Subjective Indicators. *Social Indicators Research*, 189-216.
- Doi, K., & Hayashi, Y. (2002). Mobility and Creativity in City Systems. *Transport Geography and Spatial Systems*, 1-13.
- Eurostat. (2010). *Eurostat Database Tables*. Opgeroepen op August 18, 2010, van <http://epp.eurostat.ec.europa.eu/>
- Fihel, A., Kaczmarczyk, P., & Okolski, M. (2006). Labor mobility in the enlarged European Union: International migration from the EU8 countries. *CMR Working Papers*.
- Flowerdew, R., & Martin, D. (2005). *Methods in Human Geography*. Essex: Pearson Education Ltd.
- Geurs, K. T., & van Wee, B. (2004). Accessibility evaluation of land-use and transport strategies: review and research directions. *Journal of Transport Geography*, 127-140.
- Geurs, K., Boon, W., & van Wee, B. (2009). Social Impacts of Transport: Literature Review and the State of the Practice of Transport Appraisal in the Netherlands and the United Kingdom. *Transport Reviews*, 69-90.
- Haighton, M. (2010, April 3). A'dam vreest vuilnisstaking. *De Volkskrant*, p. 3.

- Halden, D. (2009). 10 Years of Accessibility Planning in the UK - What has been achieved? *European Transport Conference*. Noordwijkerhout: Association for European Transport and Contributors.
- Hansen, W. G. (1959). How Accessibility Shapes Land Use. *Journal of the American Planning Association*, 73-76.
- Henderson, K. (1999). *Back to Europe: Central and Eastern Europe and the European Union*. London: UCL Press.
- Hooimeijer, P., Kroon, H., & Luttik, J. (2001). *Kwaliteit in Meervoud*. Gouda: Habiforum.
- Katz, P., Scully, V. J., & Bressi, T. W. (1994). *The new urbanism: toward an architecture of community*. New York: McGraw-Hill Professional.
- Kaufmann, V., Bergman, M. M., & Joye, D. (2004). Motility: Mobility as Capital. *International Journal of Urban and Regional Research*, 745-756.
- Koornstra, R. (2010, April 10). Invictus. *De Telegraaf*, p. 7.
- Kule, L. (2007). *The Baltic Sea Concept Share*. Riga: University of Latvia.
- Latvijas Statistika. (2010). *Central Statistical Bureau of Latvia*. Opgeroepen op August 18, 2010, van Database: <http://data.csb.gov.lv/>
- Leidelmeijer, K., & van Kamp, I. (2003). *Kwaliteit van de Leefomgeving en Leefbaarheid*. Bilthoven: RIVM.
- Leitmann, J. (1999). Can city QOL indicators be objective and relevant? Towards a participatory tool for sustaining urban development. *Local Environment*, 169-180.
- Levine, J., & Garb, Y. (2002). Congestion pricing's conditional promise: proimotion of accessibility or mobility? *Transport Policy*, 179-188.
- MacMillan. (2007). *English Dictionary for Advanced Learners*. Oxford: MacMillan Education.
- Mercer. (2010, 05 26). *Mercer's 2010 Quality of Living Survey Highlights*. Opgeroepen op 08 18, 2010, van <http://www.mercer.com/qualityofliving>
- Minahan, J. (2000). *One Europe, many nations: a historical dictionary of European national groups*. Westport: Greenwood Press.
- Ministerie van Verkeer en Waterstaat. (1986). *Tweede Structuurschema Verkeer & Vervoer*. Den Haag: Ministerie van VWS.
- Ministerie van Volkshuisvesting Ruimtelijke Ordening en Milieubeheer. (2001). *Vijfde Nota over de Ruimtelijke Ordening*. Den Haag: Ministerie van VROM.
- Ministerie van Volkshuisvesting Ruimtelijke Ordening en Milieubeheer. (2008). *Leefbaarheid door de Tijd*. Den Haag: Ministerie van VROM.
- Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer. (1991). *Vierde Nota Ruimtelijke Ordening*. Den Haag: Ministerie van VROM.
- Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer. (2006). *Wonen op een rijtje. De resultaten van het Woononderzoek Nederland 2006*. Den Haag: Ministerie van VROM.

- Mokhtarian, P., & Chen, C. (2004). TTB or not TTB, that is the question: a review and analysis of the empirical literature on travel time (and money) budgets. *Transport Research Part A*, 643-675.
- Moore, J. (2000). Placing Home in context. *Journal of Environmental Psychology*, 207-217.
- Norris, T., & Pittman, M. (2000). The Healthy Communities Movement and the Coalition for Healthier Cities and Communities. *Public Health Reports*, 118-124.
- OECD. (2010). *Google Public Data Explorer*. Opgeroepen op August 17, 2010, van <http://www.google.com/publicdata/home>
- Putnam, R. (1995). Bowling Alone: America's Declining Social Capital. *Journal of Democracy*, 65-78.
- Puzulis, A. (2010, April 19). Riga Planning Region. (L. Nout, Interviewer)
- Ray, L. (2002). Crossing Borders? Sociology, Globalization and Immobility. *Sociological Research Online*.
- Riga City Council. (2005). *Sustainability Trends in Riga*. Riga: Riga City Council.
- Ross, W. (2000). Mobility & Accessibility: the yin & yang of planning. *World Transport Policy & Practice*, 13-19.
- Sager, T. (2005). Footloose and Forecast-free: Hypermobility and the planning society. *European Journal of Spatial Development*, 3-23.
- Schafer, A., & Victor, D. (2000). The Future Mobility of the World Population. *Transport Research Part A*, 171-205.
- Schoon, J. G., McDonald, M., & Lee, A. (1999). Accessibility Indices: Pilot Study and Potential Use in Strategic Planning. *Transportation Research Record*, 29-38.
- Schuler, M., Lepori, B., Kaufmann, V., & Joye, D. (1997). *Eine Integrative Sicht der Mobilität im Hinblick auf ein neues Paradigma der Mobilitätsforschung*. Bern: Schweizerischer Wissenschaftsrat.
- Schwanen, T., Dijst, M., & Dieleman, F. (2004). Policies for Urban Form and their Impact on Travel: The Netherlands Experience. *Urban Studies*, 579-603.
- Shafer, S., Lee, B. K., & Turner, S. (2000). A tale of three greenway trails: user perceptions related to quality of life. *Landscape and Urban Planning*, 163-178.
- Skruzkalne, Z. (2010, April 10). Planning in Tukums, Latvia. (L. Nout, Interviewer)
- Smith, T., Nelischer, M., & Perkins, N. (1997). Quality of an urban community: a framework for understanding the relationship between quality and physical form. *Landscape and Urban Planning*, 229-241.
- Sociaal en Cultureel Planbureau. (2002). *Zekere Banden*. Den Haag: SCP.
- Sustainable Communities Network. (2000, January 6). *Clinton-Gore Livability Agenda*. Opgeroepen op August 18, 2010, van Smart Growth Network: http://www.smartgrowth.org/library/gore_pr11199.html
- UK Social Exclusion Unit. (2003). *Making the Connections: Final Report on Transport and Social Exclusion*. London: Office of the Deputy Prime Minister.

- United Nations Economic & Social Affairs. (2007). *World Urbanization Prospects: The 2007 Revision*. New York: United Nations.
- University of Latvia. (2005). *Sustainability Trends in Riga*. Riga: University of Latvia, Faculty of Geography and Earth Sciences.
- van Kamp, I., Leidelmeijer, K., Marsman, G., & de Hollander, A. (2003). Urban environmental quality and human well-being. Towards a conceptual framework and demarcation of concepts; a literature study. *Landscape and Urban Planning*, 5-18.
- Veenhoven, R. (2000). *Leefbaarheid: Betekenissen en meetmethoden*. Rotterdam: Erasmus Universiteit Rotterdam.
- Veenhoven, R. (2004). Happiness as an Aim in Public Policy. In A. Linley, & S. Joseph, *Positive Psychology in Practice* (p. Chapter 39). Hoboken, N.J.: John Wiley and Sons Inc.
- Wachs, M., & Kumagai, G. (1973). Physical Accessibility as a Social Indicator. *Socio-Economic Planning Sciences*, 437-456.
- Witteveen+Bos. (2009). *Mobility plan for Riga and Pieriga Inception Report*. Riga: SIA Witteveen+Bos Latvia.
- World Bank. (2010). *Google Public Data Explorer*. Opgeroepen op August 18, 2010, van <http://www.google.com/publicdata/home>
- World Commission on Environment and Development. (1987). *Our Common Future*. Oxford/New York: Oxford University Press.

The background image shows a cityscape across a body of water. In the foreground, two people are sitting on a wooden bench, their backs to the camera, looking out at the water. A metal railing is in front of them. The middle ground features a row of trees and a stone wall. In the background, there are several buildings, including a prominent white church with a tall, green-roofed spire. The sky is blue with some clouds. An orange diagonal line runs from the top right to the bottom left, passing through the text box.

appendix 1
detailed
results

Survey findings

The survey was conducted between the 16th of June and the 5th of July 2010. The survey was conducted as an online survey. There were multiple reasons for conducting an online survey instead of a door-to-door or phone questionnaire. First of all: the language barrier. A lot of people in Latvia do not speak, or are weary of speaking English. Even if they do speak English, they will be reluctant to answer questions from a stranger in English. Conducting a door-to-door or phone survey in Latvian turned out to be impossible due to practical and financial reasons. Secondly, an online survey creates a great advantage in the processing of the data. There is no need for digitalising every survey, which saves a lot of time and diminishes digitalisation errors. The final reason for using an online survey was to increase the geographical scope. Surveys done in person have a limit in geographical scope due to (travel-)time and money constraints. Online surveys don't have this problem, they can be conducted anywhere in the world without any extra costs.

