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A longitudinal analysis on the development of regional railway systems in Skåne

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Foreword

I would like to thank some persons that have helped me during this process. First of all, I want to thanks my supervisor Ola Hall, who has helped me with study process during this semester. I also want to send my regards to Kristoffer Levin at the infrastructural office at Region Skåne who has supplied me with statistical data for my study and helped me with questions regarding my thesis. Without him and his co-workers I would not have been able to do this study. I also want thanks my fellow students, especially Jakob Klasander, friends and family who have supported me with knowledge, motivation and required coffee breaks.

Abstract

During the last two decades a new administrative level between municipality and national has occurred, most referred as regions. Regions should work as a tool for intergrading and achieve growth in the concept of sustainable development (economic, social and environmental sustainable) in a specific area. In order to attain this and to integrate a whole region, even the areas in the periphery, it is needed to have well–designed infrastructural network of nodes and links for both cars and other alternative methods of transportations. During the last decades this development has been questioned mostly because of environmental challenges. This issue together with the concept of regional integration and expansion have done that one today could distinguish a development of alternative and more environmental friendly transportation methods. One of the most discussed solutions of this is regional public railways. In this thesis I have chosen to focus on the development of regional railways in the region of Skåne, which is located in southern Sweden.

The purpose was to analyze if there are any patterns in the development of regional railways when it comes to factors of population, travelling and commuting in and between municipalities, station cities and villages. Furthermore I wanted to connect the factors of population and commuting to a regional concept of regional development, regional expansion, sustainable development and mobility. The results showed that development of regional railways has different impact on a region depending on the distance from a regional centre and that the crucial factor is mobility and accessibility.

The results shows that station cities and municipalities located less than 20 minutes one-way to a regional center are not affected by introduction of a regional railway station more than on marginal level. Station cities located within 20 -50 minutes from a region center have a positive development and areas that are located outside of this crucial time limit are barley not affected at all by investments of new regional railway station when it comes to factors of sustainability, regional expansion and regional development.

Keywords

Regional infrastructure, regional development, mobility, regional railway networks, Skåne

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1. Introduction

Today, there is an ongoing debate that we stand in position of changing our mode of transportation; from oil based mode, towards a more environmental friendly alternative. In other words, one could argue that we face a change in the discourse of transportation. This is however a complex and large scaled global issue. But simultaneously there are local and regional aspects that one needs to understand in order create a working sustainable long lasting mode of transportation. This concern of shifting mode of transportation is needed to be handled by all decisionmakes from a global level down to a local level and vice versa.[1] The question is; how we as a population wants the society to act like in the future and sadly, we could not wait and hope for the best. We are at this moment at a critical edge were environmental issues together with increased price and decreased supply of oil have made that a change is needed. It is all about planning, planning for the future, a sustainable future.

Campbell & Fainstain argue that there are three choices for how our planning process should be developed in the future; the great metropolitan, a moderate decentralization or extreme decentralization, each one having both pros and cons and a broad range of choices.[2] This development process is of course depending on different factors, and I will not discuss all of them in this thesis. However, one of the most important factors in this discussion of the development of our future society is the choice of transportations. The above stated argument about environmental issues has started a debate that there is a need of changing our mode of transportation in a more sustainable direction. In this debate, regional railway systems and the expansion of those have come to be one solution of this issue. When one discusses development of regional railway systems one needs to understand what a region is, and what lies behind the development of regions.

1.1 Regions -concept and regulation

Regional development has come to be one of the most important factors during the last two decades for achieving an economic, social and environmental sustainable future.[3] Regional development as a concept have been taking place in the western advanced economy, as a result of higher population concentration, an expansion of our spatial room due to increased transportation opportunities and a demand of economic growth. This transformation is mostly a result of structural changes, from an industry based society towards a society based on service organized in clusters, universities and science parks, with a high educated population which travels over larger areas than ever in their daily spatial room.[4] As an example of this expansion of our spatial room, one could exam the increase in distances that the average person travels every day. Today, the average Swede travels over 50 kilometers every day, compared with 9 kilometers 1950.[5] About 10% of these travels were by some kind of public transportation. Among these, 29% were counted as commuters, in other words 1.2 million

[1] (Forsberg, 2005, p. 236)
[2] (Campbell & Fainstein, 1996, p. 23)
[3] (Svenska Kommunförbundet, Arena för tillväxt, 2003, p. 9)
[4] (Banverket, 2007, p. 4)
[5] (Wärneryd, Hallin, & Hultman, 2002, p. 73)

people in Sweden.[6] This increase of our spatial room needs a well-designed and functional infrastructural network. A well-designed and fast infrastructural network is perhaps the main factor for economic growth in a region.[7] This need of transportations, together with a demand after economic growth and a well-designed infrastructural network of nodes needs a visions, regulations and alternatives.

The regulation of regional development processes is both a top–down and a bottom–up process. The European Union is at a global level the leading figure behind regional development and it´s regulation.[8] This regulation should help the democratization processes, in a bottom–up approach in the planning of our common spatial room. These processes have made that there today is a middle layer on the hierarchical democratic stairway, namely regions.[9] The agency that regulates this processes and guidelines at a transnational level is the department of regional strategic planning department (ESDP). These guidelines most important statements are development of regional innovation systems and directive of subsidiaries.[10] ESDPs regional program has been implied on most parts of Europe, including Sweden and the region of Skåne. In Sweden, NUTEK[11] and Boverket[12] are the two national agencies that apply the regional guideline programs on a national level, which on their hand directs the regions. On an international level there have been problems with Sweden's regional development, because of its different spatial conditions compared with the rest of EU. Sweden has spatial conditions that differ, when it comes to infrastructural and demographic factors, with a population that is spread over large areas and greater distances between cities, then the average European country. In other words, a national regulation at a regional level is needed in a country like Sweden in order to a have a positive economic development in a regional context.

Sweden does today have a huge program of different traffic policy guidelines including both private and public transports. The main idea of the policy program is that it should help the population with their daily mobility and at the same time be as climate-smart as possible.[13] This is indeed a problematic situation. At the same time should our ability of mobility not decrease and still should we be capable of keeping up with our national environmental goals. This is another case of the problematic issue of long term environmental goals and short term goals of economic growth. But one could at the same time not put a side that cars are a large part of our welfare, which is claimed to be flexible and non-restricted. This has from an environmental perspective created a situation where our freedom of mobility and our modern regional development is claimed for creating urban sprawl and a sprawled population demands better transportations options.[14] On the other hand have the environmental issue started a discourse change in our freedom of mobility, towards a more environmental friendly

[6] (Sandow & Westin, 2007, p. 23)
[7] (Näringsdepartementet, 2008, p. 118)
[8] (Boverket, 2004, p. 13)
[9] (Gren, 2002, pp. 20-21) (Hermelin, 2005, p. 269)
[10] (Pinto & Rodrigues, 2010, p. 1734)
[11] National administrative agency of business and economic development and regulation.
[12] National administrative agency for planning of the built environment and management of land-use planning.
[13] (Näringsdepartementet, 2008, p. 10)
[14] (Scheiner, 2006, pp. 294-296)

development of transportations. As claimed above, a positive economic growth demands a well-designed infrastructural network, and during the last decade a solution of this complex issue has been raised, namely regional rail bound traffic. Regional rail bound traffic has not only been argued to be the solution of the last years discussion of climate changes. Rail bound traffic have in this discussion been one of the solutions in order to achieve an environmental friendly transport network without a loss in freedom of mobility. With a population that is spread over a larger area in a region.[15] It is furthermore also claimed to be the solution of integration of all parts of a region, even those areas that is located in the periphery and therefore prevent depopulation in rural areas.[16]

1.2 Railbound traffic

Rail bound traffic was introduced for commercial traffic in 1841, and have ever since then been one of the most important mode of transportation systems. It was actually the most important mode of transportation until the 1950s. [17] Nevertheless it has during the last decades played minor role at least on shorter distances; these trips have instead mostly been done with cars. However, there is today a change in the discussion of transportation as mentioned before, from a motor driven traffic towards a system based on public rail-bound traffic. Not only on a national scale of long transports, from country to country, but also on a regional level, meaning city to city. This development on a regional level is taking place in most western countries, not at least in Sweden. In Sweden one could today see a trend that is becoming more and more visible, that new railway as well as old ones opens up again. We have in other words seen a movement back to the 1950´s in the use of railways. In a historical perspective, this development of regional rail bound traffic between cities in a region is not at all a new idea, it could be found in several examples from the last century. For example, in the 1930´s England there was the idea of satellite towns. These cities could basically be described as different smaller units of villages that were spread over an area, which was supposed to separate by greenbelts and connected with infrastructure.[18] The same development could also be identified in the Master plan of Stockholm from 1950´s were satellite cities were supposed to be connected with subway lines (network of cities).[19]

The introduction of this thesis have so far be given us a glimpse of the complex subject of regional development and expansion. But in order to summarize one should try to understand that there is a complex network of links between regional development, expansion and sustainable development. In this network, infrastructure plays an important role as a major player for regional expansion, development and sustainable development, when it comes to movement of population, cargo and labor. It is also important to remember that some of the ideas of regional development and rail bound infrastructure are not only taking place at present time, but also that it has historical association. The ideas of regional development

[15] (Banverket, 2007,p. 13)
[16] (Tillväxtanalys, 2010, p. 43) (Wärneryd, Hallin, & Hultman, 2002, p. 84)
[17] (Prideaux, 2009, p. 98)
[18] (Ward, 2002, pp. 106-107)
[19] (Ward, 2002, p. 203)

could all be implied on the region of Skåne. The Region of Skåne is perhaps the oldest example in Sweden of large scale regional development. [20]

1.3 Purpose of the study

So far, there have been numerous research projects on regional development when it comes to innovation system, infrastructure and mobility. Some these are from larger projects in Sweden that have been a success when it comes to commuting and regional expansion, for example the Öresund Bridge in the region of Öresund (in southern Sweden and Denmark) and the projects in Mälardalen around Stockholm.[21] However, there have so far been shortages of studies that link regional expansion and public transportation in a broader sense.[22] Moreover, there has also been a shortage of studies on areas and cities that are located in periphery of a region and how they will be affected by the positive economic development that is taking place in populated areas in a region. What is more, is that there still is no actual empirical evidence concerning if an increased access to public transportation actually benefits commuters and travellers more than on marginal levels.[23] But it has been showed that improved accessibility to a train station reduces car dependency and increases the use of public transports.[24] Even if these statements proclaim a problematic situation, private cars are still to a far extent the most important mode of transportation. Although that there have been large investments and political campaigns in order to increase the use of public transports.[25]

The purpose of this study is therefore to investigate and find a link between improvements in accessibility to rail bound traffic and the numbers of commuters and travellers from a municipality or/and a station city on a regional level in Skåne. I will also investigate if there is any collaboration between improvements of accessibility to regional rail bound traffic and population numbers in a municipality or/and a station city both near regional centers and in the periphery of a region. Furthermore, I also aim to find a link between the main development factors of economic growth, regional expansion and environmental sustainability and then link this to development of regional rail bound traffic.

1.4 Delimitations of the study

As mentioned earlier, the main idea is to investigate what effect regional trains will have on region, when it comes to numbers of commuters, travellers and population levels. Therefore I have been strict to this aspect of regional trains and I have therefore not put in any national and interregional trains as a factor even if they share the same lines and use the same stations and could be counted as commuter trains. I have also decided to not include Malmö, Helsingborg and Lund in this study because of their high numbers of inhabitants.

The first train station that was constructed for regional use in Skåne was opened in the year of 1982. I have therefore chosen this year as the starting year for my study. I have then tried to

[20] (Statiska Centralbyrån, p. 24)
[21] (Statiska Centralbyrån, p. 65)
[22] (Wärmark, 2004, p. 13)
[23] (Armstrong & Rodríguez, 2006, p. 22) (Jonsson L. , 2007, p. 1)
[24] (Olaru, Smith, & John , 2010, p. 220)
[25] (Boverket, 2005, p. 21)

analyze patterns from the introduction of the station in each city and municipality, and then from this tried to understand what will occur during the upcoming years in new station cities until the year of 2014. Furthermore I have been using statistics from SCB (Swedish census bureau)[26] for my investigation. Some of these data are not available from the year of 1982, in one case from 1993 when it comes to data of commuters from each municipality. The numbers of commuter also refers to all commuters, and not only those who are commuting with trains. But I would argue that this still is a reliable source because of that there is a correlation between both the opening year of the train station and an increase in the amount of commuters. When it comes to population levels only every fifth year was available for every individual city. All of the available data from the region of Skåne is from 1982 until 2010. This is problematic since it gives a restraining effect on the time perspective of the thesis. However, I will present a deeper investigation of the used data in methodological chapter.

These above declared statements bring up several questions around concentration of population, important transports corridors among other questions. Of course, this have been argued and discussed in policies in Sweden for a long time. But still there are a lot of questions to find answer for in order to achieve an extent use of commuting and travelling of public transports. I will not try to find evidence for the whole spectrum of mobility and sustainability of public transports. But I will try to find some evidence and a method which could be applied at regions which are in the same dimension as the region of Skåne.

1.5 Disposition

So far, there have been discussions about the complex system of infrastructural regional bound traffic and its connection to the regional development, including its need of regulation and investment in order to have an economic growth. In the next chapter there will be a discussion and overview on region of Skåne, it´s general conditions and development processes. I will then present the found knowledge in the theoretical section. This chapter includes accessibility, mobility, regional development, regional expansion and infrastructure and how these are connected in a regional context when it comes to development of rail bound traffic. I will then present the methodological framework of the study. The study should be considered as a quantitative study of computer based analysis of statistical material. This statistical data is presented in the empirical part that is based on own produced maps and graphs, based on statistical data. The empirical results is then analysed and concluded in the last section of the thesis.

[26] (Statiska centralbyrån, 2011)

2. Research questions

- *What factors are behind the development of regional rail bound traffic in Skåne when it comes to aspects of regional development and regional expansion?*

- *What aspects lie behind a development of positive and regularly use and flow travellers and commuters relating to regional rail bound traffic in region of Skåne?*

- *Are there any spatial patterns between municipalities and cities which have a regional railway station and those who do not have when it comes to population levels, both now and in the future?*

3. Region of Skåne[27]

"Skåne experiences at this moment regional growth both on a mental stage as well as a geographical stage"[28]

Skåne in southern Sweden is one of four areas in Sweden that have a regional independent office.[29] The purpose of the regional office is to develop and analyze the potentials of the region, i and to gain a better democratization in the regional spatial planning, when it comes to infrastructure, housing, nature and climate.[30] Skåne have today a total number of 1.2 million inhabitants and four major cities. These cities are Malmö with 270 000 inhabitants, Helsingborg with 120 000 inhabitants, Lund with 100 000 and Kristianstad with 75 000 inhabitants.[31] There are 33 municipalities, which varies in size in Skåne. These municipalities are divided into labor regions which are connected by a network of transportation corridors and nodes. Most important nodes among these are; Malmö, Lund, Helsingborg, Hässleholm, Ystad, Landskrona, Trelleborg, Simrishamn and Osby.

3.1 Processes of regional development

As mentioned in the introduction, regional development is closely connected to infrastructural development and investment, as well as regional expansion, which requires an economic growth. Regional expansion is therefore based on increased transportation between nodes in a spatial network of both labor and cargo.