There are of course downsides to an online survey. One of the problems is that people are more inclined to stop a survey when it's taking too long, so it is important to keep your questions and your survey short and interesting. Another problem is that an online survey makes it impossible for people without internet to fill out the survey. This introduces a bias by excluding people without an internet connection, mainly the older generation. This bias is exaggerated by the fact that the survey was promoted using the biggest Latvian social network, draugiem.lv. This website was chosen as a platform to acquire respondents because it is the most used website in Latvia, 2,6 million Latvians have an account and it has 1,6 million unique visitors per month. This website has the option to display an advertisement to a specific geographical area, making it possible to focus the research on Pierīga, excluding Riga city. Furthermore, the survey was only visible for people of the age of 18 years or older. This limits the bias, since a lot of teenagers use the website draugiem.lv. Excluding them (by the date of birth they have registered with the website) from the target population results in a higher data-quality. The survey was promoted during two weeks, which generated a total of 529 results, of which 519 were complete surveys. The next paragraph will look at the general characteristics of the respondents, after which the most interesting results will be presented.

Question 1:

What is your gender?

Why this question?

For general characteristics and to understand the differences between men and women, the gender of each respondent was asked. Possible differences in employment and mobility are assumed.

Results:

A lot more women than men filled in the survey. 68,7% of the respondents reports to be female, 30,3% of the respondents are male, 1% of the respondents did not answer. In the Pieriga region, 53% of the residents is female, against 47% males. The difference is probably explained by the higher usage of the internet and the social networking website by women than by men. It does not influence the outcome of this research since it is not gender-specific.

Table with results:

Table 6: Gender

GENDER		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	159	30,3	30,6	30,6
	Female	360	68,7	69,4	100,0
	Total	519	99,0	100,0	
Missing	System	5	1,0		
Total		524	100,0		

Question 2:

What is your age?

Why this question?

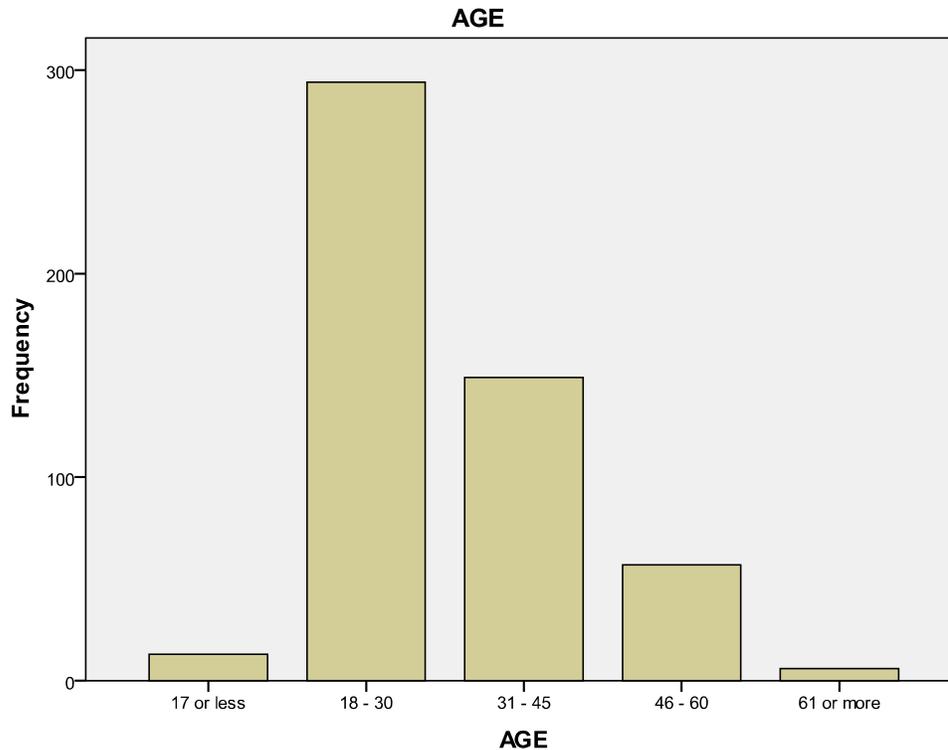
Age can say something about the mobility of a person. It also helps in gaining a better feel for the kind of household people are living in. Age is defined by age group.

Results:

Most of the respondents fall into the 18-30 category, this results in an average age of 31,5. This is younger than the average age in Latvia, being 39,1 years (Latvijas Statistika, 2010). This is not surprising, given the fact that the survey was done online, usually attracting younger people. It

might introduce a bias though, since younger people are understood to be more mobile and might have different needs than the older generation.

Frequency table with results:



Question 3 & 4:

How many people are in your household?

How many of those people are 17 or younger?

Why this question?

This question was asked to determine average household size, since that might have a big influence on accessibility needs. Families with children going to school need good connections with local schools, while young couples might require better connections with the workplace. By asking household size and number of children in question you get an idea of the way their household is composed.

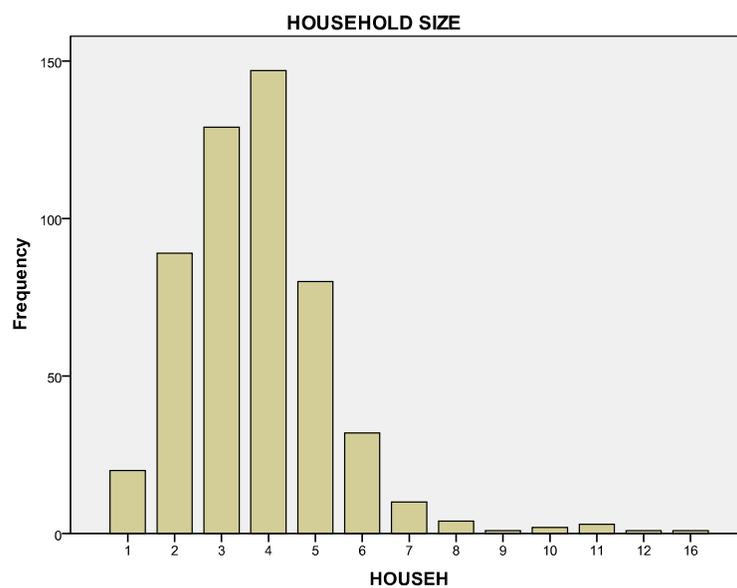
Results:

The respondents report an average household size of 3,77 with the biggest group reporting 4 people in their household (28,3%) followed by 3 people in a household (24,9%). Striking is the low number of people with a single-person household. Only 20 respondents (3,9%) report living by themselves. This does fit the hypothesis that suburban Pieriga is dominated by single-family

households. If the same survey would have been done in Riga city, different figures are to be expected.

Table 7: Household Size

Household Size				
	Frequency	Percent	Valid Percent	Cumulative Percent
1	20	3,9	3,9	3,9
2	89	17,1	17,1	21,0
3	129	24,9	24,9	45,9
4	147	28,3	28,3	74,2
5	80	15,4	15,4	89,6
6	32	6,2	6,2	95,8
7	10	1,9	1,9	97,7
8	4	,8	,8	98,5
9	1	,2	,2	98,7
10	2	,4	,4	99,0
11	3	,6	,6	99,6
12	1	,2	,2	99,8
16	1	,2	,2	100,0
Total	519	100,0	100,0	



About 51% of the respondents reports having no children in their household, while 27,6% reports 1 child and 16,3% reports two children. This results in an average of 0,79 child per household. Which is low, but in line with the very low fertility rate in Latvia. From Table 8 it's clear that there are 164 respondents who report a household of more than two adults without any children.

These untraditional households are more common in Latvia than in Western Europe. It's probable that adult children stay with their parents while they're studying or starting a job longer than is usual in the Netherlands.

Table 8: Crosstab of Household Size and Children

Household Size * Number of Children Crosstabulation										
Household Size		Children per Household								Total
		0	1	2	3	4	5	7	8	
1	20	0	0	0	0	0	0	0	0	20
2	76	8	0	0	0	0	0	0	0	84
3	53	73	1	0	0	0	0	0	0	127
4	68	23	52	1	2	0	0	0	0	146
5	31	24	14	8	2	1	0	0	0	80
6	8	10	9	3	2	0	0	0	0	32
7	3	1	3	2	0	0	1	0	0	10
8	0	0	1	2	1	0	0	0	0	4
9	0	0	1	0	0	0	0	0	0	1
10	0	2	0	0	0	0	0	0	0	2
11	0	0	2	0	0	0	0	0	0	2
12	1	0	0	0	0	0	0	0	0	1
16	0	0	0	0	0	0	0	1	0	1
Total		260	141	83	16	7	1	1	1	510

Question 5:

What kind of house do you live in?

Why this question?

This question was asked to see if there is a difference in results for people living in a detached house (equals less dense neighbourhood) or in a bigger apartment block (more dense neighbourhood). The hypothesis is that people in a denser neighbourhood make more use of public transport, because of higher availability of public transport and possible because of lower income.

Results:

57,9 percent of the valid responses report living in an apartment building. 42,1% lives in a detached house. Most of the urban area in Latvia consists of apartment buildings, so the value of 57,9% seems rather low. The geographical region where the survey has taken place consists of a lot of smaller towns though, which might explain the relatively high number of people living in detached houses. If we compare house typology with public transport usage, results in the following crosstab:

Table 9: Travel to Riga by Housetype

		Travel to Riga by Public Transport						Total	
		(almost) never	less once week	than a week	1-2 times a week	3-4 times a week	5-6 times a week	daily	
HOUSE	Detached	84	38		21	13	14	25	195
TYPE	Apartment	69	64		40	31	32	40	276
Total		153	102		61	44	46	65	471

At first sight, there seems to be a difference, residents of apartments seem to use more public transport than people who live in detached houses. It is necessary to test this hypothesis for significance. Because the first variable (house type) is nominal and the number of public transport trips per week is ordinal, an ANOVA test is suitable. The one-way analysis of variance results in the following table:

Table 10: ANOVA test for travel to Riga by Public Transport

ANOVA						
Travel to Riga by Public Transport						
	Sum	of	df	Mean Square	F	Sig.
	Squares					
Between Groups	29,563		1	29,563	9,338	,002
Within Groups	1484,849		469	3,166		
Total	1514,412		470			

From the ANOVA test can be concluded that there is a significant difference in means between the two groups (house typology). This indicates that the hypothesis is correct and that people who live in apartment buildings travel more by public transport than people who live in detached houses.

Question 6:

What are the four digits of your postcode?

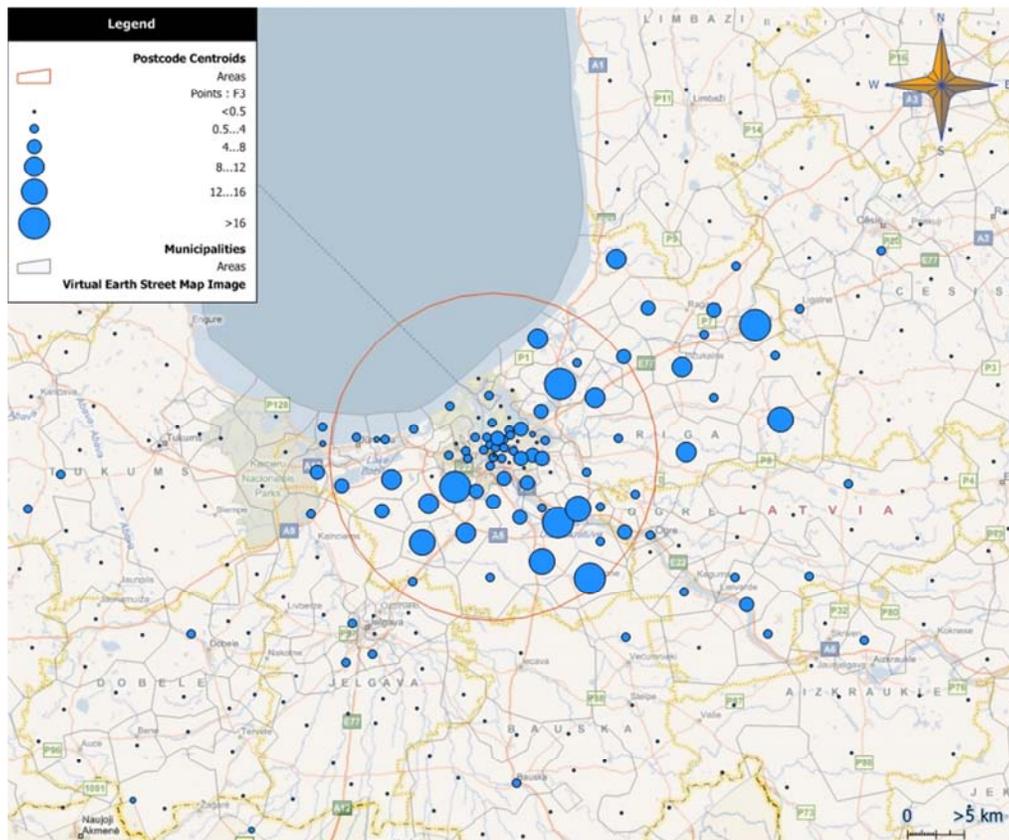
Why this question?

This question was asked to identify differences in perceived liveability between different geographical areas. Using GIS software with a dataset including the coordinates of the centroids of each postcode area, the average distance from each postcode to the centre of Riga can be calcu-

lated using a specific formula. Explaining this formula goes beyond the scope of this research. Distance to Riga and access to public transport are interesting indicators for liveability and accessibility research. More results from this data will be discussed further on.

Results:

In total, 112 different postcodes were entered. The postcode with the highest number of results is LV-2150 with 48 surveys. This means that with an average of 4.7 survey per postcode the data is too spread out to say something about every single postcode. The spread of the responses can be seen in the following figure:



In this image the spread of the survey results throughout the Pieriga region can be seen. Most of the results come from the immediate surroundings of Riga, with still quite a few surveys taken in Riga city, but the mayor part of the surveys is from within a 30km radius from the centre of Riga.

Question 7:

Which answer describes your employment situation best?

Why this question?

People with jobs will have different needs than people without a job, students or people who work in their households. In this question different categories of employment are identified, and the difference in needs for mobility and liveability can be found.

Results:

52% of the respondents are working for an employer. 23,1% are students, with and without a job. Only 3,7% is self-employed and 11,9% is unemployed, looking for a job. That last figure is quite low, since Latvia currently has an unemployment level of nearly 25% (OECD, 2010). There is no obvious explanation for this discrepancy, although it may be a desirable-answer bias. People might not want to tell that they are unemployed.

Table 11: Employment types

		EMPLOYMENT			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Looking for a job	62	11,9	11,9	11,9
	Parental Leave	4	,8	,8	12,7
	Retired	9	1,7	1,7	14,5
	Self-employed	19	3,7	3,7	18,1
	Student with a job	48	9,2	9,2	27,4
	Student without a job	72	13,9	13,9	41,2
	Voluntary Work	5	1,0	1,0	42,2
	Working for employer	270	52,0	52,0	94,2
	Working in household	30	5,8	5,8	100,0
	Total	519	100,0	100,0	

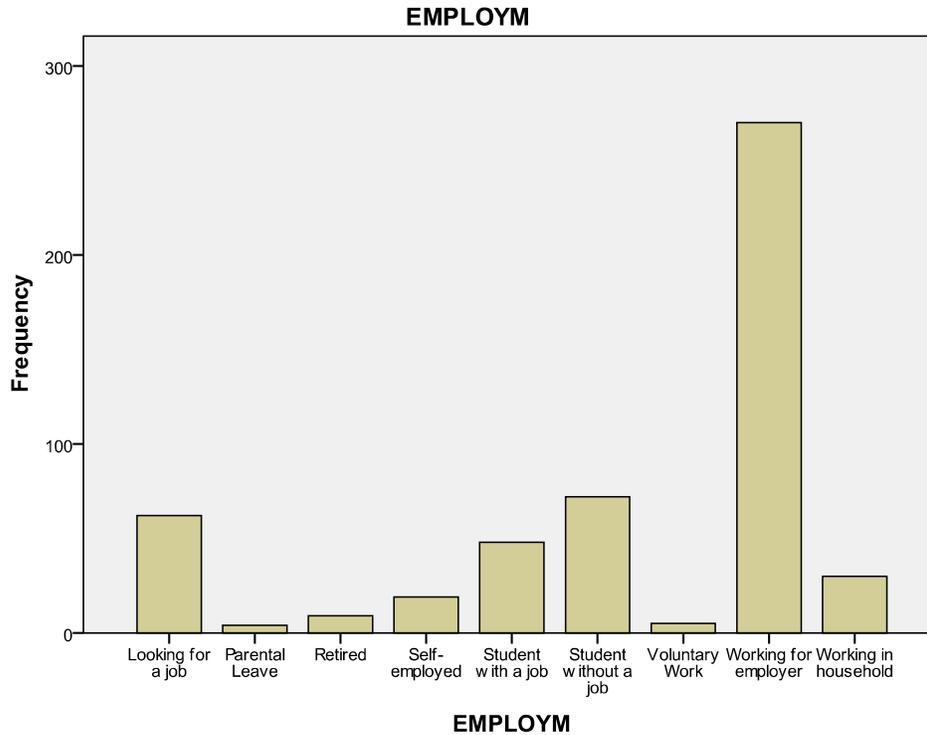


Table 12: Commuting for different employment types

		Travel to Riga for work					Total
		(almost) never	a few times a month	several times a month	a few times a week	(almost) daily	
EMPLOYMENT	Looking for a job	41	5	2	2	12	62
	Parental Leave	3	0	1	0	0	4
	Retired	7	0	1	1	0	9
	Self-employed	9	2	0	2	6	19
	Student with a job	13	5	0	6	24	48
	Student without a job	59	6	2	2	3	72
	Voluntary Work	4	0	0	0	1	5
	Working for employer	94	3	9	17	147	270
	Working in household	26	2	1	0	1	30

Crosstabulating employment status with the variable that tells us how often people travel to Riga for work results in table 12.