At a national level, Sweden aims to be in the front of the regional expansion and Skåne is one of the prime regions. In this debate of labor regions, regional expansion and positive development, public transportation have many times been called to be the answer for the

[27] (Map of Skåne is available in appendix 1)
[28] (Svenska Kommunförbundet, Arena för tillväxt, 2003, p. 60)
[29] (Statiska Centralbyrån, p. 24)
[30] (Region Skåne, 2010)
[31] (Region Skåne)

future.[32] Commuting and flow of labor, is as one could exam, two important aspects of regional development. Commuting and flow of labor is regulated and analyzed with labor regions. Malmö, Lund and Helsingborg in Skåne are all counted in the top in Sweden, when it comes to flow of commuters and movements of labor.[33] These three cities are also the most important links and nodes for regional commuting in Skåne. If one set the amount of commuters down to 2000 daily commuters, there will be a link between all larger cities in Skåne, if the numbers is set to 1000 daily commuters, then it will be a link between all cities even smaller ones.[34] This have led to that Skåne have created a dependency between larger labor regions and economic growth, were smaller local labor regions are tied to each other in larger labor regions. At this moment, region of Skåne has 11 smaller labor regions and three larger labor regions. These regions ought to work as a complement to the region as a whole. However, this also shows that there potential and a demand of integration of the labor regions in the region.[35]

There are of course both problems and opportunities with the development that actually is taking place right now in Skåne. First of all, the expansion of our daily spatial room have made that is not unusual to commute more than 2 hours a day.[36] This is socially problematic. One could ask if it is possible to have social life when you are commuting for more than 2 hours every day. However, commuting also means a solution of a complicated question in many areas, suddenly there is a solution for areas in the periphery to have a steady population ground, economic growth and increased working opportunities.[37] In contrast there are problems of different environmental issues, urban sprawl and so on. It is at this stage important to remember, that these theories including regional processes of development are all a part of a market based discourse of economic growth and competition between regions.[38]

There are some theories and development projects that deal with the problem of urban sprawl, infrastructure and regional expansion, at least in a certain sustainable direction. Example of this is Transit Oriented Development (TOD). Transit–oriented development has been discussed during the last decade and it could to some extent also be applied in the case of Skåne. TOD is focused to prevent urban sprawl, even in cities in the periphery of an urban area. Main characteristics of a TOD area is high density, and short walking distances to public transportation hubs or stations. The land use should have a varied pattern of residents, employment and shopping, which should be designed for walk and cyclist.[39] TOD and its ideas of development in a regional context are connected Christallers theory of hieratical levels of cities and the theory of polycentric network between nodes in a region, which is depending on each other with a flow of labor, knowledge and service. [40]

[32] (Bösch, 2008, p. 1)
[33] (Örebro Universitet, 2006, p. 16)
[34] (Levin, 2008, p. 5)
[35] (Levin, 2008, p. 3)
[36] (Svenska Kommunförbundet, Arena för tillväxt, 2003, p. 48)
[37] (Boverket, 2005, p. 13)
[38] (Rodrigue, 2009, p. 7)
[39] (Olaru, Smith, & John , 2010, p. 220)
[40] (Meijers, 2006, pp. 245-247)

3.2 Regional infrastructural conditions

The start of the development of modern regional rail bound traffic in Skåne was in the year of 1982, when the first train station for regional use was opened. Today, there are some major railways that run through Skåne. Most important of the railways in Skåne are "*Södra Stambanan"* which connects Malmö with Stockholm; it is argued as an important link for both public transportation as well as cargo traffic. The other two important railway corridors are *"Västkustbanan",* which is located from Malmö to Göteborg,[41] and *"Blekingebanan"* that connects Kristianstad with Karlskrona in Blekinge.[42] There are also some smaller regional tracks and local tracks that only have cargo and/or regional traffic. There are on some of these lines planned investments, which contains rebuilding or expansion of rails. On the larger tracks most of the investment are to unburden critical lines that are at the edge of their capacity, mostly around Malmö, Helsingborg and Lund. However, the infrastructure system in Skåne has at the moment a high standard if one compares it on a national level. Skåne does as well have the advantage for public transportation because of the population density. This means that there are a couple of important nodes for commuting. Most of the commuting between these nodes has in a historical perspective been done with cars. This is because of a well-designed accessible network of highways that connects cities both in Skåne and in Sweden.[43]

[41] (Banverket, 2007, p. 6)
[42] (Tellerup & Tellerup, Kristianstad-Karlskrona Blekinge kustbana)
[43] (Banverket, 2007, pp. 4-6)

4. Theoretical Framework

This section deals with theoretical framework of rail bound traffic in context of regional development and the involved factors in this umbrella term. Some of the main theories have already been mentioned and highlighted. In this section I will try to put them in a perspective on other factors that involves development of regional railway systems and link them together in order to exam how they are depending on each other. From the previous chapters, one could distinguish some important factors;

- The important role that a regional infrastructural network has in a spatial system.
- That there is a complex spatial relationship between different development processes.
- That there are reasons why development and expansion could occur at a certain time, for example; visions, regulations, investments in infrastructure, spatial conditions etc.[44]

There are furthermore some variables that are considered to be important for these processes and it is clear that there is a system of different variables that could ignite a regional expansion and development. However, there is not any exact theory on how all are linked to each other.[45]

The different variables that are involved in the regional processes and in the theoretical framework of regional development and expansion have been touched upon so far; economic growth, commuting, accessibility, mobility and sustainable development. Were some having a correlation, and some have a more unclear connection to regional development and expansion. All of these will be more investigated in the upcoming chapters. But then again one could already here distinguish a crucial statement, that development and expansion of regions demands an economic growth, which do not collaborate with environmental sustainable goals at the moment. This has done that one today stand in front of a critical cross road of conflicting factors.[46]

4.1 Regional development

To begin with, as described before, there is no actual theory that encompasses all perspectives of regional development. There are a number of different theories that deals with this subject more or less.

When one tries to study development of regional rail bound traffic, there is a need to consider what a regional development and expansion in fact is. Regional development is the process, which is taking place in the middle layer on the hierarchal democratic stairway, between local and national level. This process includes improvements of economic growth, housing, employment rate, accessibility, and service in the region as a whole.[47] Among these hard values there are also soft values that are linked to regional development such as attractivity,

[44] (Rodrigue, 2009, p. 7)
[45] (Wärmark, 2004, p. 16)
[46] (Banverket, 2007, p. 9)
[47] (Hermelin, 2005, p. 267) (Pike, Rodríguez-Pose, & Tomaney, 2006, p. 24) (SIKA, 2001, p. 18)

nature and factors of demographic concerns.[48] These soft and hard values are all depending on strong economic structures[49], universities as well as governmental policies, visions and guidelines.[50] Regional development has also come to be a global competition of commercial values, meaning between countries, and national competition, meaning between regions. This includes the importance of a strategic value of a specific place, sustainable regional expansion, innovation systems and clusters which are all connected in a complex network.[51] This connection of global competition is about attracting labor and investments to a specific area /or region. In order to attract those, a region needs to have all of the above stated points well-established and organized.[52] Furthermore, a region needs to be equal on economic, cultural, social and also political planes. It is also a question of functionality of specific areas, which has developed through processes involving housing possibilities, infrastructure network and institutional systems.[53]

When one discusses regional development and its theory, there are factors that lie behind the creation of a region. In the creation a region, there are two common explanations, namely; administrative and functional regions. An administrative region is based on cultural and political values; many times socio–economic factors along with historical and environmental events.[54] The people inside an administrative region define themselves as a population on their own, and the borders are many times based on historical or mental borders.[55] Functional regions on their hand are in general based on a node[56], for example a labor pool, or a regional center.[57] The theory around functional regions is closely linked to Christallers Central place theory. This center of labor and distribution of service is in a need of surrounding area in order to serve the demand after products, labor and facilities. A functional region is established when smaller labor regions are linked together and one could distinguish an expansion of the spatial room in larger regions.[58] However, there are some drawbacks in the theory around the creation of an administrative region. An administrative region tends to get outdated fast for the reason that it is based on historical and mental borders that was created when the region was introduced. Therefore, functional regions have come to be the more logical choose of geographically describing regional processes and development.[59]

4.1.1 Regional expansion

The discussion of regional development and the increase of our spatial room are often referred to regional expansion and in order to understand what lies behind regional development, one need to understand the function of regional expansion. Regional expansion gives one the ability to have a freedom of mobility, were one could choose to live at one place, work in

[48] (Stough, 2010, pp. 617-618)
[49] (Pike, Rodríguez-Pose, & Tomaney, 2006, p. 14)
[50] (Stough, 2010, p. 617)
[51] (Örebro Universitet, 2006, p. 9)
[52] (Pike, Rodríguez-Pose, & Tomaney, 2006, pp 10-13)
[53] (Lönegren, 2001)
[54] (Gren, 2002, pP. 12-17)
[55] (Boverket, 2005, pp. 21-22)
[56] (Statiska Centralbyrån, p. 22)
[57] (Stough, 2010, pp. 613-614)
[58] (Statiska Centralbyrån, p. 22)
[59] (SIKA, 2001, p. 14)

another area and at the same time specialize in interests at different locations.[60] In other words, what is seen today is a demand of regional expansion.[61]

The theory behind why regional expansion is taking place at a certain time and place is unclear, and no exact empirical data has so far been found. Nevertheless, there are some ideas of factors which ought to initiates an expansion. To begin with, there are factors behind urbanization that has been frequent used during the last decades, and therefore we see a pressure on housing prices and as a result, families and households tends to move further out from the city to suburbs and smaller cities (an expansion of our spatial room).[62]

This trend of regional expansion is also a case of an upturn in the ability of mobility, because of an increased accessibility. One could argue that these aspects are clear and common knowledge, but it has been discussed how regional expansion actually improves and help a region to grow more than in square meters. However there is empirical evidence that regional expansion creates economic growth, decrease unemployment rates, and helps regions to be less vulnerable and stable to crisis. This expansion will therefore give the possibility to have an economic growth, better ability to find qualified labor, better access to infrastructure and freedom of mobility.[63] For example, if one labor region has an economical decline another could have an increase in economic growth and labor. Regional expansion could at this point consequently stimulate one to still live in the hometown and work in another, with help from a satisfying infrastructural regional network.[64] Therefore, region expansion has come to be the solution of keeping up positive population levels, economic growth and increase the attractivity, even in the periphery of a region.[65]

4.1.2 Central place theory or polycentric network model

Even if regional development only has been on the agenda for some decades, different theories that involve the same ground concepts have been discussed and theorized during the years. Perhaps the most famous and discussed theory is Christallers "Central place theory" that were introduced in the 1930s. The Central place theory is based on different levels or thresholds of service and producing levels in and between cities. A given city has a given minimum demand and geographical domain, of which people is not willing to pay for.[66] This provides a hierarchal network of cities in which only a few cities (central places) will offer all service and goods, these different cities are connected with infrastructure.[67] If a city and its surrounding area cannot fulfill the minimum demand of goods and service, then this city must connect to the nearest central place that fulfills the levels of goods and service.[68]

This theory could be considered as the ground fundament of regional development, but it is indeed generalized and simplified explanation of complex system and in the 1960s

[60] (Scheiner, 2006, p. 291) (Frändberg, Thulin, & Vilhelmson, 2005, p. 54)
[61] (Sandow & Westin, 2007, p. 11)
[62] (Sandow & Westin, 2007, p. 25)
[63] (Bergman, 2009, p. 7) (Näringsdepartementet, 2008, p. 55)
[64] (Sandow & Westin, 2007, p. 11)
[65] (Wärmark, 2004, pp. 18-44)
[66] (Meijers, 2006, pp. 245-247)
[67] (SCB, 2010, p. 19)
[68] (Meijers, 2006, pp. 245-247)

Christallers theory was redefined. The redefinition of Christallers theory was due to the fact that cities that interact in a network with each other in a region or nation could not be defined empirical by Christallers theory, when it comes to linkages of growth and spatial relationships of development in a region. The theory that was meant to replace Central place theory was "Polycentric urban region". This theory was expected to be introduced and implemented in the western advanced economy. A polycentric urban region explains the regions as an area that could have several different city centers of the same size and service, which is depending on each other, both-ways. In this Polycentric model, there are primary centers and also secondary cities that are depended on larger cities, and if the cities are in the same size, they could work as a compliment to each other in a network.[69] Both of these theories have been criticized and discussed. Authors like Berry have claimed that none of the theories should be nor abounded, nor fully used. Instead a progressive view of both should be used, were Central place models should be applied for industrial economics and Polycentric urban models should be used and applied at more advanced service dominated economies.[70] However, the central place theory as well as the polycentric model is general and static, both are clearly defined but no exact demonstration and example of empirical evidence has so far been founded.[71]

4.1.3 Regional rail bound traffic

Following up this discussion of development and different theories that is connected to the regional development and network between cities, regional rail bound traffic has come to be the main factor of connecting economic growth with regional expansion in a network of cities. Before one starts to discuss regional trains, it is needed to be defined. Regional trains could be defined as; rail bound traffic/commuter rail that operates within in a given area, such as a metropolitan area or a region. Furthermore, it is many times owned by the public, but with private contractors.

In the discussion of regional infrastructure, regional rail bound traffic is claimed to be one of the best alternatives of transportations if it have a high level of service, which provides better accessibility, air quality and growth in a specific area.[72] However, these investments are expensive and some studies shows that it is not economic endurable to have superior infrastructural rail bound projects in new areas. Investments should instead be concentrated to existing infrastructural network and corridors, which has a restraining effect on its flexibility and accessibility.[73] This creates two sides of the coin in the theory of regional rail bound traffic. On the one hand it should aim for deleting polarization and unequal development in a region. But at the same time it could instead create an unequal development because of the fact that some areas gain more investments than other. Because of it is not economic endurable to have investments in some areas. In other words, corridors, links and hubs could

[69] (Johansson, 2006, p. 27)
[70] (Berry, Parr, Epstein, Ghosh, & Smith, 1988)
[71] (Meijers, 2006, pp. 245-247)
[72] (Armstrong & Rodríguez, 2006, p. 22)
[73] (Wärmark, 2004, p. 20) (Boverket, 2005, p. 22) (Örebro Universitet, 2006, p. 37) (Sivilevicius, Maskeliunaite, & Podvezko, 2009, p. 101)

create a core /periphery development in the region.[74] According to Wärmark, improvements of infrastructure, which improves mobility and accessibility, will be one of the most fundamental facts of a marginalized relocation of people in the near future. Wärmark also argues that investments of specific regional infrastructure only will have a marginalized effect on the economic growth and the welfare of the region, than it is expected to have.[75] At the same time, there have been discussions that infrastructural investments and its impact on regional development differs because of spatial conditions. Regions with a weaker economy and higher unemployment will have economic growth, if infrastructural investments are made. But areas with a high income and low unemployment will have low countable differences if investments are made.[76] However, regional infrastructure is argued as one of the most important fundaments of our society, for economic growth, improvements of travel time between destinations[77], distribution of population and to transport as large numbers of passengers as possible between cities.[78]

At the same time one should try to problematize the connection between theories of regional expansion and rail bound traffic at this stage. First of all regional expansion, has been argued to reduce our chances towards a sustainable society, and instead campaign urban sprawl, which is depending on cars.[79] Secondly, areas with scattered population ought to have regional busses, rail bound traffic is more preferred to have in populated areas at already existing important transport corridors.[80] Thirdly, there are the congestions of rail bound traffic that is a large problem. This is explained by; that investments in rail bound traffic are expensive compared with other infrastructural investments and it is also more sensitive of delays and pressure on tracks. Therefore, congestions are created more frequently at rails than in other transport constructions. In order to get rid of these congestions, investments are needed in order to maintain a high mobility and accessibility.[81]

In order to summarize, regional rail bound traffic is claimed to be one of the solution for an ongoing regional expansion in a network of cities and nodes. In other words; regional development implies regional expansion and expansion demands well- designed infrastructure. Regional trains should furthermore, also be more efficient and flexible when it comes to accessibility and in the longer replace car traffic on some lines or at least decrease the use.[82] Though this there has been a change in the discourse during the last years, and most of science and official reports tends to discuss that regional trains is the new possibility for a continuing regional expansion in the concept of sustainable development.

[74] (Rodrigue, 2009, pp. 56 -58)
[75] (Wärmark, 2004, p. 55)
[76] (Polasek, Schwarzbauer, & Sellner, 2010, p. 83)
[77] (Näringsdepartementet, 2008, p. 118) (SCB, 2010, p. 65)
[78] (Engström, 2005, p. 424) (Prideaux, 2009, p. 98)
[79] (Olaru, Smith, & John , 2010, p. 233)
[80] (Fridh, 1996, p. 4)
[81] (Pike, Rodríguez-Pose, & Tomaney, 2006, p. 14)
[82] (Örebro Universitet, 2006, p. 28)

4.1.4 Regional commuting

As pointed out in the introduction, regional development is depending on one major factor, namely labor regions; they forms a region and it is claimed to be the most important factor behind economic growth as well as regional expansion. The term and definition of labor regions were introduced in 1991 and the smallest part in a labor region is a municipality.[83] Labor regions is created in two different processes; firstly if more people move into a local labor region or if it expands geographical due to commuting.[84] There are some steps in order to decide and split up regions and divide those into labor regions. Step one is to decide a local center, this include that a 80% of the working force should work inside the municipality and not more than 7.5% commute to another specified municipality. If both of these are fulfilled, the municipality is counted as independent labor region on their own, if not, then is the municipality in need of being linked to another municipality. When the local centers are divided, one divides the other municipalities into local centers. This is decided from where one municipality has most commuters.[85]

At a national level in Sweden there have been a decline from 187 labor regions in 1970 to 86 in the year 2004, this development among others shows that there have been a regional expansion and an extent of commuting behaviors. But it should at the same time be mentioned that this development more frequently have been taking place in urban areas, were smaller regions have been tied together, with the help of faster options of transports as one factor.[86] A labor region with a large and dense populated population has of course better possibilities for economic growth than a labor region that is stretched over a far area that is sparsely populated.[87] There is at the moment a discussion if there will be continuing decrease in the number of labor regions, some analyses claims a decline down to 67 labor regions in the year of 2015 in Sweden.[88] This development of labor regions is of course a case of increased mobility, increased demand of labor from a larger market and a regional expansion.[89] In other words, one could argue that there is a clear link between the size of local labor regions and the development of the labor market,[90] as well as in the network of cities.