From this table we can learn that from the people who work for an employer, 60,7% travels to Riga a few times week or more. Out of 48 students with a job, 63% travels to Riga for work a few times a week or more.

Question 8:

Do you own a car?

If yes, in what year was it built?

Why this question?

Question 8 was added to find out how many people own a car, and the percentage that, while owning a car, still chooses to go to Riga by public transport. Furthermore, the relationship between owning a car and the frequency of trips to Riga might be interesting. The question about the year the car was built is a secondary indicator for income. If people own a very new car that says something about their income.

Results:

As can be seen from the table below, 52% of the respondents own a car, 48% does not own a car.

Table 13: Car Ownership in Pieriga

		Car Ownership			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	270	52,0	52,0	52,0
	No	249	48,0	48,0	100,0
	Total	519	100,0	100,0	

Unfortunately, there is no significant correlation between car ownership and the number of trips a respondent makes, but the further people live away from the city, the more often they own a car. This relationship is significant (sig < 0.05). This does not result in a correlation between distance to Riga and public transport usage. There seems to be no significant connection between those two variables.

Table 14: ANOVA test of Distance to Riga

ANOVA					
Distance to Riga	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12482,374	1	12482,374	4,001	,046
Within Groups	1600398,115	513	3119,684		
Total	1612880,489	514			

Question 9:

How often do you travel to Riga (municipality) for the following reasons:

- To work - For Business - To visit friends or family - To go shopping - For my education - For leisure - For medical care - For personal care - For other reasons

Why this question?

For researching accessibility and liveability, it is necessary to know how strong the connections with Riga are. The hypothesis is that these ties are very strong and that many people travel to Riga very often for different reasons. This question tests that hypothesis. These reasons are chosen to cover most activities that one would undertake in Riga city. The list is not extensive, that's why it includes an "other" category.

Results:

From the graph in Figure 20 we can tell that 37,4% of the respondents travel to Riga for work (nearly) daily and that 14,8% of the respondents travel to Riga for their education on a (nearly) daily basis. If we look at the people who work for an employer, we see that 52,9% of the working population travels to Riga on a (almost) daily basis. This means that the region of Pieriga is largely dependent on Riga city for it's jobs. Furthermore, a lot of people travel to Riga for business purposes on a regular basis. For shopping, a lot of people travel to Riga on a regular, though not daily basis. 87,3% of the people travel to Riga to go shopping at least a few times a month.

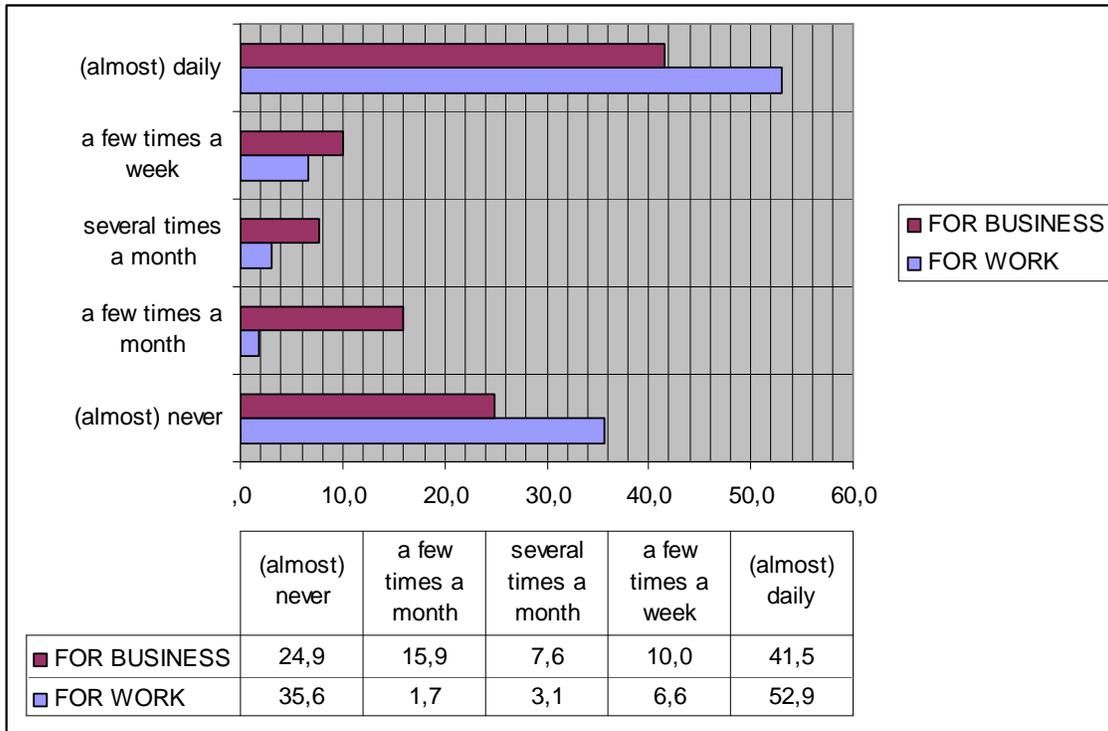


Figure 20: Commuting to Riga

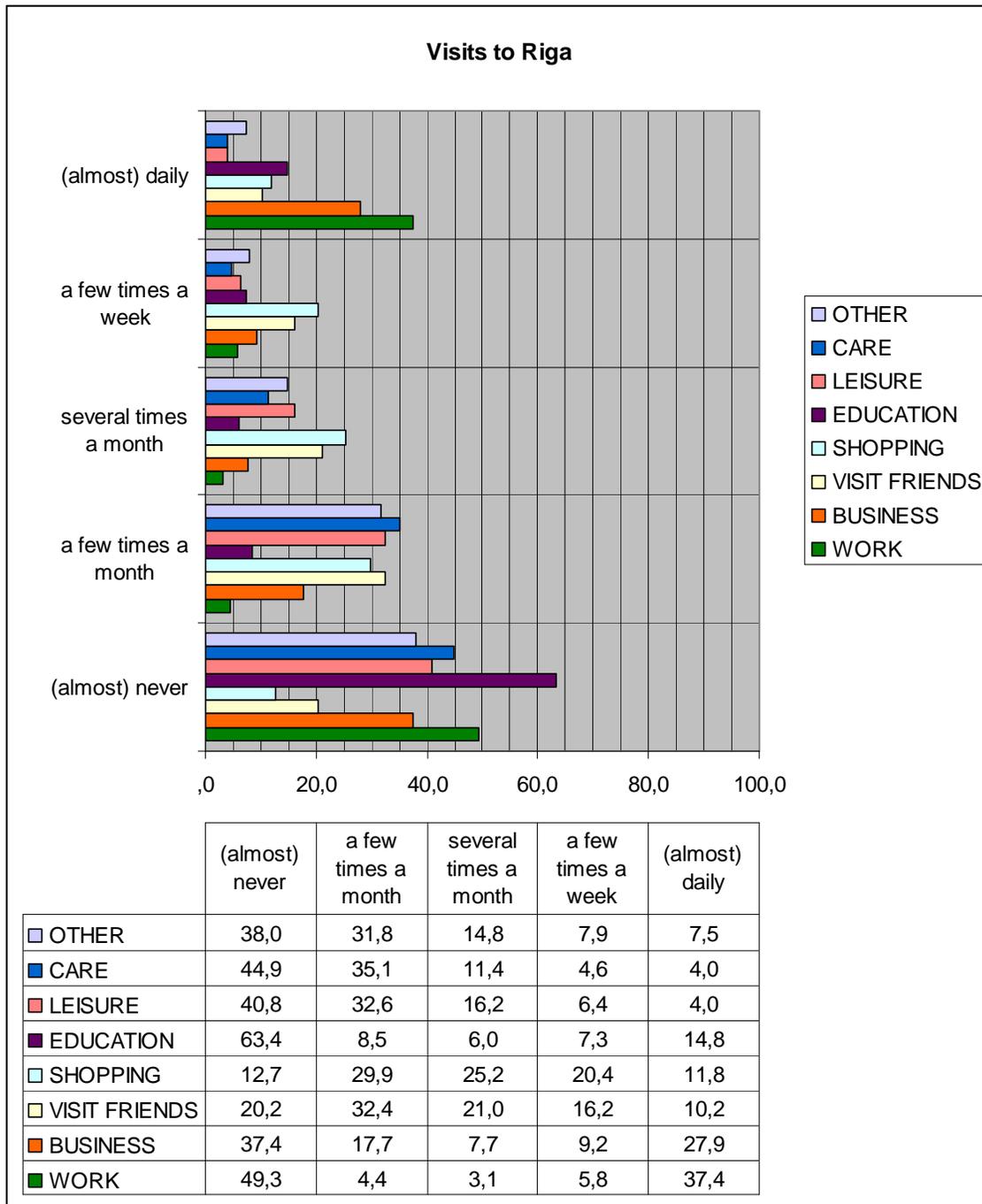


Figure 21: Frequency of trips to Riga

Questions 10 and 11.

How often do you drive a car to Riga?

How often do you use public transport for trips to Riga?

Why these questions?

To investigate the importance of the car vs. the public transport in the Pieriga region, these questions are highly relevant. Since there are no data available for public transport usage or car

dependency, the only way to gather data about the importance of the car vs. public transport facilities is to ask people about their car and public transport usage. If one mode of transport is much more important than the other, it might not be necessary to model both modes in the GIS.