Infrastructural investments over a larger spatial area are unquestionably taking place because of a demand of travelling over a larger area in order to have economic growth and increased possibilities of commuting, which is connected to regional expansion, infrastructural investments and labor regions. Currently, there is a trend of people moving out from a city core to the periphery, because of subjective emotional personal feelings, economic reasons, according to housing prices and consumption patterns outside of the city core. In this movement distance to a train station plays a major role as one of the most important factors when it comes to choice of moving out from the city core. These persons have many times a

[83] (Örebro Universitet, 2006, p. 38)
[84] (Bergman, 2009, p. 7)
[85] (SCB, 2010, p. 10)
[86] (Sandow & Westin, 2007, p. 12)
[87] (Örebro Universitet, 2006, p. 22)
[88] (Sandow & Westin, 2007, p. 12)
[89] (Statiska Centralbyrån, p. 115)
[90] (SIKA, 2001, p. 31)

background in larger cities, and they tend to use public transportation more frequently than other. On the other hand, a person who tends to commute with automobile continues to do it, even if they have satisfying public transportation options.[91] This creates a situation, where the facilities, labor, companies, business and universities are located at different places.[92] Therefore one could today distinguish an extent in time from house to work. In other words, today we live at one place and commute to our work in other part of the region.[93] This development is of course in need of good transportation corridors between different nodes, if one should be able to commute back into the city for the working career and still be able live were one is settled.[94] Investments of infrastructure are therefore done for the reason of a demand after more movements of labor and economic growth. The factor of economic growth in this case is commuters.[95]

An individual that starts to commute is depending on subjective feelings and priorities, but some general conclusions could be found. A commuter is many times a person with a high education, the higher graduation level the more wish and need for commuting.[96] Men have a tendency to commute over larger distances compared with women, because of higher education. Women furthermore tends to have a higher regularity use of regional public transports.[97] Psychological described there is time limit when one considers not commuting; this time is set to 45 -50 minutes, or at most one hour door–to–door.[98] There are also issues of commuting as factors of inequality, when one starts to commute over a larger area, one part of the family in some cases needs to take more responsibility in the household and maybe go down to part time, most of the times women.[99] Commuters also tend to be more stressed. What is more is that groups which that already are marginalized have a tendency to be even more separated in the commuting societies.[100]

4.2 Freedom of mobility and accessibility

Accessibility and mobility could be considered to be the overall purpose of regional development. If regional development is the power line, then one could describe accessibility and mobility as the electricity that connects the different terms and makes them develop. Accessibility and mobility needs to be separated and it could be described as; accessibility refers to opportunities that are connected in time and distances and mobility refers to the ability to move between locations that one needs to access.[101] Furthermore, accessibility is; *"… dominantly the outcome of transportation activities, namely the capacity of infrastructures to support mobility; it presents the most significant influence of transportation on location."*[102] However, transports have a purpose, and that is to fulfill the demand of

[91] (Scheiner, 2006, p. 295)
[92] (Svenska Kommunförbundet, Arena för tillväxt, 2003, p. 69)
[93] (Statiska Centralbyrån, p. 34)
[94] (Boverket, 2005, p 7) (Bösch, 2008, p. 1)
[95] (Eliasson, Lindgren, & Westerlund, 2003, p. 828)
[96] (SIKA, 2001, p. 35) (Sandow & Westin, 2007, p. 25)
[97] (Näringsdepartementet, 2008, p. 65)
[98] (Banverket, 2007, p. 9)
[99] (Sandow & Westin, 2007, p. 16)
[100] (Boverket, 2005, p. 13)
[101] (Hanson & Giuliano, 2004, p. 4)
[102] (Rodrigue, 2009, p. 63)

mobility.[103] From this, one could argue that regional development is basically an increase in mobility and accessibility.[104]

Freedom of mobility is depending on regional expansion, in the creation of nodes and infrastructural networks. So far have this expansion and freedom of mobility been depending on cars, but it has as mentioned been challenged by other modes of transportation. One could simply understand the problem when one knows that the transport sector in Sweden is responsible of 30% of the total amount of emissions. Because of these facts and the environmental friendly trend that we face today, it is without a doubt simple to understand that Sweden need to have a transportation system which could deal with this issue and decrease the total amount of emissions Freedom of mobility is important in the development of regional train traffic, and commuters today have high expectation on their mode of transportation, meaning that commuters requires; comfort, service, quality, just in time, safety, attractivity, travel time, schedule and distance as some of the factors that is needed to be fulfilled.[105] These mentioned demands should always be fulfilled at location in the core of the city, as well as in the suburbs or even in the smallest station villages in the countryside.

Accessibility is considered as argued before as one of the main fundaments for economic growth and regional development. However, accessibility could not be expected as ignited factor of growth in all parts of a nation, e.g. an older demographic structure could not expect high population or economic growth just because of increase in accessibility; it is one factor among other. [106] Nevertheless, accessibility could actually be an attractive factor that people perhaps will be reluctant to renounce because of the fact that better accessibility tends to attract people to stay instead of moving.[107] Accessibility and mobility is simply to apply, through investments. However this often means environmental, spatial issues and problems with congestions. Congestions are well investigated, but the solution is not fully understood and solved, as the example here will show. Congestion occurs mostly in two different cases, firstly when the demand of mobility becomes greater than the capacity and secondly because of random events like accidents etc. The solution of this is to increase the capacity and accessibility. But at the same time it has been showed that increasing in capacity increases the demand and the history repeats itself.[108]

According to above stated arguments one could argue that accessibility and mobility have come to be one an important part of attractiveness in a region, even outside of larger regional centers. There is in other words a demand and a need of accessibility, in order to increase the mobility.[109] The solution of creating attractiveness in a region is complex, but there are some examples of solutions of this issue. One solution of this is regional train stations or hubs at attractive locations.[110] An attractive city/or village needs good infrastructural connections,

[103] (Rodrigue, 2009, p. 2)
[104] (Hanson & Giuliano, 2004, p. 4)
[105] (Fridh, 1996,p. 20)
[106] (Polasek, Schwarzbauer, & Sellner, 2010, pp. 71-73)
[107] (Eliasson, Lindgren, & Westerlund, 2003, p. 828)
[108] (Rodrigue, 2009, p. 311)
[109] (SIKA, 2001, p. 32)
[110] (Nelldal & Troche, 2001, p. 91)

which could be implied through investments of regional train stations. There are examples of an increased commercial and residential value nearby regional stations, and a decrease of value the further away one moves from this location.[111] But on the other hand there have been discussion of that accessibility to a regional train station only have improved the value slightly. One explanation of this could be that the accessibility only has been improved marginable in the hierarchal regional network, it could be factors of schedule as well as need of changing transportation at a another station.[112] Other reasons could be that other mode of transportations is more flexible, in order to reach a regional centers.[113]

4.3 Sustainable development in a regional context

As discussed in the previous chapters, there have been an expanding of our daily spatial room, longer distances between home and work, regional development, regional expansion, faster transports etc. This together with other environmental issues made that a solution in came up, namely sustainable development.[114]

"The term „sustainable development" emerged in the late 1980s when what is now called the „Brundtland report" was published under the title Our Common Future. The Brundtland report presented a common definition of sustainable development that is still topical: Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs."[115]

Sustainable development is indeed a vague and undefined theory, but it could still not be put aside in the discussion in the theory of regional development infrastructure and rail bound traffic. Sweden has, together with the rest of Europe, worked for a development process towards sustainable development. However, so far have this thesis shown that it is a complex problem, and one of the main factors is in a regional context is the use of cars. Cars have somehow become a symbol of freedom, which ought to free oneself from geographical restrictions and instead improve our geographical flexibility (freedom of mobility). Massive communication with cars is a problem and it is mostly because of our increased daily spatial movements during the decades that have shaped this situation.[116] Regional expansion is depending on a growing flow of traffic between different nodes in region. This process has done that there are a pressure on different concerns such as; climate change, air quality, noise, water quality, soil quality, biodiversity etc.[117] There are furthermore soft values like segregation barriers and social concerns in the context of regional expansion and sustainable development.[118]

[111] (Armstrong & Rodríguez, 2006, p. 38) (Pagliaraa & Papab, 2010, p. 204)
[112] (Nelldal & Troche, 2001, p. 47)
[113] (Jonsson L. , 2007, p. 28)
[114] (Prideaux, 2009, pp. 100-106)
[115] (Bösch, 2008, p. 37)
[116] (Wärneryd, Hallin, & Hultman, 2002, p. 74)
[117] (Rodrigue, 2009, pp. 268-272)
[118] (Jonsson D. R., 2008, p. 28)

Sustainable development is also claimed to be the solution of the technological problems that we faces in the development of a new mode of transportation. Sustainable development is connected and linked to the development of technological solutions for rail bound traffic. Ideological described, sustainable development argues that technological solution will help our society to develop in sustainable direction; this should be done without any questioning of economic or social structures. This development should in the longer run lead to a more efficient and environmental friendly mode of transportation.[119] If one compares above mentioned statement of sustainable development and regional expansion it is obvious that people should be encouraged to choose public transports (But then again the problem with mobility contra sustainable development is well known). One could ask if it is possible from a regional perspective to have transportations that is based on sustainable development.[120]

However, public transportation is many times called to be the answer of reaching sustainable development, because of its ability to reach people which are not able to travel over a further area, and it's a vital part of the regional development and expansion. It is also claimed to be a better environmental choice of travelling and furthermore it is a factor of economic growth. One could argue that this is a simple solution but one might also ask them a question at this stage. If for example a railway line is under the limit of being economical supportable and it is then needed to be closed and replaced with less environmental friendly.[121] Could it then be argued to be sustainable? Even if this statement is problematic and discussed, there are still some main points for reaching a sustainable transport planning in regional context;

- A long term vision of a sustainable transport that provides mobility and access to all.
- The vision should contain a long term trend which considers all aspects of transport, and their impacts on health, environmental, economic and social implication.
- Define environmental quality objects.
- Set sector perspective targets with quality objects with milestones and dates.
- Set strategies for achieving environmentally sustainable transport, and implement those.[122]

[119] (Pike, Rodríguez-Pose, & Tomaney, 2006, p. 115)
[120] (Bösch, 2008, pp. 1-2)
[121] (Bösch, 2008, p. 43)
[122] (Rodrigue, 2009, pp. 276-277)

5. Methodology

When one aims to understand patterns of infrastructure, regional processes and development from a human geography method one can use the umbrella term of "transport geography".

Transport geography is not considered as an own field, instead is called to be a field of application, to understand economic and social processes.[123] Transport geography emerged as a discipline during the same time period as when one could analyse an increase in our mobility and it is today claimed to be one of the most important fields when it comes to understand and explain issues of mobility, regions, production of networks and nodes. The role of transport geography is to understand the relationship between these factors and link them together. A better understanding of these issues aims to help both public and private actors with capacity, transfers, reliability and integration of transport systems.[124]

5.1 Scientific approach

This study aims to find regional patterns from information that are collected from a number of different sources. The theoretical framework is based on literature, articles and policy documents from governmental institutions and the regional infrastructural office at region of Skåne. My aim in research process was to find a broad theoretical background in order to find a wide-ranging fundament of different factors and theories that could involve and influence regional development. The conclusion is that there are a wide range of different factors that is involved in the regional process. However, it is mobility and accessibility that is the most important theories when it comes to development of rail bound traffic.

The data for my empirical research was based on three sources. Firstly, the data of the amount of travellers on a daily bases and the opening year of the stations were from regional infrastructural office in Skåne.[125] The second collection of data was from SCB (Swedish Census Bureau).[126] The third source is the database of spatial information that is given and approved to use from the culture and economic geographical department at Lund University.

5.2 Choice of method

The study should be considered a quantity study, because of the reason that the empirical data is based on large numbers of statistic data. The statistic material is to be considered as an instrument of describing and showing numbers that should be compared with the theoretical framework in an attempt to analyse the reality. A quantitative study aims for finding exact numbers for an answer, instead of "pseudo quantity" numbers such as many, often etc.[127] Moreover, a quantity study is based on a macro level (in this case a regional level), and not a micro level (individual level). The macro level in this study is the collected statistical data, which ought to be well thought-out study of a process in a given area over time. What a macro quantity study aims to do, is to find a link between different variables and theories and investigate if it proves or undermines the theory. A macro quantity study has its background

[123] (Rodrigue, 2009, p. 37)
[124] (Rodrigue, 2009, pp. 7-8)
[125] (Region Skåne, 2011)
[126] (SCB, 2011)
[127] (Rosengren & Arvidsson, 2002, p. 361)

in the sociology were Max Weber and Emilee Durkheim were two of the main actors in this school. Both of them tried to find connection between movements in the society, population's behaviour and different official variables.[128] I would argue that this type of macro quantitative study is well designed for this type of thesis. I am using a data tool and large numbers which ought to show an objective reality from a macro level perspective.

From above stated arguments and statements, one could argue that this method is a positivistic stance, because of that is trying to highlighting quantitative methods and objectivity in order to find patterns. Positivistic science is inspired by the nature science and is often claimed to be more objective, which proclaims hard quantity facts. The hypothesis should then be open for external review and retest of one´s hypothesis.[129] A positivistic research is more over a method that is close linked to naturalism, which in turn is a philosophical scientific model, which means that one is doing a study of social reality with the use of general terms, in order to find a general pattern for the specific case.[130]

At this point one also needs to define their science and how one observes and identify it. This is done by validity and reliability. Validity and reliability is a tool for measuring the quality of the collected data. Validity measures if one really is investigate what one is supposed to do. Reliability measures how reliable ones choose of tool for measurement that one uses actually is.[131] The validity of the data should be reflected as quality. The data comes from national agencies and exact numbers for every question have been used, so the validity of the data is reliable.

5.3 Collection and visualization of empirical data

The empirical data is basically based numbers gathered from two sources as told in the purpose, SCB (Swedish census bureau) and official numbers of stations and the amount of travellers from the regional infrastructural office at region of Skåne. The databases were collected in Excel documents with a number representing each year from the collected data and each station city or municipality. This was a problem which had to be dealt with high caution. My purpose was to find data so close to the station city/village as possible, in order to have data that could represent something that was close to source of the study as possible. But this was not possible at all levels.

Most of the data from SCB represents only municipalities, so there was a need to draw some general conclusion for the station cities. But in most cases, there was relationship between the statistics from the municipality and the station city. I would argue that this is of two reasons. Firstly, the station is mostly located in the largest city and according to the theories around catchment area and accessibility almost all station cities has the whole municipality as there catchment area. Secondly, because of the reason that many municipalities have two or more stations in there municipality, which increases their catchment area.

[128] (Rosengren & Arvidsson, 2002, pp. 327-333)
[129] (Guelke, 1985, pp. 130-131)
[130] (Bryman, 2004, pp. 250-251)
[131] (Rosengren & Arvidsson, 2002, p. 47)

When this process was finished I decided to find a tool with high validity and reliability in order to process this data and to get well–designed databases for my presentation. In this thesis I have used two different tools for doing this, ArcGIS 10 for design and visualization of maps, and Microsoft Office Excel 2010 for describing and present the collected empirical data.

As described before I first collected all data in excel and started to process the data in order to the purpose of the study. However, Excel is a tool that is used for presenting data. Large numbers of data could be handled by Excel in order to perform and show trends in data tables, or as in this case line diagram.[132] The second tool GIS (Geographic information system) was introduced the 1980´s, and have since then been developed into a common tool that is used in business, government and academia. GIS is a tool that is used for organized and collect geographical data. Furthermore, one could use it in order to handle, analyze and display different kind of geographical spatial data.[133]

As described earlier in the method the spatial data from Skåne was based on data that was received from culture and economic geographical department at Lund University. The spatial data here represents different databases of geographical lines, polygons and points. In this thesis the most important figures were; municipalities, railway lines, roads, cities and station cities. The station points were not represented in the spatial data so I did an own data collection in a point layer that represented all stations in Skåne.[134] These stations points and the polygons represented the municipalities were then joined with the data from Excel, in order to achieve a map of all stations and cities in Skåne. These maps could be seen in the appendix of all different railroads. The use of GIS in this study is only to present and visualize maps of the spatial conditions in Skåne. The presented data in the empirical part is strictly described with Excel and visualized as line diagrams, in order to support and clarify my empirical findings.

5.4 Critique of method

GIS have in this study been used for visualization of the spatial conditions of Skåne and producing pedagogical maps. But one should still consider it as a subjective tool, even when it comes to visualization and explaining the nature on a specific map. One should remember important basic factors in the presentation of the analyses such as: choice of color, texture and the hue. One should of course also apply this factors when the presentations from excels are done. Besides this, there are also a need of considering which geometric figures that are used; consider size, orientation and nature and how they are represented with different lines, polygons and points.[135] Furthermore, on objectivity, one could argue that using large numbers of quantity data is not at all objective, only in some cases strong objectivity.[136] Even if one is aiming for being objective in there research, there is always a risk of taking a partial part of one side, more or less. In other words, a research project is always subjective. We should

[132] (Microsoft Corperation, 2011)
[133] (Environmental Systems Research Institute, 1993, p. 2)
[134] (Skåne karta tåg och buss)
[135] (Rodrigue, 2009, pp. 158-159)
[136] (Harding, 1997, p. 388)

instead aim for strong objectivity or minor subjectivity.[137] In this discussion there is furthermore a need to be critical of staring oneself blind of technique tools for visualization of empirical data. This large belief in in technology that is inspired by nature science, is claimed for being a "god trick" that have made us techno monsters, where one tries to see everything from nowhere, maps and other lines are simply only positivism and an illusion.[138]

I agree with above stated argument, that one should not staring oneself blind at one side of the coin. There is at all times a need for deconstruction, contestation, and webbed connections. There is always needs to be critical of the objectivity of a project.[139] The god trick is indeed a problem, not at least in nature science and this method should be used with caution. But on the other hand, I would argue that different methods of presenting data such as GIS and Excel could be used in order to simplify and show another perspective on a specific issue. One map cannot show everything, but it could help you to illustrate, what I would argue actually is close to objective truth. However, one cannot simplify a complex world into total objectivity in a map or a graph, but still one could simplify it as much as possible.

[137] (Friberg, 2006, p. 278-281)
[138] (Haraway, 1987, pp. 580-583)
[139] (Haraway, 1987, pp. 584-585)

6. Empirical results

In this section I will present the results of my study. There are as one could see no figures in the text, so all results which are not presented with footnotes in the text refer to the appendix and analyses of those. Appendices could be found after the reference list.

6.1 Spatial Conditions in Skåne

I will in this section present the development of regional railways in Skåne from an overall perspective, I will review the different specific lines that have regional trains, from the most southern line Ystadbanan, and then in geographical order, from south to north. This presentation of the spatial conditions could be founded in Appendix 1 at page 50.