Results:

As can be seen in table 15, 50,9% of all respondents use the car to travel to Riga more than 3 times a week. In comparison, 47,6% of the respondents use public transport to travel to Riga more than 3 times a week. This indicates that both car and public transport are equally important in the mobility and accessibility in Pieriga. According to the one-way ANOVA test, there appears to be a strong inverted relationship between the two, meaning that people who drive their car to Riga quite often are not the same people who frequently use public transport. That information excludes survey errors.

CAR DRIVE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Don't have a licence	46	20,5	21,5	21,5
	Don't use a car	23	10,3	10,7	32,2
	less than once a week	15	6,7	7,0	39,3
	1-2 times a week	21	9,4	9,8	49,1
	3-4 times a week	30	13,4	14,0	63,1
	5-6 times a week	33	14,7	15,4	78,5
	daily	46	20,5	21,5	100,0
	Total	214	95,5	100,0	
Missing	System	10	4,5		
Total		224	100,0		

Table 15: Car usage for trips to Riga

PUBLIC TRANSPORT					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	(almost) never	65	29,0	30,1	30,1
	less than once a week	23	10,3	10,6	40,7
	1-2 times a week	25	11,2	11,6	52,3
	3-4 times a week	21	9,4	9,7	62,0
	5-6 times a week	34	15,2	15,7	77,8
	daily	48	21,4	22,2	100,0
	Total	216	96,4	100,0	
Total		224	100,0		

Table 16: Public transport usage for trips to Riga

Question 12:

*Please indicate how satisfied you are with the proximity of the following services in your town:
- Supermarket - Other shops - Post-office - Kindergarten - Primary School - Secondary School -
Municipality office - Library - Theatre, cinema - Doctor - Personal Care (hairstylist, pharmacy)*

Why this question?

This question gives a lot of information on satisfaction with the availability of different services in the neighbourhood. Availability of services is an important factor for liveability, as it reduces the need for mobility, leading to a reduced car dependency and less time spent in transit. In this question, 11 different services were chosen that give an indication of satisfaction of the respondents with the complete range of services in their neighbourhood. Of course it's very likely that a respondent doesn't make use of all the services mentioned. To decrease a random-answer bias, there is a box indicating "don't use it".

Results:

From the results we can learn that in general, respondents are quite content with the proximity of the respective services in their region. Supermarkets and grocery shops are apparently most plentiful, with 58,8% of the people reporting to be content with the proximity of a supermarket. The largest dissatisfaction lies with leisure facilities and other shops, where 31,6% of the respondents report to be unhappy about the availability of those services. Educational facilities and the library are the services that people report not to use most often (around 34% and 24% respectively). Of course these figures are not clear enough, since it is important to weigh the importance of different services. The next question will look into the importance of the different services.

Question 13:

*Please indicate how often your household uses these services:
- Supermarket - Other shops - Post-office - Kindergarten - Primary School - Secondary School -
Municipality office - Library - Theatre, cinema - Doctor - Personal Care (hairstylist, pharmacy)*

Why this question?

As has been said in the previous paragraph, not every service is used as often as other services. To be able to weigh the importance of the accessibility of different services, it's necessary to know the usage frequency of every different service. This question enquires about that frequency. Respondents are asked how often every service is used, ranging from (almost) daily to less than once a month.

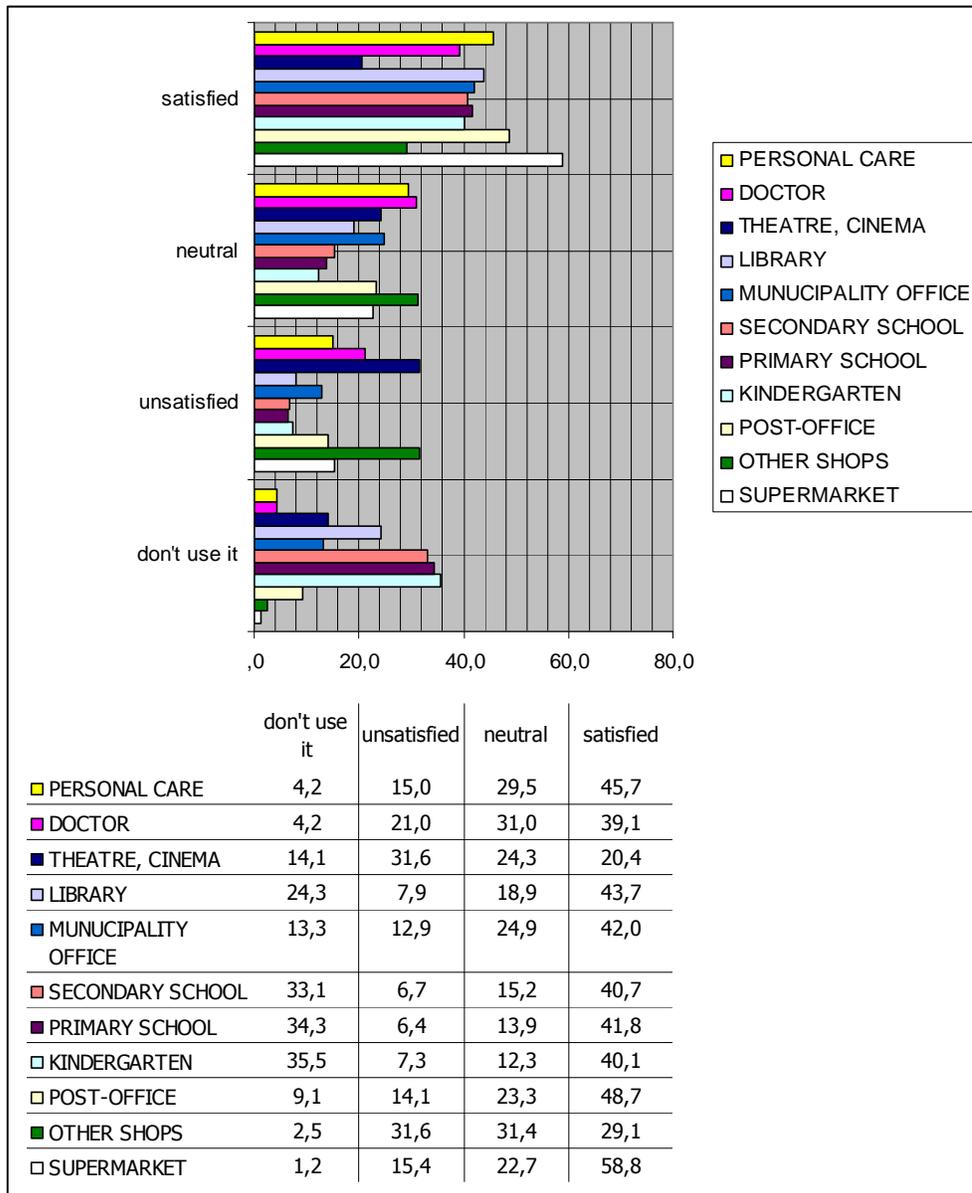


Figure 22: Satisfaction with different services

Results:

As can be expected, the supermarket is by far the most used service, with 95,8% using it more than once a week. Other shops are second, with 50,2% using that service more than once a week. The shops are followed by the schools and the personal care services. Multiplying the percentage of people using it more than once a week by the percentage of people who are unsatisfied with the proximity of the respective services (excluding the people who indicate not using them), non-daily shopping gets the highest number. This means that non-daily shopping has the highest number of people who do use it, but aren't satisfied with the location of these shops. Interesting to see is that second place is for supermarkets. While most people are satisfied with the proximity of a supermarket, still 15,9 percent of people who do use the supermarket are unsatis-

fied with the proximity of a supermarket. With 95,8% of the people using a supermarket more than once a week, this is still a potential problem. Improving satisfaction for frequently used services thus starts with improving the location of shops and supermarkets.