Skåne have today a railway system that is concentrated to the populated areas in the south and western parts, around the larger regional centres, Malmö and Helsingborg. The areas in the north and eastern are more sparsely populated and the railway system is not as well developed. The most important railway corridor is Södra Stambanan, which is located from Stockholm to Malmö with stations in Osby, Hässleholm, Höör, Eslöv, Lund, Malmö and a number smaller regional stations.[140] Another important transport corridor is Västkustbanan that is located on the west coast from Malmö to Göteborg, with stops in Malmö, Lund, Landskrona, Helsingborg, Ängelholm and Båstad. There are also at this line some regional stations in cities and villages.[141] There are also a number of smaller regional railways in Skåne; Ystadbanan, located from Malmö to Simrishamn, Rååbanan, located from Helsingborg to Eslöv and Skånebanan, located from Helsingborg to Kristianstad. Skåne do also have some major roads that are significant for both regional and interregional traffic. There are furthermore some smaller railroads at different lines, these are either resign or only for cargo traffic.[142]

6.2 Ystadbanan

Ystadbanan is located in the southern parts of Skåne and is used for regional and cargo traffic. The line is located from Malmö in the direction towards Simrishamn, through Svedala, Skurup, Rydsgård, Svarte and Ystad at a first leg. The second leg is from Ystad to Simrishamn, and there are regional stations in Köpingebro, Tomelilla, Lunnarp, Smedstorp, Gärsnäs and Simrishamn. The results here are based on the empirical data that is presented in appendix 2 at pages 51-56.

There were two other stations on this line in villages that were located close to Simrishamn, but these were closed 2002, which improved the travel time from Simrishamn to Malmö. The highway of E65 goes from Malmö to Ystad is located next to Ystadbanan. The first regional railways were introduced in the earlier 1990´s, but it was first when Ystadbanan was electrified on the whole line in 1996 one could start to discuss in terms of a working regional railway line.[143]

[140] (Tellerup & Tellerrup, Malmö-Nässjö-Mjölby-Norrköping-Katrineholm Södra Stambanan)
[141] (Tellerup & Tellerup, Lund-Helsingborg-Halmstad-Göteborg Västkustbanan)
[142] (Skånetrafiken, 2010)
[143] (Ystadbanan)

The first stage of Ystadbanan is situated from Malmö to Ystad and has since the introduction there has been a curve going up when it comes to population and travel levels. In this part are the stations in Persborg and Oxie excluded, because of the reason that they are located inside the borders of Malmö. Svedala is the first station outside of Malmö and it has ever since the introduction in 1982 had a positive population curve and travelling behavior. But it is still on percental lower levels if one compare with Skurup, Rydsgård, Svarte and Ystad. The population level in Svedala have also gone up since 1982, but no actual improvement or relationship could be seen until 2002 and from this stage the graph also shows a positive curve in the number of travellers. The stations in Skurup and Rydsgård in the municipality of Skurup have also seen improvements, both in the amount of travellers and population levels. The station in Skurup has since the opening in 1989 had a high number of daily travellers, but with obvious improvements since the year of 2002. The station is Svarte, Ystad and Köpingebro have a pattern that is close to Skurup; all of the stations have a high level of daily travellers and increased population levels ever since 2002.The number of daily travellers has actually increased tripled at the station of Köpingebro.

The second stage of the line is located from Ystad to Simrishamn and is sometimes called Österlenbanan. The line has during the years had some improvements but also shutdowns. In 2002 two stations was closed, which improved the travel time for the line. Today is the time schedule is set to 1 hour on the line in the morning, and 2 hours on day time and then 1 hour again in the afternoon and in the evening.[144] However, the station in Tomelilla shows almost the exact same pattern as the previous stations, a steady improvement since the introduction and a real boost in 2002, the same pattern could also be seen in Lunnarp and Smedstorp. The station in Smedstorp have interesting curve if one compare the number of travellers with the number of inhabitants, 372 inhabitants in 2005 and 118 daily traveller in the same year. Simrishamn and Gärsnäs station is located longest away from Malmö, almost 90 minutes of travelling time.[145] The municipality of Simrishamn is the only area, were there has been a decline in the numbers of inhabitants. The last line diagram shows the number of commuters and there have been an increase in the numbers of commuters going out and in from all municipalities, and one could also here analyze a pattern of a boost since the year of 2002.

[144] (1 Skanetrafiken)
[145] (2 Skånetrafiken)

6.3 Södra Stambanan

Södra Stambanan is located from Stockholm to Malmö. In the Region of Skåne, it is located from Osby, through Hässleholm, Höör, Eslöv, Lund, Malmö and a couple of smaller cites that I will present more in detail shortly. The rail is double-lined and it is also shared by cargo traffic, interregional traffic and regional trains.[146] There is also an important highway corridor located next to the rail. The results founded here are based on the empirical findings which are presented in appendix 3 at pages 57-61.

The first section of the line is located between Malmö and Lund. The stations in Lund and Malmö are excluded. All of the municipalities that are located along the line show a positive population curve, except Hässleholm, which had a decrease until the year of 2000, but since 2005 presented a positive development again. The stations in the municipality of Burlöv and Staffanstorp, which are located between Lund and Malmö, have been going steady up ever since the introduction year 1982. Burlöv and Åkarp which are located closer to Malmö have not had such a distinct growth as Hjärup, which have been going steady up since 1982. The graph of Burlöv population level and the train station graph show a correlation until the end of 1990s. The number of travellers in Åkarp follows a high number but it should be noted that it does not follow the population curve. Hjärups has a pattern between the numbers of travellers and the population levels between 1990 and 2004 and it increases equally.

The stations in Stångby, Örtofta and Eslöv have all improved in the amount of travellers, even more if one compares with the stations between Lund and Malmö. Both Stångby and Örtofta show high numbers of travellers compared with the population level. Örtofta had a population of 196 in 2005 and approximately 361 daily travellers in the same year. Eslöv had furthermore, an increase in the number of travellers until the year of 1998, but since then there is curve going downwards. This is probably because of faster communication to Malmö and Lund with Öresundståg, which has lower amount of stops.[147] But there have on the other hand been a heavy increase in the number of inhabitants with almost an increase with 5000 people in 10 years.

The last section on the rail is the stations in Stehag and Höör. Hässleholm is also a part of section and it will be presented in the presentation of Skånebanan later on. Stehag displays a positive numbers both in the amount of travellers and in the population levels ever since the introduction in 1987. Furthermore, it is possible to travel with other public transportation options in the southern direction; this is one reasons of the high number of travellers. [148] Höör shows a positive development in population numbers, but when it comes to the numbers of travellers with regional trains we see the same pattern as in Eslöv, a decline since the year of 2000, probably because of the same reason. The amount of commuters out from the municipality on this section of the railway system in Skåne shows a positive curve. However, Eslöv shows a line that goes almost straight up and in 10 years, there are almost 30% more commuters that travel out from the municipality. The numbers of commuters into the municipalities have also increased but not significantly.

[146] (Tellerup & Tellerrup, Malmö-Nässjö-Mjölby-Norrköping-Katrineholm Södra Stambanan)
[147] (3 Skånetrafiken)
[148] (3 Skånetrafiken)

6.4 Västkustbanan

Västkustbanan is located from Malmö to Ängelholm in Skåne, through a number of cities and villages, including Åkarp and Hjärup which were discussed in the previous presentation on Södra Stambanan and they are therefore excluded in this section. Helsingborg is also excluded because of its size. The line goes from Lund further up to Kävlinge, Döjesbro, Hjälarp, Landskrona, Glumslöv, Rydebäck, Helsingborg, Ödåkra, Kattarp and Ängelholm. The track is double on all lines except on the route after Helsingborg where it is single way towards Ängelholm. Furthermore there is also one important highway that is located almost at the same line as the rail. The rail between Helsingb6org and Lund was rebuilt in the year of 2000 and a couple of new station was at this point introduced, this is why o there is an increase in the amount of travellers at this point.[149] A fully presentation of the empirical data is available in appendix 4 at page 62-6.

All of the municipalities that had a station since the year of 1982 have a positive development, when it comes to population levels. Firstly; Kävlinge have since the introduction been growing steady, with some smaller dip in the beginning of 2000 both in population numbers and, due to changes in the departure schedule, but today the numbers is higher than ever. Döjesbro which were opened as a station in 1984 had a stable curve until the beginning of 2000. There have however since 2000 been growing from a level of around 250 persons every day to 500 daily travellers. Hjälarp have during its 10 years as a station city been stable with a level of just under 500 travellers every day. It should be noted in Döjesbro and Kävlinge which both are located in the same municipality have a population line that follows the number of travellers.

The next section on Västkustbanan contains three different stations; Landskrona, Glumslöv and Rydebäck. Landskrona is the largest city on the line, and it is therefore a higher number of travellers and inhabitants. Since the rebuilding of the rail in the year of 2000 there has been an increase in the amount of daily travellers. Glumslöv and Rydebäck have also been growing when it comes to population level. Both stations have high numbers of travellers compared with the population and it seems to be a continuing trend. The next section on the line is from Helsingborg to Ängelholm and it holds three stations; Ödåkra, Kattarp and Helsingborg. Ödåkras population have actually decreased since the building of the station, a reason of this could not be founded. The levels of travellers have also been unstable, with a steady increase until the year of 2004 when the graph line was straighten out and a decrease in the amount of travellers could be found. Kattarp have the same pattern as Ödåkra with a decrease in the population and an unstable amount of travellers. At last, Ängelholm as a station had some dips during a couple of years but have however had an up going curve during the last years. Furthermore, Ängelholm population have been growing in a stable line since the station was build. When it comes to the amount of commuters out and in from the municipalities a pattern of growth is seen at all levels except for Kävlinge which had a decrease in the numbers of commuters into the area since 1993. Moreover, the numbers of commuters have increased significantly especially after the rebuilding of the line, which appears to be a factor of high use of the regional trains.

[149] (Tellerup & Tellerup, Lund-Helsingborg-Halmstad-Göteborg Västkustbanan)

6.5 Rååbanan

Rååbanan is located next to Västkustbanan on the west side of Skåne. The rail is located from Eslöv in the south to Helsingborg in northeast, through a couple of smaller villages. The Stations are located in following cities; Teckomatorp, Billeberga, Tågarp, Vallåkra, Gantofta and Helsingborg. In this section are Helsingborg and Eslöv excluded. Eslöv have already been presented and Helsingborg is a regional centre and are therefore not of interest. A fully presentation of founded data is presented in appendix 5 at pages 67 -70.

The track is a single rail and it carries both cargos and regional trains. After the opening of Västkustbanan in 2001[150], Rååbanan lost its position as the major railway on the west coast. However it gave the regional trains new opportunities and two new stations.[151] All of the municipalities in this section have been presented with population level in the other sections, but as a reminder, all stations have since 1982 have a positive population growth, mostly Eslöv and Landskrona. Svalöv had until the earlier 2000 a negative trend but had since then had a positive population curve.

The station in Teckomatorp has since 1990 had a positive development of population, 1494 inhabitants in the year of 1990 and 1644 in 2005. The use of the station has varied over time, but since 2005 a growth in the amount travellers could be seen. Today the station has a time schedule that is set to one every hour.[152] Billeberga have during the years had both a loss in the population level and a quite low number of travellers which have varied year from year. But since the early 2000, a trend could be seen with higher number of travellers. Tågarp have at the moment both a high number of travellers and a positive development of the population, which could be considered as odd because of that both stations next to Tågarp have a negative trend. Vallåkra and Gantofta are both located close to Helsingborg but only Gantofta have so far been having a positive trend of inhabitants. On the other hand, Vallåkra have a high number of travellers every day but a negative trend in the number of inhabitants. The number of commuters in and out from the municipalities has been shown in the previous section.

[150] (Tellerup & Tellerup, Lund-Helsingborg-Halmstad-Göteborg Västkustbanan)
[151] (Tellerup & Tellerup, Eslöv-Teckomatorp-Ramlösa (-Helsingborg) Rååbanan)
[152] (4 Skånetrafiken, 2010)

6.6 Skånebanan

Skånebanan is a case that of a line that have a history that goes in two development directions. Firstly, there are some stations that have been opened for a long time and secondly some that have not been opening for more than 4 years.[153] A full presentation of the founded the empirical data could be founded in appendix 6 at pages 71-76.

One could argue that there is a pattern of two different groups on the line from Helsingborg to Hässleholm. At first we have the municipalities of Bjuv, Klippan and Åstorp which all have been having an up going curve during the last 10 years. In the other group there is Perstorp which has a negative or stagnated curve. On the line from Hässleholm to Kristianstad there are some interesting cases. First of all, Hässleholm shows a curve that is stagnated which seems to be strange of the fact that is considered as a node in both a regional and national perspective. Krisitanstad on the other hand is in up going curve in both the number of travellers and population levels.

Closest to Helsingborg there are three stations that have been opened for the longest time, Påarp, Mörarp and Bjuv. All three had during the first years a positive development, but a dip in the year of 2000. However, after the reopening of the whole line from Helsingborg to Kristianstad a steady development up going curve could be analysed. The station in Åstorp was opened in the year of 1999, and the first years there was a small amount of travellers, but since 2007 the curve has been going up to levels that is almost three double as large as before 1999. Klippan, Perstorp and Tyringe also show high numbers that seems to be continuing to grow in the next couple of years. Hässleholm and Krististand have also been having high numbers of travellers since the opening in 2007.

Vinslöv is located between Hässleholm and Kristianstad. Vinslöv have lost travellers the last two years. Vinslöv had before the new schedule a timetable that was set to every hour, but since the last years lost some departures.[154] There have been small changes in the number of commuters into the municipalities, but these have not collaborated with the start of the stations. There has on the other hand been a positive development on the commuters that travels out from the municipalities, especially those ones that is situated closer to Helsingborg.

[153] (Tellerup & Tellerup, Hässleholm-Åstorp-Ramlösa / Kattarp (-Helsingborg) Skånebanan)
[154] (4 Skånetrafiken)

6.7 Commuting patterns into regional centers

A full presentation of the founded empirical data in this section could be founded in appendix 7 at page 77.

The regional conditions in Skåne for commuting and travel with regional trains have as one could realize been over all positive so far. If one analyse the amount of commuters in and out from the municipalities in Skåne no especially pattern could be seen, but if one analyse the pattern of commuters going to Helsingborg and Malmö a totally different pattern is taking place. Since 1993 the amount of commuters has gone almost straight up and most of the development collaborates with the introduction of the regional railway station that has been taking place during the same period. The amounts of travellers into Helsingborg have increased from 8000 to 20 000 in 15 years. Malmö shows the same development with an increase in the amount of commuters into the city from 42 000 to 60 000 during the same period.

6.8 Future investments

A full presentation of the empirical data for section 6.8 and 6.9 could be founded in appendix 8 at page 78-80.

6.8.1 Cities with new investments 2011 -2014

In the upcoming year investments are made in the northeast parts of Skåne. The project of "Pågatågen Nordost (Pågatågen northeast)", is taking place during the years from 2012 until 2014. All of the cities that will have regional stations have since 1990 had a population curve that has been either stagnated or negative. The project consists of two railway lines, which will both go in northern direction from Hässleholm. The first line is located from Hässleholm to Växjö and in Skåne stations will be opening in Ballingslöv, Hästveda, Osby and Killeberg. The other line will be located from Hässleholm to Bjärnum and Vittsjö and finally Markaryd in Småland. New stations will also be installed in Sösdala and Tjörnarp south of Hässleholm on Södra Stambanan. Stations will also be close to Kristianstad and in Bromölla, which will be the end station.[155] Osby have at the moment opportunities of travelling with train on longer distances with interregional trains. However it is still a long distance to larger cities like Malmö and Helsingborg. At last, Bromölla which is in the same size as Osby share the same patterns in the population levels and the answer of this pattern is also almost surely the same; the factor of distance that is too long to larger important regional centers. Furthermore, most of the municipalities in Skåne will at least one regional station in after 2014. However, there are also some municipalities that will not be affected by the investments that are made during the next years and were currently is no plans on investments.

[155] (Pågatågatågen Nordost)

6.9 No future investments

6.9.1 Southwest

Lomma, Trelleborg and Vellinge are all located close Malmö and do not have any planned investments. But because of its close distance to Malmö, they still have opportunity of growth in number of population levels without regional railways. All of these three municipalities are at the moment integrated with Malmö and there are more flexible options of public transport options like city busses.

6.9.2 Northeast

The northeast parts of Skåne has for a long time had a decline in number of population, mostly in the municipality of Östra Göinge, which are both in the periphery with a scattered and rural population. Östra Göinge´s population level has been going steady down, despite of their good geographical placement within a close distance to Kristianstad. This is probably because of a lack of good transportation options.

6.9.3 Northwest

Båstad and Höganäs are two municipalities which are located in the northwest parts of Skåne, close to the border of Halland. Both have seen a growth in the population levels, due to the same reason as the case of the municipalities around Malmö, a short distance to a regional center. Örkelljunga on the other hand is located in the inland, and it has a linear growth in the number of inhabitants, furthermore the city would perhaps have loss in population if it was not for the highway that runs through the municipality, that gives Örkelljunga a good mobility and close distance in time to especially Helsingborg.

6.9.4 Mid Skåne

The municipalities of Hörby and Sjöbo are located in the central parts of Skåne and these do both have a growth in the number of inhabitants, not as heavy as in the other municipalities that have regional train stations, as an example, if one compares Hörby and Höör. One could also match Sjöbo with Ystad.

7. Analysis

The aims for this thesis were to find and analyse if there are any patterns in the development of regional railways since 1982 in Skåne when it comes to factors of population, travellers and commuting.

7.1 Research question 1

- *What factors are behind the development of regional rail bound traffic in Skåne when it comes to aspects of regional development and regional expansion?*

I would argue that there is a link between the theoretical framework and the empirical results, between the regional development and expansion, and the development of rail bound traffic. However it is also as mentioned in the theoretical framework some unclear link that also will be discussed in the paragraphs on the following pages.

First of all one of the main factors in the regional development of rail bound traffic in Skåne is the factor of population and fast infrastructural connections to regional centers (Malmö and Helsingborg). The railway system in Skåne is developed from and around these populated areas in the southwest and the northwest parts of the region, and mostly around the important transports corridors of Västkustbanan, Södra Stambanan and important highways from the start of 1982. As discussed in the chapter of regional development, I would argue that there is a complex spatial relationship between different regional processes and regional rail bound traffic.

In the region of Skåne are these factors of development influenced on different levels. The regional rail bound network has developed from the more populated area in and around Malmö and Helsingborg. This is mainly due to a couple of reason. Firstly, these cities had already before a well-constructed network of nodes and lines between the cities, both when it comes to railways and highways. This has made the investments cheaper. Furthermore, the economic growth has mostly been concentered to the populated areas, which have done that there is a need to have good infrastructural network because of a demand after specialized labor and an economic growth. When there was investments in new regional railway system one could see an increase in the amount of travellers over time at most of the stations even those that is located far from the regional centers, up to the crucial time of 45-50 minutes. After this, a positive travel pattern fades out and one could see a decrease in the amount of travellers, probably due to fact that Malmö, Helsingborg and their hinterland is important to all parts within 50 minutes in Skåne, especially when it comes to commuting.

The regional expansion in Skåne is taking place within the concept of Sustainable development, on a social, economic and environmental level, and they are all linked to the development of regional rail bound traffic. Firstly, there is the social concept of sustainability. Regional traffic in Skåne is aiming for being social sustainable, when it comes to reaching as many people as possible and increase their ability of mobility. However, this is problematic, because of the reason that some parts are excluded from regional rail bound traffic, due to the fact that it not economic sustainable to develop railway systems in these areas, the population is simply to scattered and the factor of distance to regional centers is too

long. Environmental sustainable is perhaps the clearest declaration in the development of regional rail bound traffic in Skåne when it comes to regional development and expansion. Regional rail bound traffic is simply a way towards a more environmental sustainable choice of transportation in the concept of regional development and expansion. However, it is still problematic due to the same reasons as described above when it comes too factors of economic growth and that not all inhabitants will be able to travel with regional trains because of their lack of accessibility in order to have freedom of mobility.

Furthermore in this discussion there are the development of labor regions, which is also considered to be one of the main factors behind regional development and expansion. The development of labor regions will probably continue to expand, according to the increased levels of commuters along the important transport corridors in and between nodes, especially to Malmö and Helsingborg. However, this expand will only be taking place in some areas in Skåne and some areas in the more scattered populated areas will not be able to integrated with the larger labor regions within the region.

This process creates both a social and environmental challenge in the context of regional expansion and development. The aim is to create a regional expansion that could improve growth and accessibility to service in all parts of a region. On the other hand, it is also environmental vulnerable because of that no development of alternative transport options creates a society that is depending on cars. However, the last years developing of the regional rail bound system have made it possible to travel with regional trains even in the peripheries of the region. Several of these stations are outside of the time limit of 50 minutes to regional centers in the region of Skåne, which is problematic, and therefore will the shift at these places only be marginal.

7.2 Research question 2

- *What aspects lie behind a development of positive and regularly use and flow travellers and commuters relating to regional rail bound traffic in region of Skåne?*

The empirical results shows that there has been a heavy increase in the use of regional rail bound traffic. First of all this is due to a couple of factors, which all involves accessibility and mobility, which seems to be the overall best explanation of a regular use of regional rail bound traffic. In order to have a steady use, a region needs to have a capacity of infrastructural networks to support mobility. The development of regional railways in Skåne shows that accessibility and mobility is important factors behind a positive trend of regular use regional rail bound traffic, both when it comes to travelling and commuting. It is furthermore also a question of governmental guidelines which promotes more environmental friendly alternatives, instead of going by cars. In order to forsake to travel with cars, there is a need for develop alternative transports that is equal or even more flexible when it comes to accessibility to important nodes and regional centres. This development could be applied to the case of Skåne on the important transport corridors that is located from Malmö and Helsingborg. At these transport corridors there are some years of adaption and then a steady growth in the use of a new railway station. This is due to both promotion and the subjective

feeling to choose to travel with regional railways have transformed, from a transportation option that one uses on larger distances to an option that is more flexible even on a daily basis when it comes to travel within in region.

One other important aspect that is crucial for a regular use of regional rail bound traffic is time and schedule in regional expansion and in accessibility when it comes to mobility. In order to have an economic growth, larger labour markets, specialized functions of cities and equal level of development, a region needs to have fast transport option to important nodes (polycentric region). The empirical results in this investigation shows that region of Skåne is separated. I claim that the region of Skåne could be separated in three different development groups of travelling and commuting patterns.

In the first group there are the municipalities and station cities that are located next–to or nearby the regional centres of Malmö and Helsingborg. These municipalities show a distinct growth in the amount of travellers from 1982 and in the amount of commuters going out and in. However, the growth rates do not collaborate with the introduction of the station on more than a marginal level. This is because of some different factors, first of all the factor of distance and mobility. If one commute to Malmö or Helsingborg from these municipalities or cities, there are other transportation options that are more flexible than regional trains, like city busses, bicycle or cars. These cities and municipalities have for a long time been developed around these regional centres and they are therefore already fully integrated and adapted to these cities. In other words, these areas are not affected more than marginal by introduction of regional station. Therefore are they not an own part of the polycentric model, they are more or less already in a symbiosis and integrated with the regional centres.

If one travels further out from the regional centres of Malmö and Helsingborg, one finds the cities and municipalities that are most affected positive by the introduction of a regional station. This cities and municipalities are within a distance of 20- 50 minutes from one of the regional centres. These areas show a distinct growth in the amount of commuter and travellers that are equal involved with the introduction of a station. However, it has taken some years of adaption time before a clear link in the amount of travellers could be founded. This is due to reasons and arguments of accessibility and adoption time to a new mode of transportation. Furthermore, this development have most likely been given people the possibility to still live in one city and work or study in another city, or the possibility to move outside of the city to a more attractive location with better subjective possibilities of service and housing. In other words the increased accessibility has upgraded people possibility of mobility.

Most of the increase in the amount of travellers and commuters has been taking place along historical important transport corridors along the west and the southern coast, as well as inland on Stambanan. Furthermore, these increased levels of travellers and commuters is taking place were one have the possibility to travel one way without any change of transportation mode, to either a university city or an important labour market such as Malmö or Helsingborg. There also some other stations that works within the time limit of 50 minutes maximum. However, these travellers are in a need of changing trains at some of the nodes in

the region, for example Krisitanstad or Hässleholm, and therefore the growth of travellers is not as distinct as in the above stated examples.

Group number three is the cities and municipalities that are located more 50 minutes from the regional centres. These areas are many times either an end station or an area without a well – developed infrastructural network of rail bound regional traffic. There are most of the times not a correlation between the numbers of commuters and travellers and an introduction of a new regional train station, some of them have a steady amount of travellers and some is stuck in a downward spiral. There are also two cases of stations that have being closed due to small amount of travellers, almost certainly caused by the factor of that they are too far away from a regional city centres, or depending on the factor that is not economic endurable to have a station there. These examples are from Ystadbanan as well at one location on Skånebanan. However, some station in this last group have only been open for some years and therefore it is hard to draw any exact conclusion according to the adaptation time of getting used to travel with an alternative transportation option.

One could furthermore not put aside the aspect of labour market, labour regions and the network of different facilities that is behind the use of rail bound traffic when it comes to the amount of commuters. As described and analysed before, region of Skåne have two important nodes that could be defined as regional centres, which are Malmö and Helsingborg. One understands the importance of these two nodes when the amount of commuters in these two cities during the last 15 years are analysed. Most of the cities and municipalities in Skåne have a majority of labour going out from the municipality, except of those that are located nearest Malmö and Helsingborg, which have a high amount of commuters going into the municipality. The municipalities that are located further out, between 20-50 minutes from Malmö or Helsingborg has a level of commuters going out from the municipality that is going upwards and a stable curve of commuters going into the municipalities. The third group have an up going curve of commuters going out from the municipality, but not more than marginal if one compares with the first two groups. In almost all cases the amount of commuters corresponds with improvements and better accessibility to specific regional railway systems in municipalities.

I would argue that the use of rail bound traffic in Skåne have made it possible to analyse a development of an up-going curve going into both regional centres and also into cities that is located close to these important nodes. This is a case of polycentric urban development of a network of cities that works as a compliment to each other; both between the regional centres and their hinterland. This is clearly a trend of regional and labour market expansion. However, this development of rail bound traffic have helped region of Skåne to have an growth on many levels, those who are within the crucial time of 50 minutes from a regional centre with satisfying accessibility of regional rail bound traffic. This will give the region a possibility to have a smoother and more balanced growth, which will work within aspects of network, nodes, expansion and sustainable development on both a commercial as well as on an individual level. But it is also shown that some areas are more or less excluded at this point. The growth is concentrated to the important transport corridors around Västkustbanan, Södra Stambanan and Ystadbanan, if they are within the time limit of 50 minutes.

7.3 Research question 3

- *Are there any spatial patterns between municipalities and cities which have a regional railway station and those who do not have when it comes to population levels, both now and in the future?*

When it comes to population numbers and the spatial patterns between those cities and municipalities which do have and do not have any station at this moment is fundamental. I would argue there is a clear pattern that is close to the same previous analysed patterns. The spatial patterns are developed in three different development groups. First of all there are the municipalities that are located closest to Helsingborg and Malmö. These municipalities and cities have ever since 1982 have a positive development of population levels; because of that they are already fully integrated within the regional centres and are therefore not affected by any planned new investments or affected by the regional expansion that is taking place in Skåne at the moment.

The second group is those that are the municipalities and station cities that are located on a distance of 20 -50 minutes from a regional centre. The empirical results show that they do have a population curve that corresponds with the introduction of a new train station. This clarifies that an expansion of the region and growth has been taking place. These areas are located between Malmö, Lund and Hässleholm, between Malmö and Ystad, around Krisitanstad and Helsingborg. There are at this moment two new stations that are going to be located south of Hässleholm in smaller cities and they will probably have a positive numbers both when it comes to the number of commuters and population, because of the reason their fast and attractive distance from Malmö. Several of the municipalities in this group around Helsingborg do also have major roads that are located through the area. This will give the cities a good connection with a stable level of commuters and growth in the population levels both now and in the upcoming years, even if they do not have any planned investments at the moment. This is because of the reason they are already integrated with the regional network, because of their good accessibility to mobility and therefore are they a part of the regional expansion. On Ystadbanan there are at the moment not any planned investments, and there will probably according to the empirical findings be a continuing stable level of population at least to Ystad. From Ystad to Simrishamn is the development unsure, according to the factor of time and accessibility to Malmö.

In the third group are those who are located farthest away in the periphery from the regional centres. In the case of Skåne, these are located north and northeast of Hässleholm on two new lines in the project of Pågatågen Nordost. These new station cities will perhaps have a more stable population level. However, some of them are already in a downward spiral of population, with a stagnated levels and low numbers of commuters. Therefore will the effect of new investments of station not be more than marginal, probably due to two reasons. Firstly; the factor of distance that is over the limit of commuting time and secondly because of that one needs change train in Hässleholm in order to reach the regional centres. In other words, the investments of accessibility will not support the flexibility of mobility in the third group. This is why these areas only will have a marginal effect on the expansion of the region.

From the previous paragraph, one could find the important factor of time, which is connected to mobility and accessibility. Mobility and accessibility is the most crucial factors of positive population levels and expansion in a region. The first two groups are already fully integrated in a regional network of expansion according to their good infrastructural condition in the spatial room. Furthermore one could therefore discuss these two groups in a concept of regional polycentric development. The third group is perhaps the most important group of having a positive development; many of these municipalities are already in a downward spiral of negative trends. Many of those that decide to move out cities for better housing possibilities, demands a high mobility or freedom of mobility and consequently a regional expansion, because of reason that they still have a working career in the regional centres. The cities and municipalities that are in group three simply do not have the attractiveness, accessibility or freedom of mobility that areas closer to regional centres have. I would argue that the network of cities in Skåne does not reach all parts, and some parts are therefore excluded from the regional expansion and the goal of stable development in the region as whole is not reached. This development of mono-centric development from two regional centres will probably lead to even more increased regional differences, even if there are investments of new regional railway stations. One of the effects will be continued negative trends of population levels. It will furthermore lead to a continue use of cars. Because of the reason that the alternative mode of transportation does not satisfy the individual need of mobility.

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8. Conclusion

During the last 30 years in region of Skåne there has been a development of regional rail bound traffic that started at the regional centers in and around Malmö and Helsingborg. From these areas an expansion of the region has been taking place, especially along three important transport corridors, Ystadbanan, Södra Stambanan and Västkustbanan. This development have been positive for the region if one discuss in terms of economic growth, labor market, population levels, accessibility and freedom of mobility. However, this development have not been as extensive as expected, because of the reason that not all parts of the region is affected more than on a marginal level. The areas that are within the given maximum time of 50 minutes from either Malmö or Helsingborg single way without a change of mode of transportation will have a continued positive development, when it comes to the commuters, travellers and population levels, in the upcoming years. The cities and municipalities that are located outside of this critical time limit are in a need for another solution than a mono–centric regional expansion in order to create an equal growth in the region of Skåne. Perhaps a regional expansion that crosses over to other regions in the north.

All of the areas in the case of Skåne from above stated examples could be separated into three different groups that are all depending on accessibility and mobility. Group number one is municipalities that are located closest and already fully integrated with the regional centers. These areas are only depending on regional railways more at a marginal level. Group number two is located within the time limit of 50 minutes maximum from a regional center. These station cities and municipalities have a positive development of population and commuting levels and are depending on development of regional railway system. The third group is not affected by the regional expansion; they are simply located to far from regional centers and outside of important transport corridors.

Finally I conclude that investments of regional rail bound traffic do not have more than a marginal effect over a large area like Skåne. If the network of regional centers and cities is not equal distributed over an area, with a well-designed regional infrastructure some will be marginalized and the economic growth will be tied to specific areas. Therefore one could argue that regional expansion is not the solution for unpopulated areas, but perhaps, as we have seen is this thesis, investment of the right kind in the right area, in the right time, could direct us in a certain direction; an environmental friendly rail bound direction. In other words, a train station does no help everything everywhere, but some things somewhere.

4 Further research

This thesis has shown an overall perspective of the regional development of regional rail bound traffic, when it comes to perspective involving population levels, commuters and travellers, both historical, at the moment and in the future development. I would argue that this have been given us information about how the development of rail bound traffic have developed on a regional level in a top –down approach has been taking place. An interesting continuing of this research would have been to go down to a more local level in order to have achieved a deeper understanding for a specific line or railway. My investigation has shown some general patterns that could be implemented on the case of Skåne and perhaps other regions in the same size. However, even Skåne could be considered to be quite unequal when it comes to spatial and demographic condition. There are probably more aspects that need to be putt in order to have exact theory and solution for every line.

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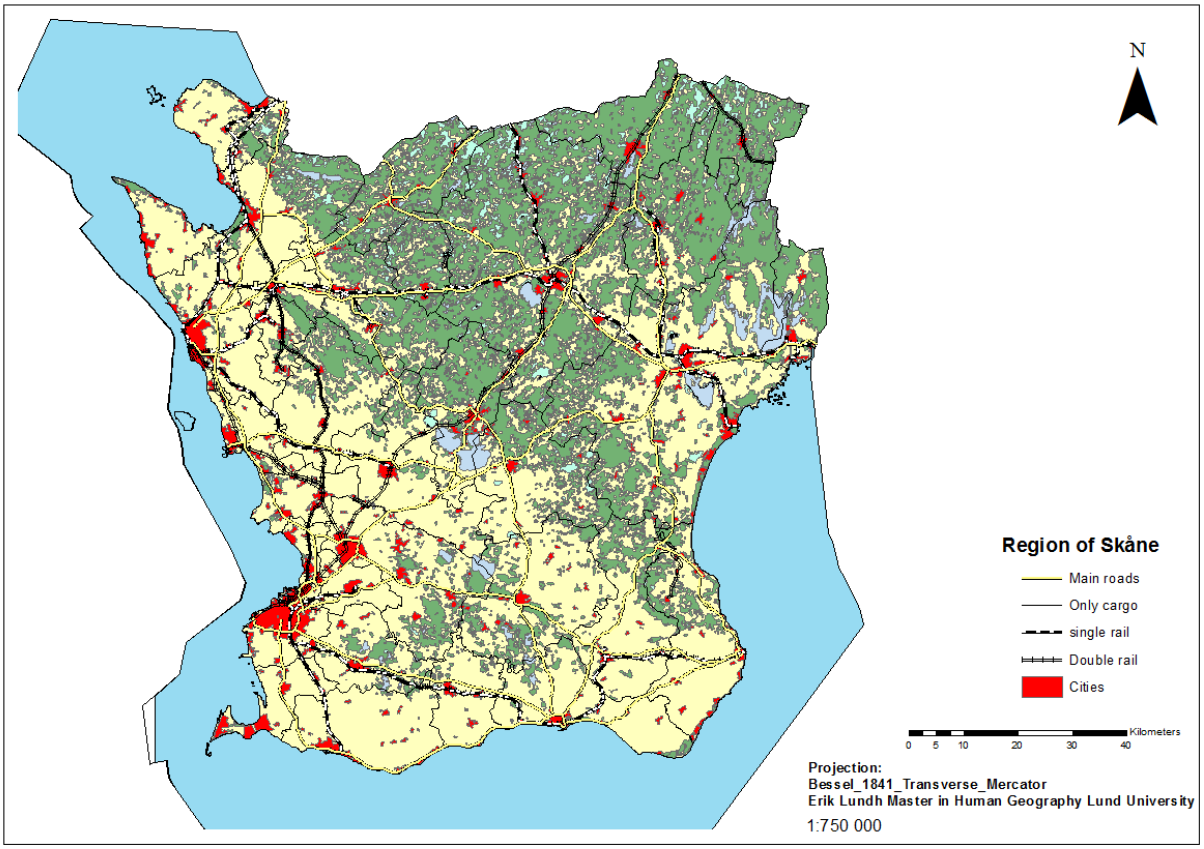
Appendix 1