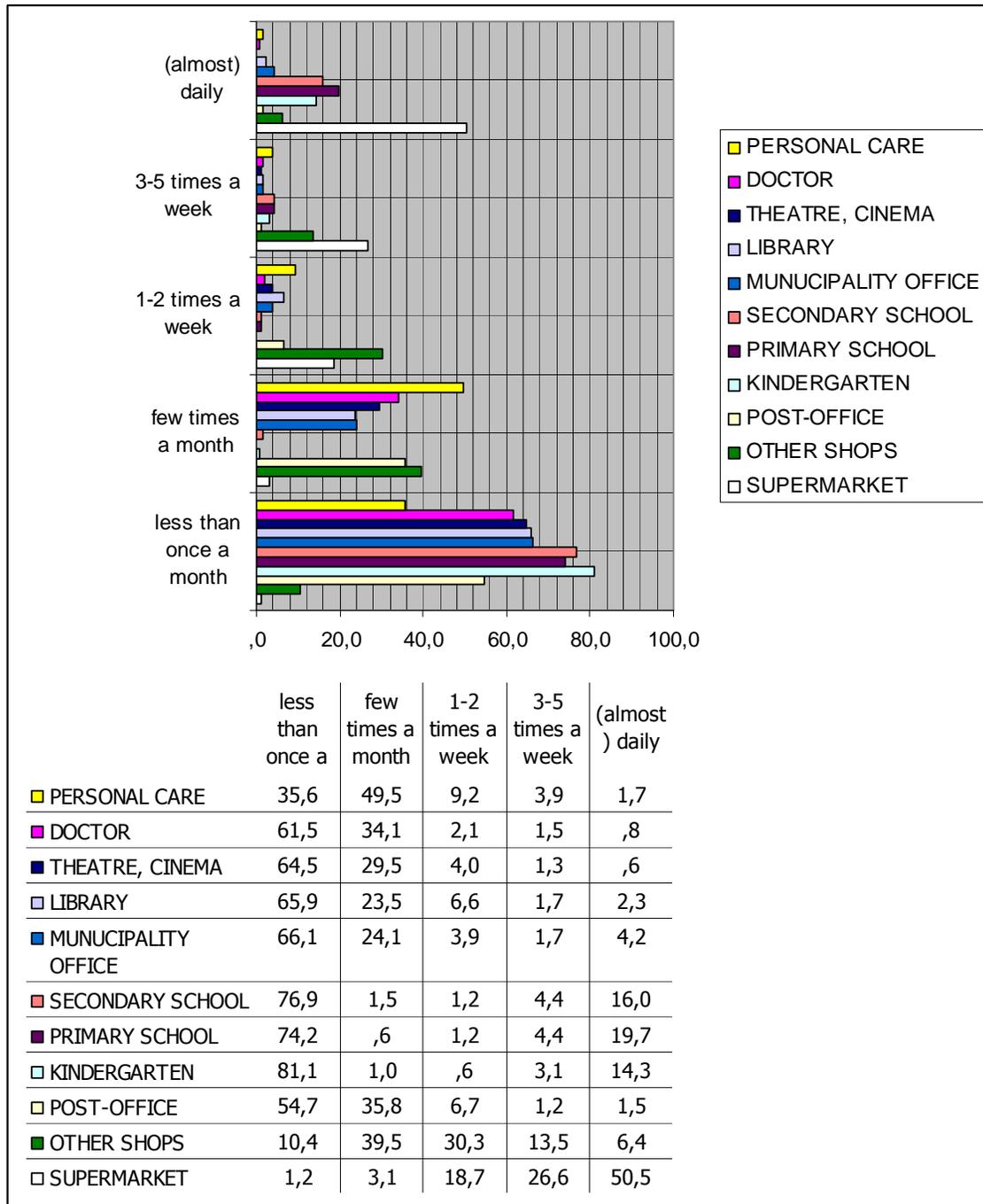


Figure 23: Frequency of usage of different services

If the percentage of people that do use a specific service, but is unsatisfied with the location is counted, the result is as follows:

	Supermarket	Other Shops	Post-Office	Kindergarten	Primary School	Secondary School	Municipal Office	Library	Theatre, Cinema	Doctor	Personal Care
Unsatis- fied	15,9 %	34,3 %	16,3 %	12,3 %	10,2 %	10,8 %	16,2 %	11,2 %	41,4 %	23 %	16,7 %

As can be seen in this table, the greatest dissatisfaction is with leisure facilities like a theatre or a cinema. 41,4% of the people find the proximity of these services unsatisfactory, followed by shops and medical care (doctor's office). Especially the lack of leisure facilities is problematic, since more than one third of the people use these facilities more than a few times a month.

Question 14-19

14. *What is your opinion on safety in your neighbourhood?*
15. *What is your opinion on the condition of your neighbourhood?*
16. *What is your opinion on the social quality of your neighbourhood?*
17. *How satisfied are you with your own house?*
18. *How satisfied are you about public transport in your neighbourhood?*
19. *How satisfied are you about road safety in your neighbourhood?*

Why these questions?

These questions are asked to acquire an indicator for the overall liveability in the respondents' neighbourhoods. Each of these questions reflects a certain aspect of liveability that has been distilled from the literature see Figure 24.

Question 19 about road safety was added for a different reason. Latvia has, together with Lithuania, the most dangerous roads of Europe, with 184 deaths per year per million inhabitants against a European average of 84 (Eurostat, 2010). To see if this is also perceived this way by the respondents, the question is asked whether they are satisfied with the road safety in their neighbourhood. If road safety is very bad, it will influence liveability.

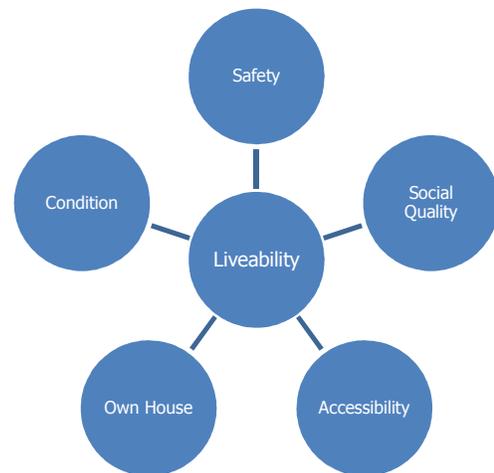


Figure 24: Liveability indicators

Results:

In general, the perceived liveability figures are better than expected. Previous research in this field indicated a very low opinion on the quality of life in Latvia (Riga City Council, 2005). The figures in this research show quite a positive attitude. On average, only 15,6% of the respondents answer negatively to the questions. Interesting to see are the differences between people who frequently use public transport and people who don't. Frequent users have a higher opinion of public transport than people who don't. Their bad opinion of public transport might be the reason for not using it, but it also says something about the quality of the public transport. If people who actually use it have a better opinion of public transport, the quality of the service must be better than most non-public transport users think.

Furthermore, the variable with the highest percentage of people reporting bad or very bad liveability is road safety. This underlines our hypothesis that road safety is one of the bigger problems in Pieriga, but it doesn't seem to be perceived as bad as expected, still "only" 23,7% of the respondents answer *unsatisfied* or *very unsatisfied* on the question how satisfied they are about road safety.

Another interesting point is the difference between respondents from the Pieriga region (defined by postcode range 2000 < 3500) and the people that live closer to, or in Riga (postcode range 1000 < 2000). For starters, they answer differently to the question on Social Quality. While statistically not significant, there is an indication that people within Riga city are less satisfied with the social quality in the big city than people in smaller cities. At the same time, people in Riga city do not consider social quality to be as important as people in Pieriga. In Riga city, 39,8% of the respondents find social quality very important, in Pieriga, 44,2% of the respondents consider social quality very important.

	Public transport users			Non-public transport users		
	Frequency	Percent	Valid Percent	Frequency	Percent	Valid Percent
Don't Know	1	0,6	0,6	25	7,8	7,8
Very Bad	4	2,5	2,5	16	5	5
Bad	27	17	17	48	15	15
Neutral	19	11,9	11,9	73	22,8	22,8
Good	84	52,8	52,8	128	40	40
Very good	24	15,1	15,1	30	9,4	9,4
Total	159	100	100	320	100	100

Table 17: Opinions on public transport

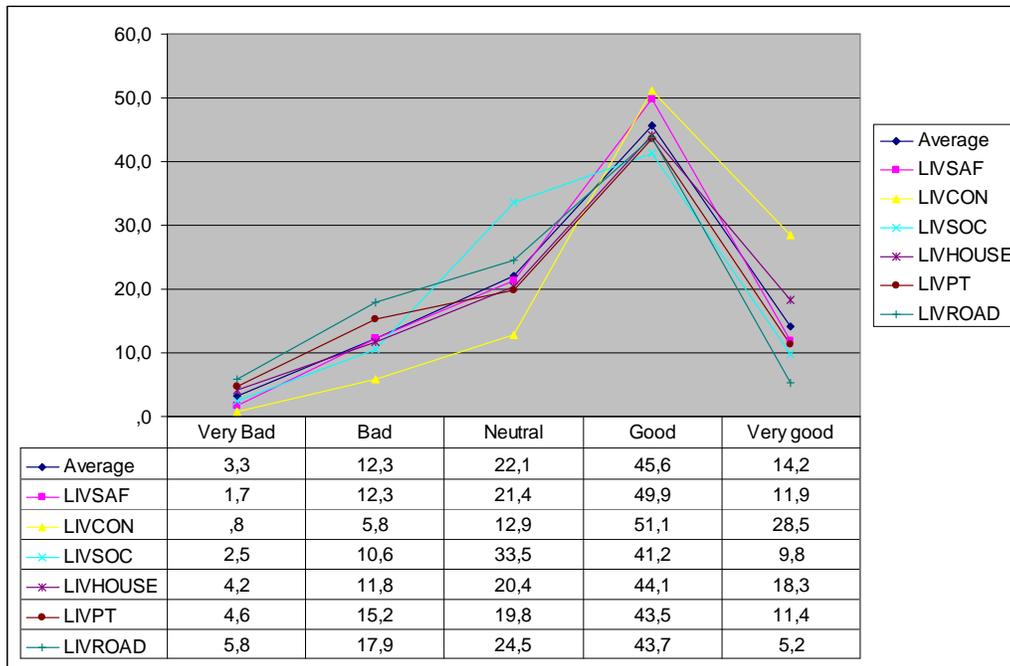


Figure 25: Liveability indicators

Question 20:

Do you think the area will change over the next 15 years?

- My neighbourhood - My Town/Village - Pieriga region - Latvia

Why this question?

This question is to test whether people in the sample are generally positive or negative about the future. This might not be that relevant to this specific research but it can give some vital information about the general attitude of the residents of Pieriga. It's also interesting to see if there is a correlation between general attitude about the future and the overall opinion on liveability. This way it is possible to identify if negative people distort the outcome of the survey.

Results:

Interesting to see is that people are in general positive about changes in the future, but more so about their own neighbourhoods (see Table 18 and Table 19) than about the country. This could mean that Pieriga is doing better than the rest of Latvia (which appears to be true, if economical and demographic figures are reviewed). It could also mean that people are more sure about the developments in their near vicinity than about developments in the rest of the country, making them more positive.

EXPECTED CHANGE OF NEIGHBOURHOOD					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Will get worse	31	6,0	6,8	6,8
	No Change	165	31,8	36,1	42,9
	Will Improve	261	50,3	57,1	100,0
	Total	457	88,1	100,0	
Missing	System	62	11,9		
Total		519	100,0		

Table 18: Expectations of change in own neighbourhood

EXPECTED CHANGE OF LATVIA					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Will get worse	77	14,8	19,0	19,0
	No Change	119	22,9	29,4	48,4
	Will Improve	209	40,3	51,6	100,0
	Total	405	78,0	100,0	
Missing	System	114	22,0		
Total		519	100,0		

Table 19: Expectations of change in Latvia

Question 21:

Please indicate how important each factor is in how you think about your living environment:

- Safety - Neighbourhood condition - Social Quality - My own house - Availability of public transport - how easy it is to get to Riga.

Why this question?

This question is added to distinguish between important and less important factors in liveability. Having an order in importance of certain liveability factors makes it possible to weigh each factor and thus build a comprehensive and balanced liveability model.

Results:

The outcome of this question is less clear than expected. Many respondents find all of the factors equally important. Most important are the factors "safety" and "own house" which are found "very important" by 76,1% and 66,7% of the respondents respectively. Interesting to see is that people who live in Riga do find the ease of getting to Riga more important than people who do not work in Riga. While this might be expected, it's good to have scientific proof.

EASE OF GETTING TO RIGA (Working in Riga)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unimportant	4	1,8	1,8	1,8
	Neutral	10	4,5	4,5	6,3
	Important	68	30,4	30,4	36,6
	Very Important	142	63,4	63,4	100,0
	Total	224	100,0	100,0	

EASE OF GETTING TO RIGA (Not working in Riga)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very unimportant	5	1,7	1,7	1,7
	Unimportant	4	1,4	1,4	3,1
	Neutral	25	8,5	8,5	11,5
	Important	99	33,6	33,6	45,1
	Very Important	162	54,9	54,9	100,0
	Total	295	100,0	100,0	

An aerial photograph of a city, likely Seattle, showing a large river (the Duwamish River) winding through the urban landscape. Several bridges cross the river, including a prominent cable-stayed bridge on the left and a multi-arched bridge in the center. The city is densely packed with buildings, and green spaces are visible. The sky is clear and blue. A large orange diagonal line runs from the bottom left towards the top right, passing through the text box.

appendix 2
complete
survey

Accessibility in Pieriga

Thank you very much for taking the time to participate in this survey. This survey is part of a larger project to assess the traffic situation and the living conditions in Rīga and Pieriga. For this project, we would like to know how often you travel to Rīga and for which purposes. We would also like to know how satisfied you are with your living environment.

The survey consists of 21 easy questions.

The survey is completely anonymous and it will take approximately 5 minutes to fill out.

If you have any questions about the research of the survey, please don't hesitate to send an e-mail to:

L.Nout@witteveenbos.nl

1. What is your gender? *

Male or Female?

- Male
- Female

2. What is your age? *

- 17 or less
- 18 - 30
- 31 - 45
- 46 - 60
- 61 or more

3. How many people are in your household? *

Including yourself

4. Of those people, how many are 17 or younger?

5. What kind of house do you live in? (In winter time) *

Apartment in a bigger block, detached house or other?

- Detached house
- Apartment
- Other:

6. Which are the four digits of your postal code *

For example: if your postal code is LV-1045, please write down 1045

7. Which answer describes your situation best? *

- I am working for an employer
- I am self-employed
- I am a student with a job
- I am a student without a job
- I am retired
- I am looking for a job
- I am working in my household
- I do voluntary work
- Other:

8. Do you own a car? *

Please only count cars fit for driving

- Yes
- No

If you have a car, in which year was it built?

If you have more than one, please type the year of the newest car

9. How often do you travel to Riga (municipality) for the following reasons? *

	(Almost) daily	A few times a week	Several times a month	A few times a month	(almost) never
To work	<input type="radio"/>				
For business	<input type="radio"/>				
To visit friends or family	<input type="radio"/>				
To go shopping	<input type="radio"/>				
For my education	<input type="radio"/>				
For fun (Theatre, Cinema)	<input type="radio"/>				
For medical care (pharmacy, doctor, hospital)	<input type="radio"/>				
For personal care (hairdresser, banking etc.)	<input type="radio"/>				
For other reasons	<input type="radio"/>				

10. How often do you drive a car to Riga? *

Please also count trips when you drive a van, motorcycle or scooter

- Don't have a driving licence
- Don't use a car/Never use one
- less than once a week

- 1-2 times a week
- 3-4 times a week
- 5-6 times a week
- Daily
- Don't know

11. How often do you use public transport for trips to Riga? *

Public transport means: Bus, Minibus, Train

- (Almost) Never
- Less than once a week
- 1-2 times a week
- 3-4 times a week
- 5-6 times a week
- Daily
- Don't Know

Would you be willing to fill out a few more questions about your displacements yesterday? *

This is only a few more questions

- Yes
- No

Page 5

After page 4

Note: "Go to page" selections will override this navigation. [Learn more.](#)

Yesterday's Trips

Have you left your house yesterday? *

- Yes
- No

Page 6

After page 5

Note: "Go to page" selections will override this navigation. [Learn more.](#)

Trip 1

For this part of the survey we would like to know about your movements of yesterday. Please think about where you went and why.

For example:

1. You brought your children to school
2. After school you went to work
3. From work you went to the supermarket
4. From the supermarket you went home

This example means you made four trips, please fill them in accordingly.

For which reason have you made your FIRST trip? *

- To my work
- Somewhere FOR my work
- For my education

- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- Went home
- Other:

Where did you go? (1) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (1) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

(Going home counts as a trip!)

- Yes
- No

Trip 2

For which reason have you made your SECOND trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (2) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (2) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

- Yes
- No

Trip 3

For which reason have you made your THIRD trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (3) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (3) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

- Yes
- No

Trip 4

For which reason have you made your FOURTH trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (4) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (4) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

- Yes
- No

Trip 5

For which reason have you made your FIFTH trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (5) *

- My neighbourhood
- My town/village
- To Riga

- Another town (NOT RIGA)

Which type of transport did you use? (5) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

- Yes
- No

Trip 6

For which reason have you made your SIXTH trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (6) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (6) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

- Yes
- No

Trip 7

For which reason have you made your SEVENTH trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (7) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (7) *

(please give the main type of transport, used for the biggest part of the trip)

Next Part

12. Please indicate how satisfied you are with the proximity of the following services in your town *

	Satisfied	Neutral opinion	Unsatisfied	Don't know	Don't use it
Supermarket - Grocery store	<input type="radio"/>				
Other shops (non-daily needs)	<input type="radio"/>				
Post-Office	<input type="radio"/>				
Kindergarten	<input type="radio"/>				
Primary School	<input type="radio"/>				
Secondary School	<input type="radio"/>				
Municipality office	<input type="radio"/>				
Library	<input type="radio"/>				
Theatre, Cinema	<input type="radio"/>				
Doctor	<input type="radio"/>				
Personal care (hairdresser, pharmacy)	<input type="radio"/>				

13. Please indicate how often your household uses these services *

Please answer for your entire household. Not just for yourself

	(almost) Daily	3-5 few times a week	1-2 times a week	Few times a month	Less than once a month
Supermarket - Grocery store	<input type="radio"/>				
Other shops (non-daily needs)	<input type="radio"/>				
Post-Office	<input type="radio"/>				
Kindergarten	<input type="radio"/>				
Primary School	<input type="radio"/>				
Secondary School	<input type="radio"/>				
Municipality Office	<input type="radio"/>				
Library	<input type="radio"/>				
Theatre, Cinema	<input type="radio"/>				
Doctor	<input type="radio"/>				
Personal care (hairdresser, pharmacy)	<input type="radio"/>				

14. What is your opinion on safety in your neighbourhood? *

Safety in this regard means crime, theft, etc

- This is a very safe neighbourhood
- This is a somewhat safe neighbourhood
- Neutral opinion
- This is a somewhat unsafe neighbourhood
- This is a very unsafe neighbourhood
- Don't Know

15. What is your opinion on the condition of your neighbourhood? *

Is it well-maintained, enough green space?

- The neighbourhood is in great condition
- The neighbourhood is in pretty good condition
- Neutral opinion
- The neighbourhood is in a pretty bad condition
- The neighbourhood is in a very bad condition
- Don't Know

16. What is your opinion on the social quality of your neighbourhood? *

Do you know your neighbours? Are people friendly to each other?

- It's a very social neighbourhood
- It's a somewhat social neighbourhood

- Neutral opinion
- It's a somewhat unsocial neighbourhood
- It's a very unsocial neighbourhood
- Don't Know

17. How satisfied are you with your own house? *

- Very satisfied
- A bit satisfied
- Neutral opinion
- A bit unsatisfied
- Very unsatisfied
- Don't Know

18. How satisfied are you about public transport in your neighbourhood *

Are there frequent trains or busses and are the stops close to your home?