Figure 1.1Map of Skåne



Appendix 2

Figure 2.1 Map of Ystadbanan

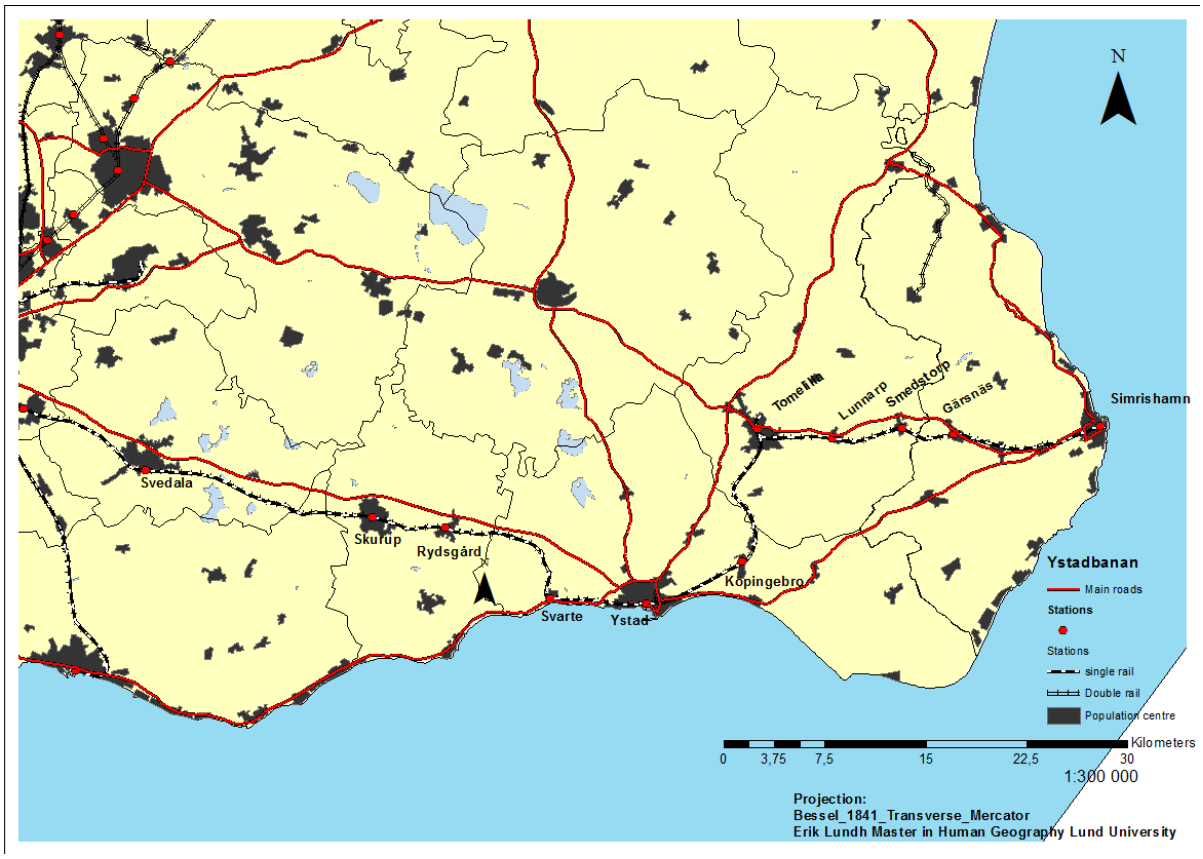


Figure 2.2 Population in the municipalities

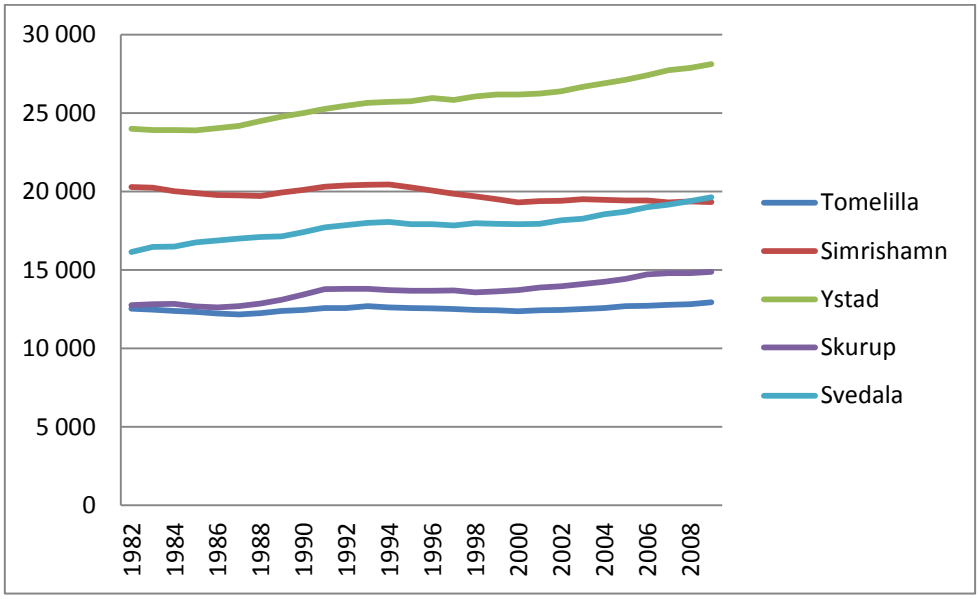


Figure 2.3 Numbers of travellers Svedala

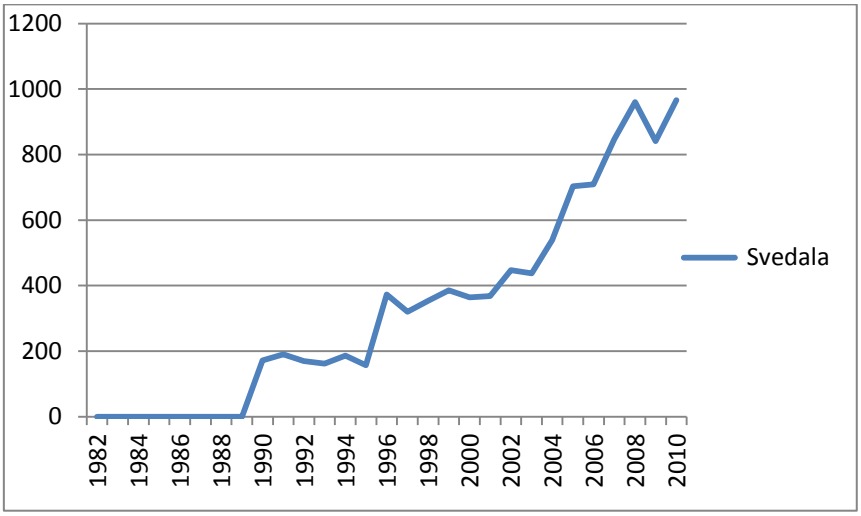


Figure 2.4 Number of travellers Skurup

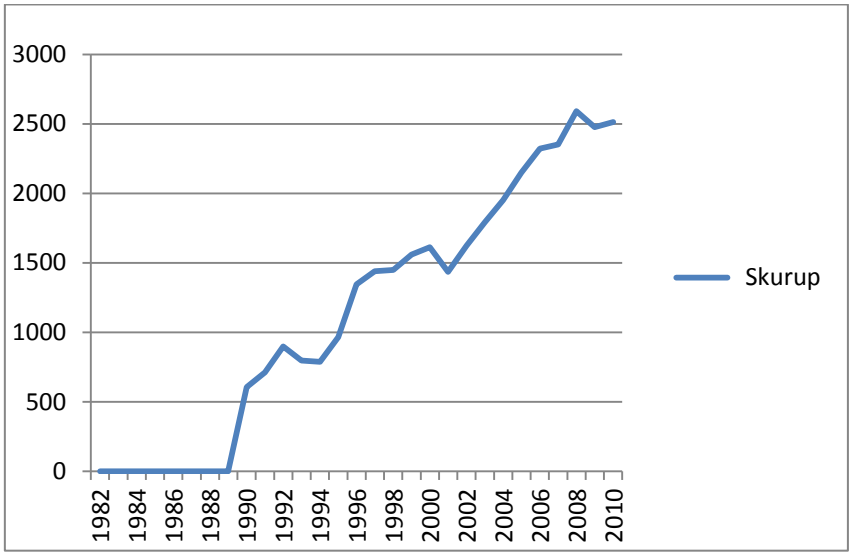


Figure 2.5 Number of travellers Rydsgård

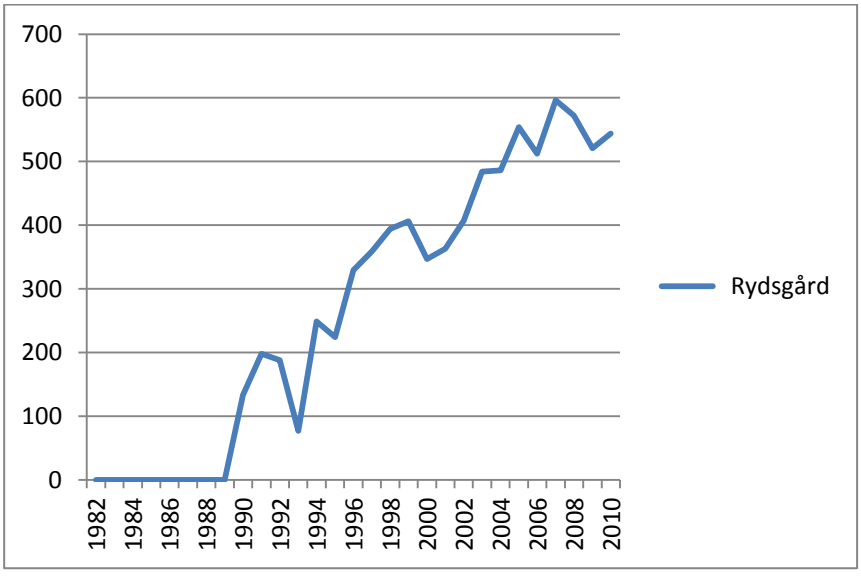


Figure 2.6 Number of travellers Svarte

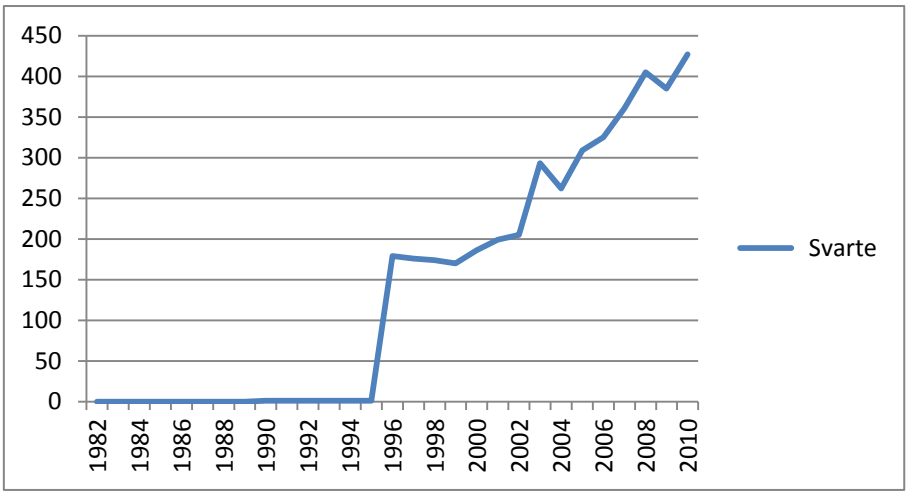


Figure 2.7 Number of travellers Ystad

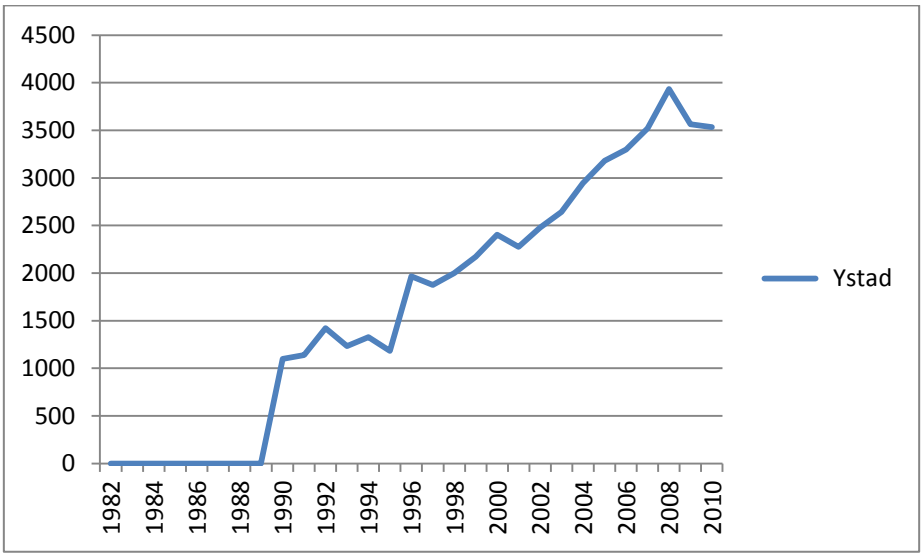


Figure 2.8Number of travellers Köpingebro

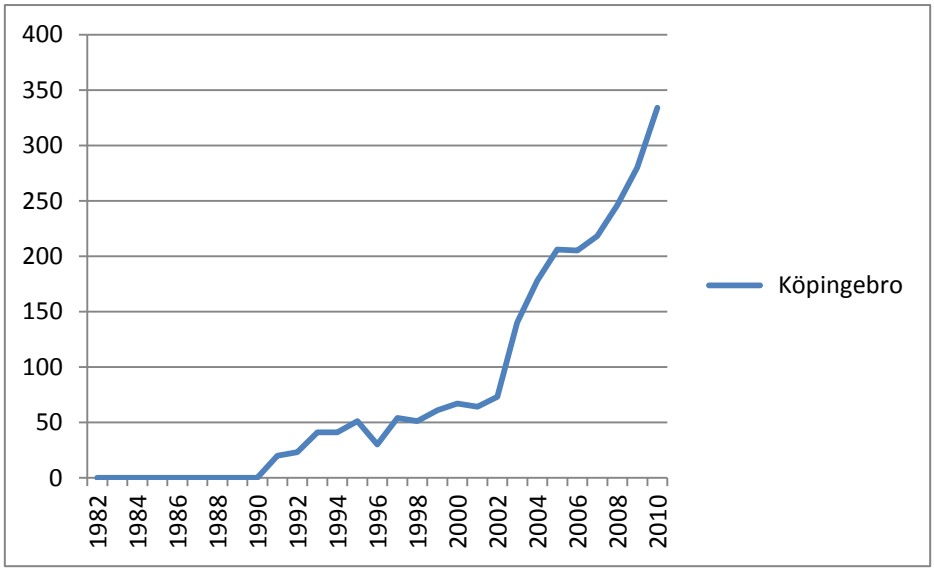


Figure 2.9 Number of travellers Tomelilla

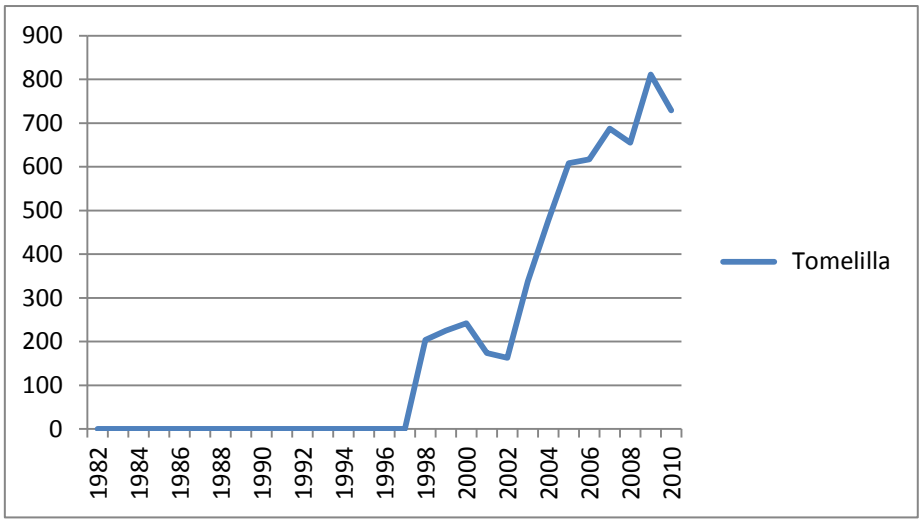


Figure 2.10 Number of travellers Lunnarp

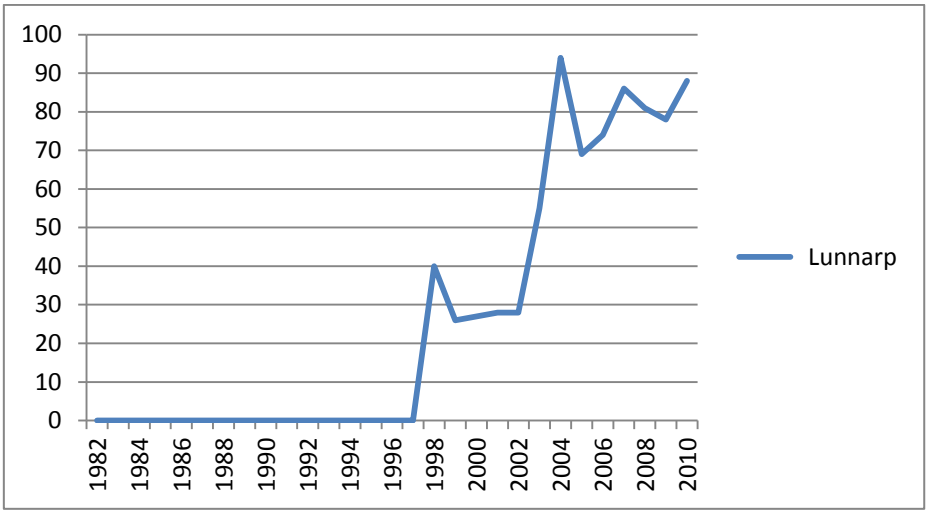


Figure 2.11 Number of travellers Smedstorp

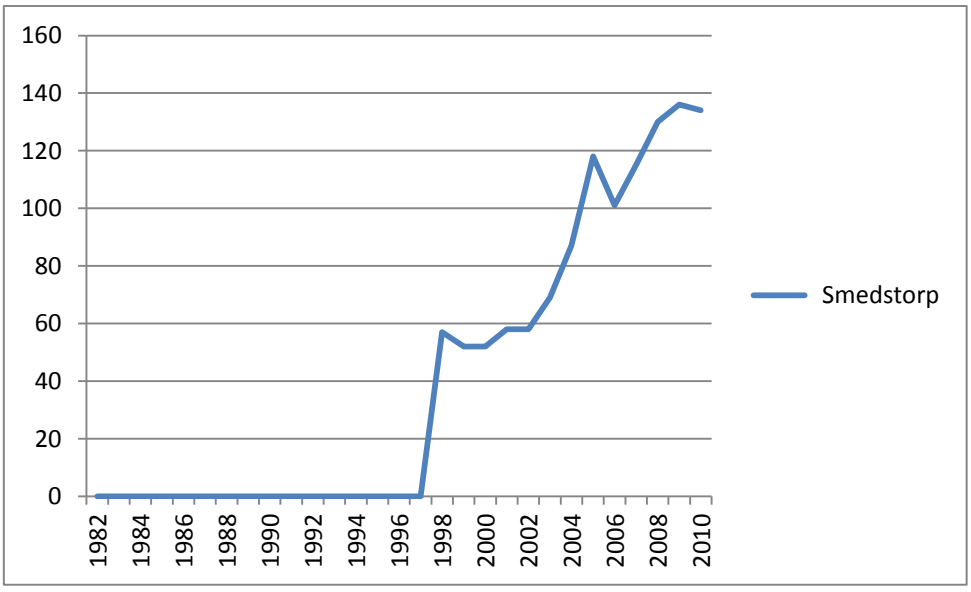


Figure 2.12 Number of travellers Gärsnäs

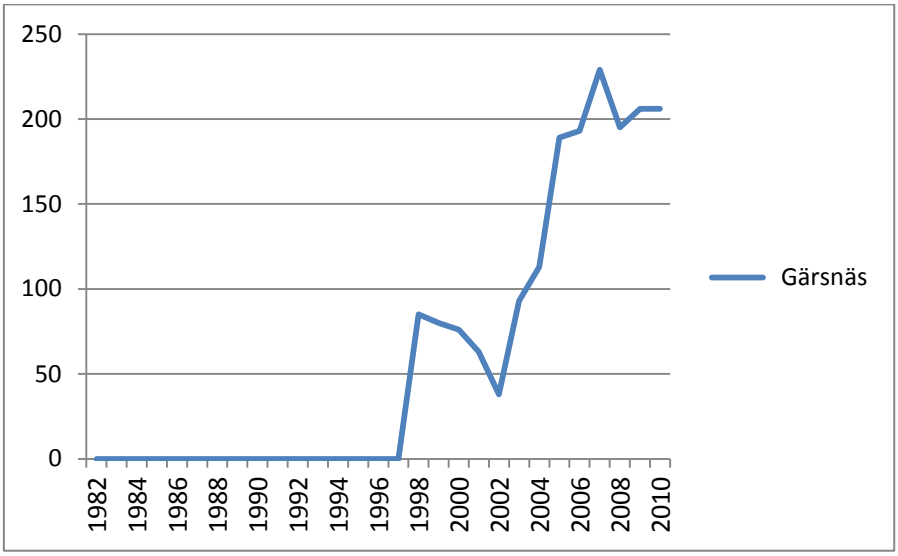


Figure 2.14 Numbers of travellers Simrishamn

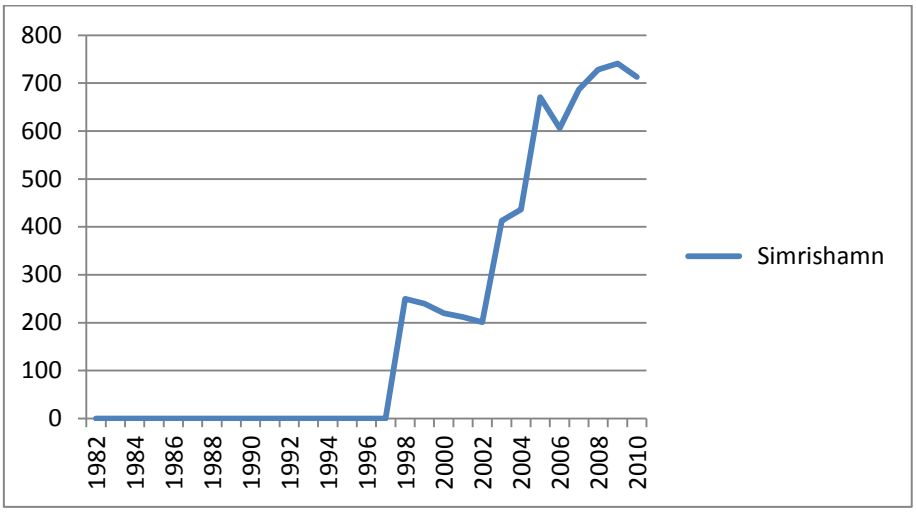


Figure 2.15 Number of commuters out from the municipalities

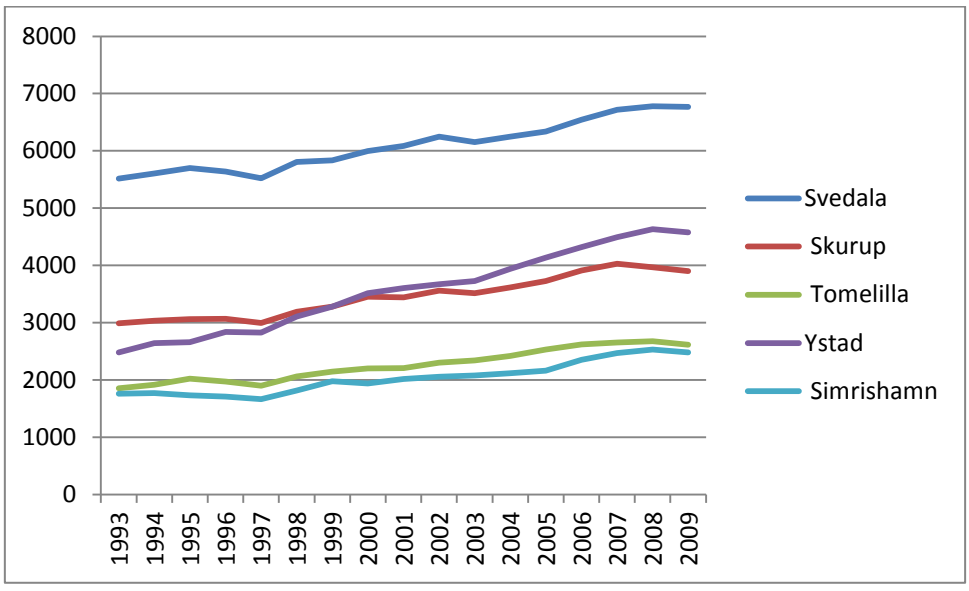
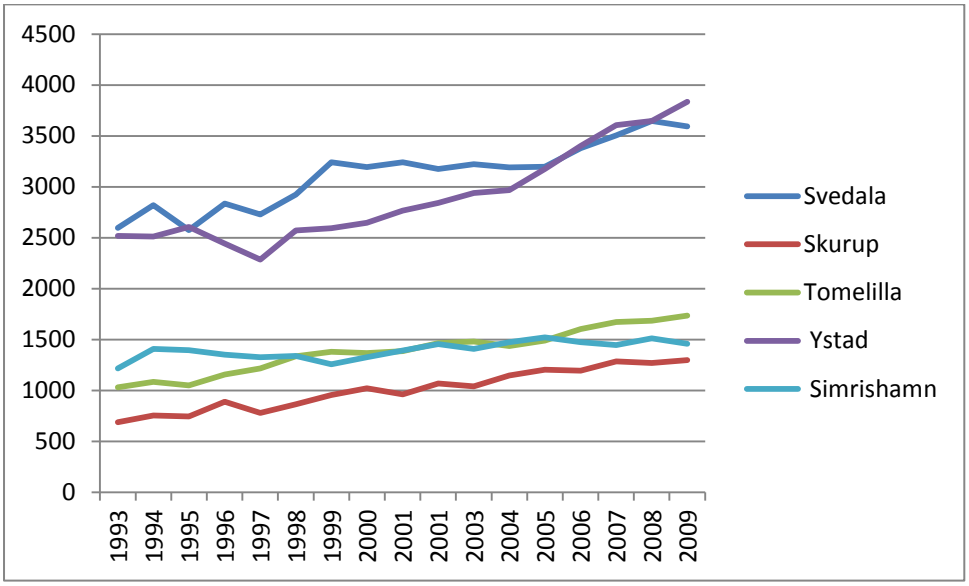