- Very satisfied
- A bit satisfied
- Neutral opinion
- A bit unsatisfied
- Very unsatisfied
- Don't Know

19. How satisfied are you about road safety in your neighbourhood *

- Very satisfied
- A bit satisfied
- Neutral opinion
- A bit unsatisfied
- Very unsatisfied
- Don't Know

Can you explain why you think that way about the traffic safety?

20. Do you think the area will change in the next 15 years? *

	It will be better	It will remain the same	It will get worse	Don't Know
My neighbourhood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My Town/Village	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pieriga Region	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Latvia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Please indicate how important each factor is in how you think about your living environment *

	Very Important	Somewhat Important	Neutral opinion	Somewhat unimportant	Very unimportant
Safety	<input type="radio"/>				
Neighbourhood condition	<input type="radio"/>				
Social quality	<input type="radio"/>				
My own house	<input type="radio"/>				
Availability of public transport	<input type="radio"/>				
How easy it is to get to Riga	<input type="radio"/>				

Are you willing to participate in further research regarding this subject?

- Yes
- No

Leave your e-mail address here

(If you want to participate in the lottery)

Accessibility in Pieriga

Thank you very much for taking the time to participate in this survey. This survey is part of a larger project to assess the traffic situation and the living conditions in Rīga and Pieriga. For this project, we would like to know how often you travel to Rīga and for which purposes. We would also like to know how satisfied you are with your living environment.

The survey consists of 21 easy questions.

The survey is completely anonymous and it will take approximately 5 minutes to fill out.

If you have any questions about the research of the survey, please don't hesitate to send an e-mail to:

L.Nout@witteveenbos.nl

1. What is your gender? *

Male or Female?

- Male
- Female

2. What is your age? *

- 17 or less
- 18 - 30
- 31 - 45
- 46 - 60
- 61 or more

3. How many people are in your household? *

Including yourself

4. Of those people, how many are 17 or younger?

5. What kind of house do you live in? (In winter time) *

Apartment in a bigger block, detached house or other?

- Detached house
- Apartment
- Other:

6. Which are the four digits of your postal code *

For example: if your postal code is LV-1045, please write down 1045

7. Which answer describes your situation best? *

- I am working for an employer
- I am self-employed
- I am a student with a job
- I am a student without a job
- I am retired
- I am looking for a job
- I am working in my household
- I do voluntary work
- Other:

8. Do you own a car? *

Please only count cars fit for driving

- Yes
- No

If you have a car, in which year was it built?

If you have more than one, please type the year of the newest car

9. How often do you travel to Riga (municipality) for the following reasons? *

	(Almost) daily	A few times a week	Several times a month	A few times a month	(almost) never
To work	<input type="radio"/>				
For business	<input type="radio"/>				
To visit friends or family	<input type="radio"/>				
To go shopping	<input type="radio"/>				
For my education	<input type="radio"/>				
For fun (Theatre, Cinema)	<input type="radio"/>				
For medical care (pharmacy, doctor, hospital)	<input type="radio"/>				
For personal care (hairdresser, banking etc.)	<input type="radio"/>				
For other reasons	<input type="radio"/>				

10. How often do you drive a car to Riga? *

Please also count trips when you drive a van, motorcycle or scooter

- Don't have a driving licence
- Don't use a car/Never use one
- less than once a week

- 1-2 times a week
- 3-4 times a week
- 5-6 times a week
- Daily
- Don't know

11. How often do you use public transport for trips to Riga? *

Public transport means: Bus, Minibus, Train

- (Almost) Never
- Less than once a week
- 1-2 times a week
- 3-4 times a week
- 5-6 times a week
- Daily
- Don't Know

Would you be willing to fill out a few more questions about your displacements yesterday? *

This is only a few more questions

- Yes
- No

Page 5

After page 4

Note: "Go to page" selections will override this navigation. [Learn more.](#)

Yesterday's Trips

Have you left your house yesterday? *

- Yes
- No

Page 6

After page 5

Note: "Go to page" selections will override this navigation. [Learn more.](#)

Trip 1

For this part of the survey we would like to know about your movements of yesterday. Please think about where you went and why.

For example:

1. You brought your children to school
2. After school you went to work
3. From work you went to the supermarket
4. From the supermarket you went home

This example means you made four trips, please fill them in accordingly.

For which reason have you made your FIRST trip? *

- To my work
- Somewhere FOR my work
- For my education

- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- Went home
- Other:

Where did you go? (1) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (1) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

(Going home counts as a trip!)

- Yes
- No

Trip 2

For which reason have you made your SECOND trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (2) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (2) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

- Yes
- No

Trip 3

For which reason have you made your THIRD trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (3) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (3) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

- Yes
- No

Trip 4

For which reason have you made your FOURTH trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (4) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (4) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

- Yes
- No

Trip 5

For which reason have you made your FIFTH trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (5) *

- My neighbourhood
- My town/village
- To Riga

- Another town (NOT RIGA)

Which type of transport did you use? (5) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

- Yes
- No

Trip 6

For which reason have you made your SIXTH trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (6) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (6) *

(please give the main type of transport, used for the biggest part of the trip)

A Car

Did you make any other trips yesterday? *

- Yes
- No

Trip 7

For which reason have you made your SEVENTH trip? *

- To my work
- Somewhere FOR my work
- For my education
- For my childrens' education
- For grocery shopping
- For other shopping
- To visit somebody
- To go home
- Other:

Where did you go? (7) *

- My neighbourhood
- My town/village
- To Riga
- Another town (NOT RIGA)

Which type of transport did you use? (7) *

(please give the main type of transport, used for the biggest part of the trip)

Next Part

12. Please indicate how satisfied you are with the proximity of the following services in your town *

	Satisfied	Neutral opinion	Unsatisfied	Don't know	Don't use it
Supermarket - Grocery store	<input type="radio"/>				
Other shops (non-daily needs)	<input type="radio"/>				
Post-Office	<input type="radio"/>				
Kindergarten	<input type="radio"/>				
Primary School	<input type="radio"/>				
Secondary School	<input type="radio"/>				
Municipality office	<input type="radio"/>				
Library	<input type="radio"/>				
Theatre, Cinema	<input type="radio"/>				
Doctor	<input type="radio"/>				
Personal care (hairdresser, pharmacy)	<input type="radio"/>				

13. Please indicate how often your household uses these services *

Please answer for your entire household. Not just for yourself

	(almost) Daily	3-5 few times a week	1-2 times a week	Few times a month	Less than once a month
Supermarket - Grocery store	<input type="radio"/>				
Other shops (non-daily needs)	<input type="radio"/>				
Post-Office	<input type="radio"/>				
Kindergarten	<input type="radio"/>				
Primary School	<input type="radio"/>				
Secondary School	<input type="radio"/>				
Municipality Office	<input type="radio"/>				
Library	<input type="radio"/>				
Theatre, Cinema	<input type="radio"/>				
Doctor	<input type="radio"/>				
Personal care (hairdresser, pharmacy)	<input type="radio"/>				

14. What is your opinion on safety in your neighbourhood? *

Safety in this regard means crime, theft, etc

- This is a very safe neighbourhood
- This is a somewhat safe neighbourhood
- Neutral opinion
- This is a somewhat unsafe neighbourhood
- This is a very unsafe neighbourhood
- Don't Know

15. What is your opinion on the condition of your neighbourhood? *

Is it well-maintained, enough green space?

- The neighbourhood is in great condition
- The neighbourhood is in pretty good condition
- Neutral opinion
- The neighbourhood is in a pretty bad condition
- The neighbourhood is in a very bad condition
- Don't Know

16. What is your opinion on the social quality of your neighbourhood? *

Do you know your neighbours? Are people friendly to each other?

- It's a very social neighbourhood
- It's a somewhat social neighbourhood

- Neutral opinion
- It's a somewhat unsocial neighbourhood
- It's a very unsocial neighbourhood
- Don't Know

17. How satisfied are you with your own house? *

- Very satisfied
- A bit satisfied
- Neutral opinion
- A bit unsatisfied
- Very unsatisfied
- Don't Know

18. How satisfied are you about public transport in your neighbourhood *

Are there frequent trains or busses and are the stops close to your home?

- Very satisfied
- A bit satisfied
- Neutral opinion
- A bit unsatisfied
- Very unsatisfied
- Don't Know

19. How satisfied are you about road safety in your neighbourhood *

- Very satisfied
- A bit satisfied
- Neutral opinion
- A bit unsatisfied
- Very unsatisfied
- Don't Know

Can you explain why you think that way about the traffic safety?

20. Do you think the area will change in the next 15 years? *

	It will be better	It will remain the same	It will get worse	Don't Know
My neighbourhood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My Town/Village	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pieriga Region	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Latvia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Please indicate how important each factor is in how you think about your living environment *

	Very Important	Somewhat Important	Neutral opinion	Somewhat unimportant	Very unimportant
Safety	<input type="radio"/>				
Neighbourhood condition	<input type="radio"/>				
Social quality	<input type="radio"/>				
My own house	<input type="radio"/>				
Availability of public transport	<input type="radio"/>				
How easy it is to get to Riga	<input type="radio"/>				

Are you willing to participate in further research regarding this subject?

- Yes
- No

Leave your e-mail address here

(If you want to participate in the lottery)