Figure 2.6 Number of commuters into the municipalities



Appendix 3

Figure 3.1 Map of Södra Stambanan

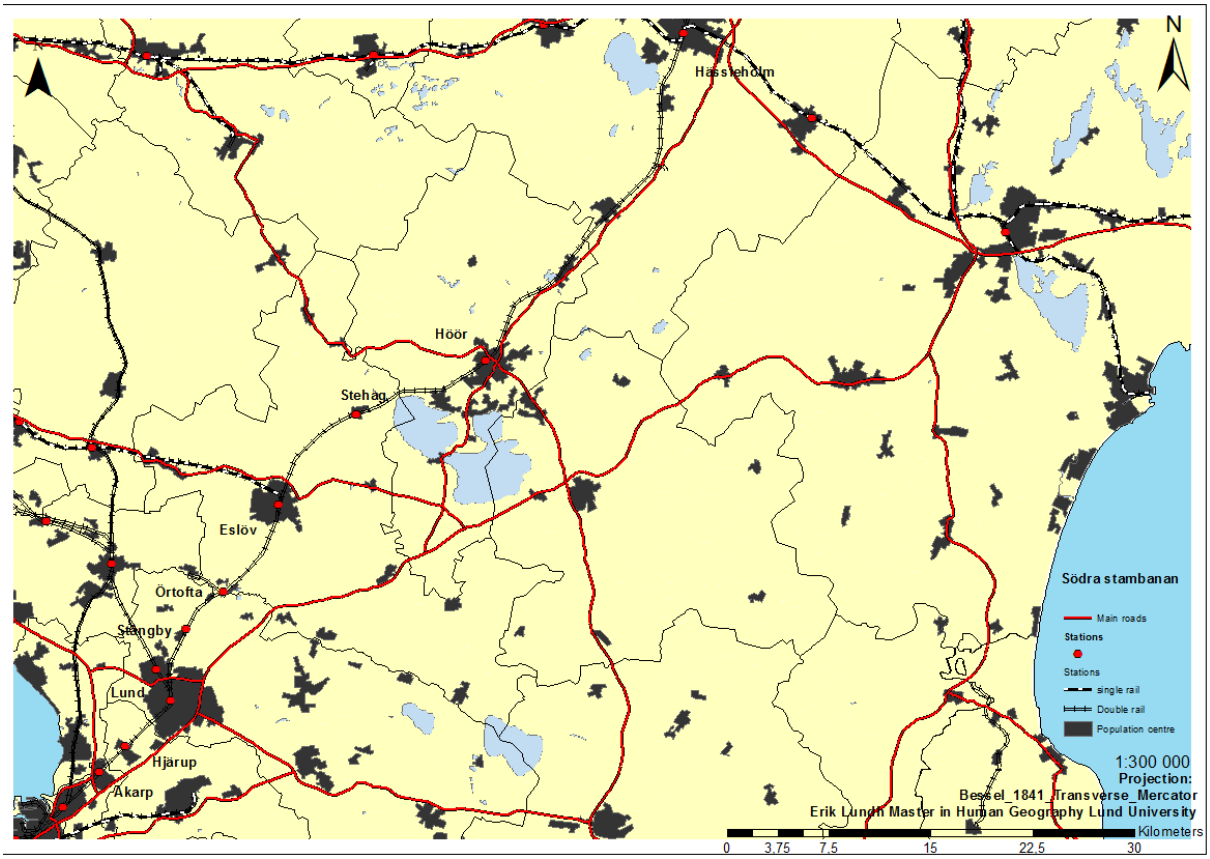


Figure 3.2 Population in the municipalities

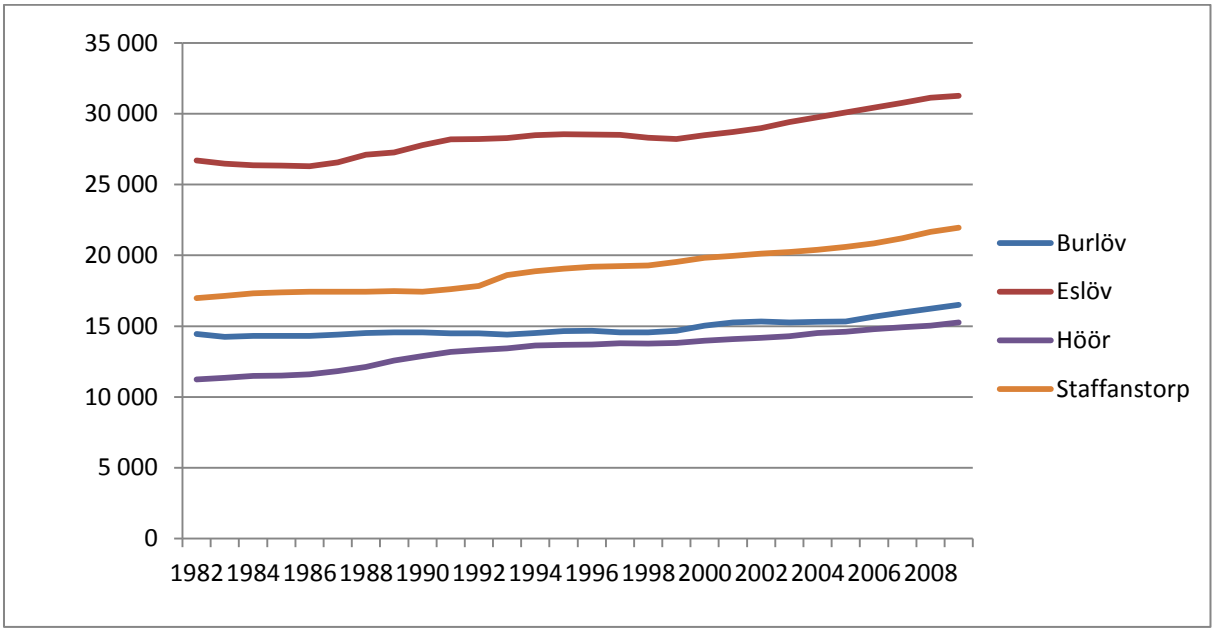


Figure 3.3 Number of travellers Burlöv

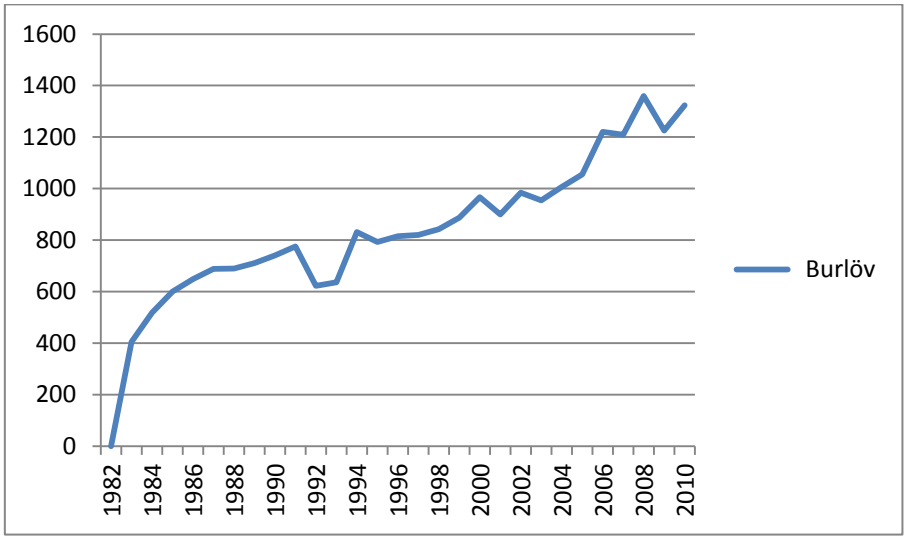


Figure 3.4 Number of travellers Åkarp

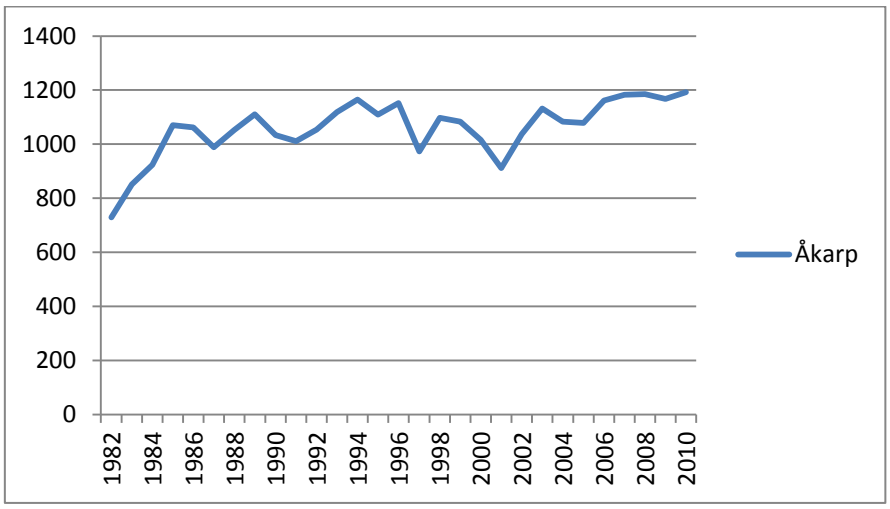


Figure 3.5 Number of travallers Hjäup

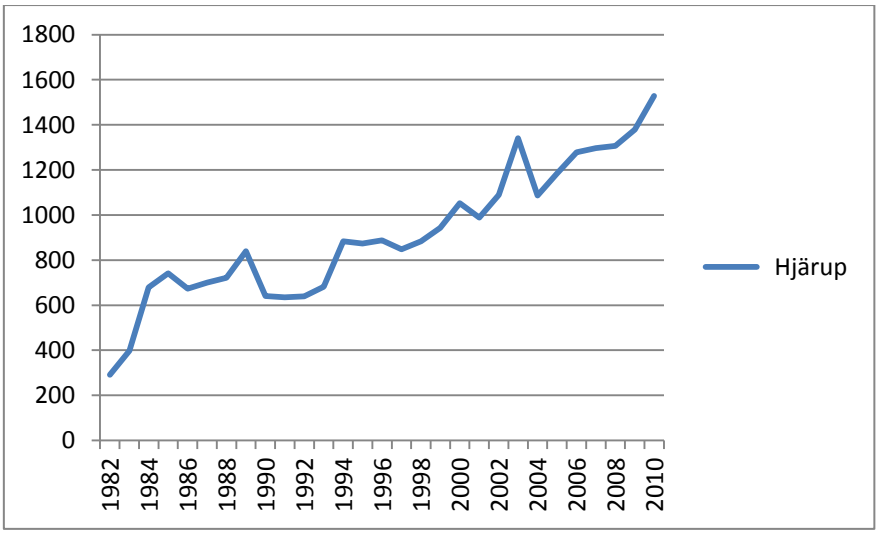


Figure 3.6 Number of travellers Stångby

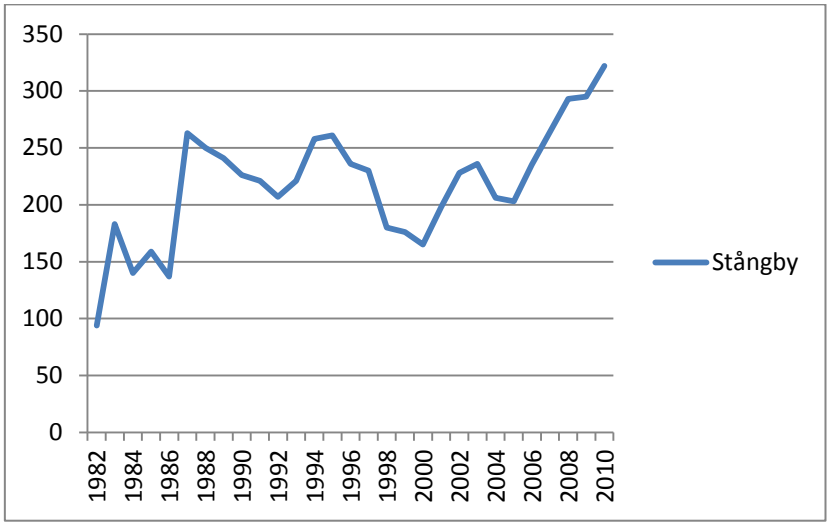


Figure 3.7 Number of travellers Örtofta

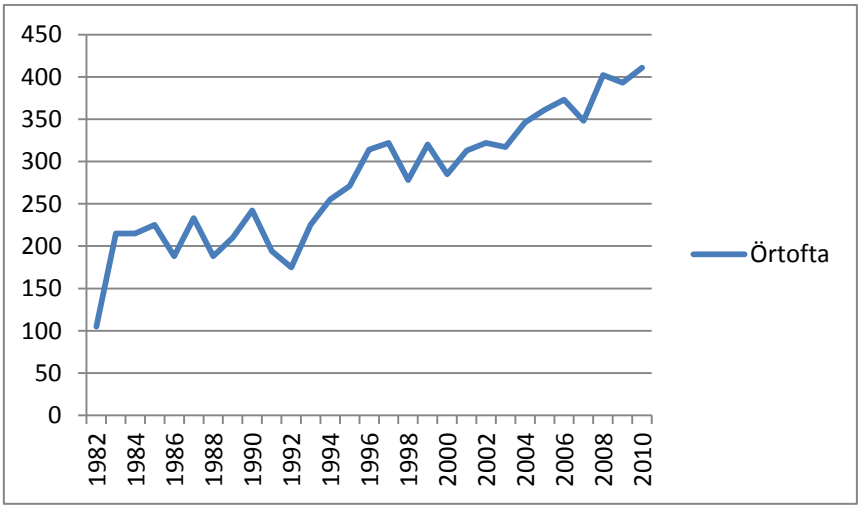


Figure 3.8 Number of travellers Eslöv

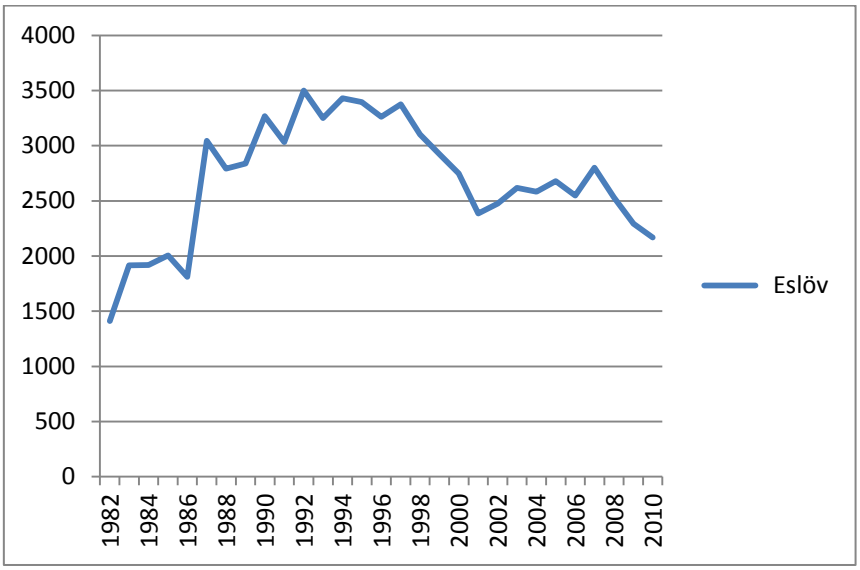


Figure 3.9 Numbers of travellers Stehag

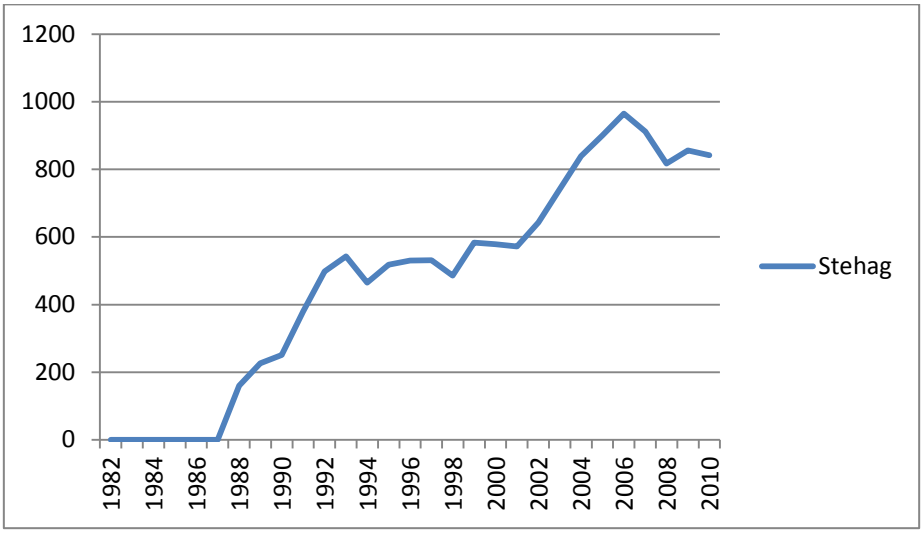


Figure 3.10 Number of travellers Höör

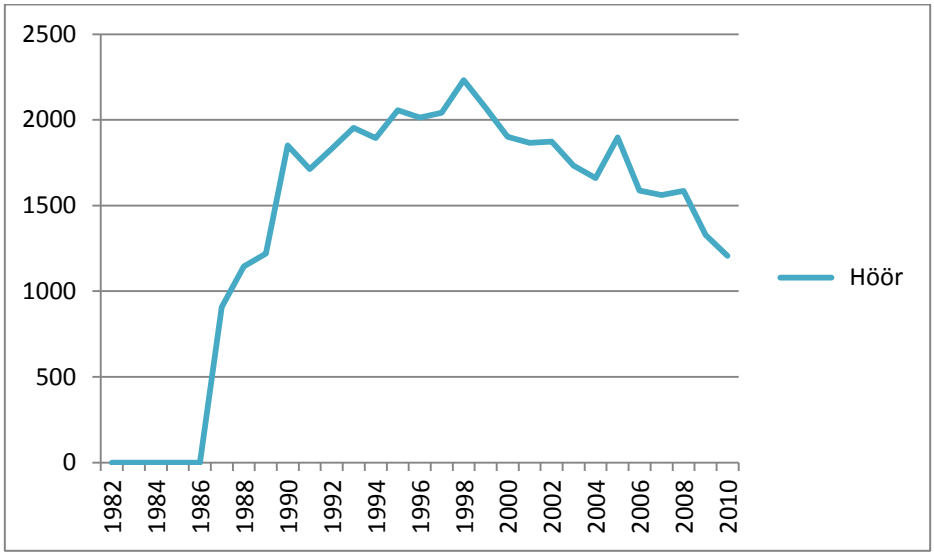


Figure 3.11 Number of commuters out from the municipalities

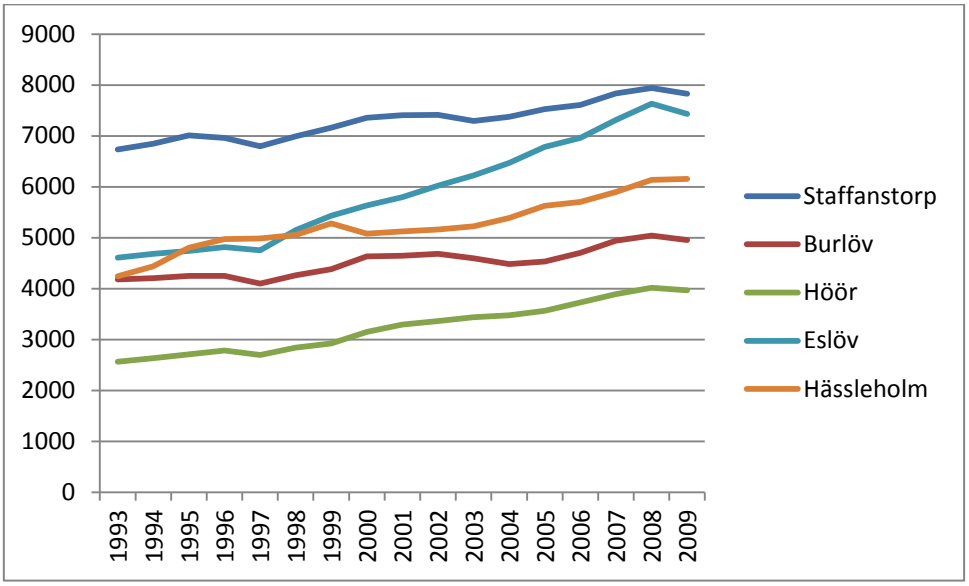
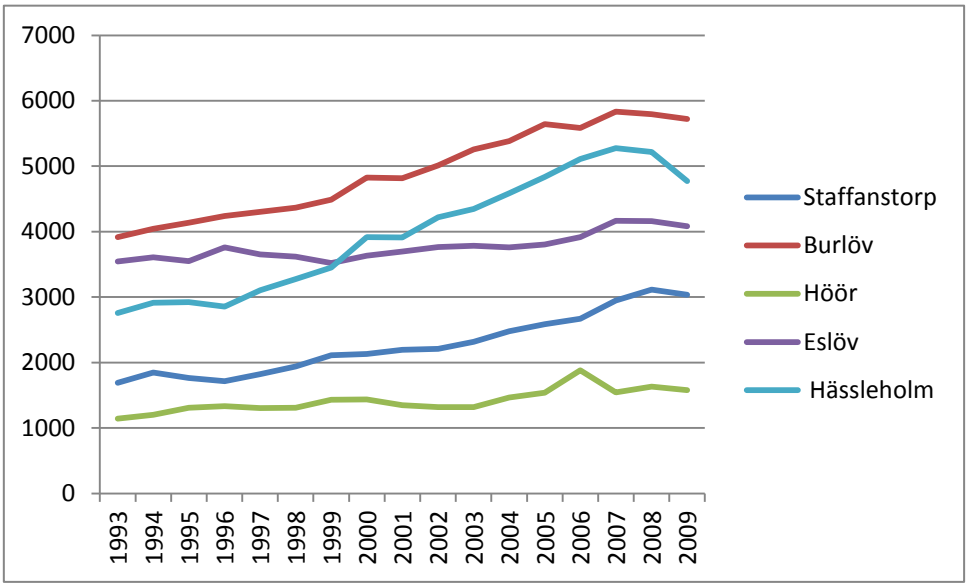


Figure 3.12 Number of commuters into the muncipalites



Appendix 4

Figure 4.1 Map of Västkustbanan

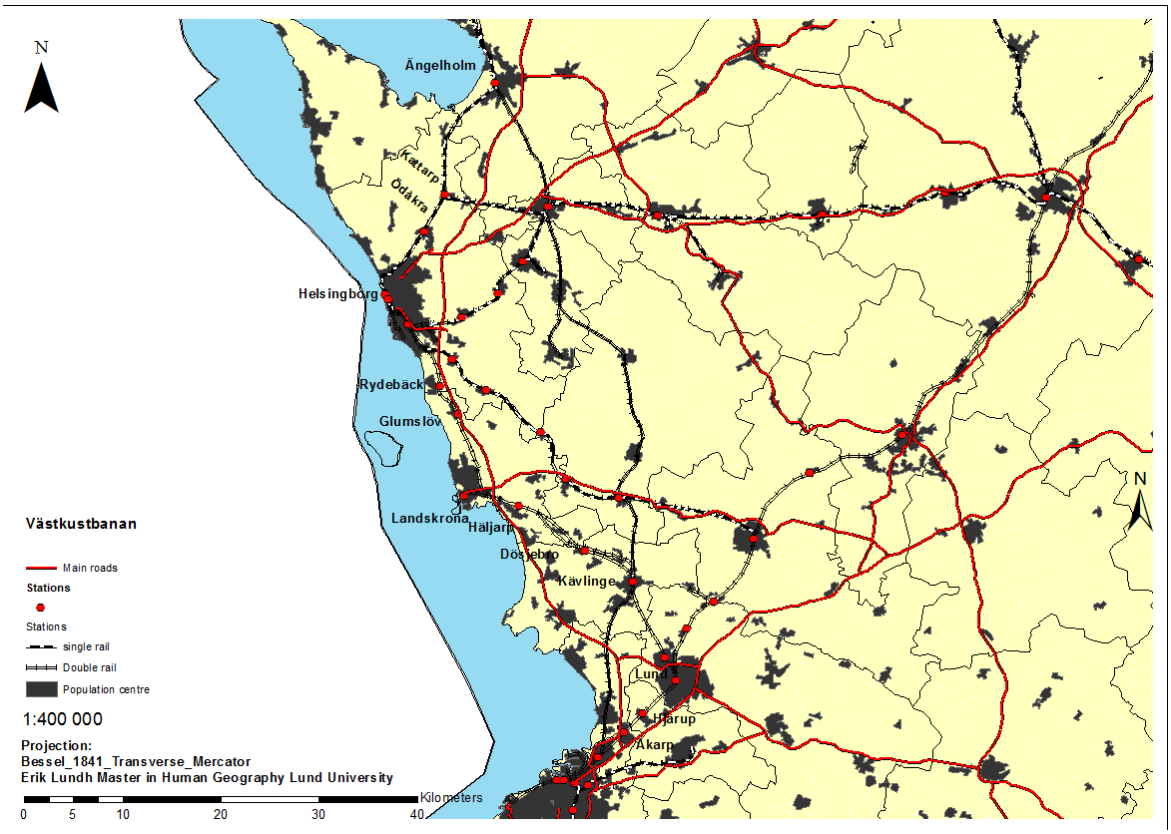


Figure 4.2Population

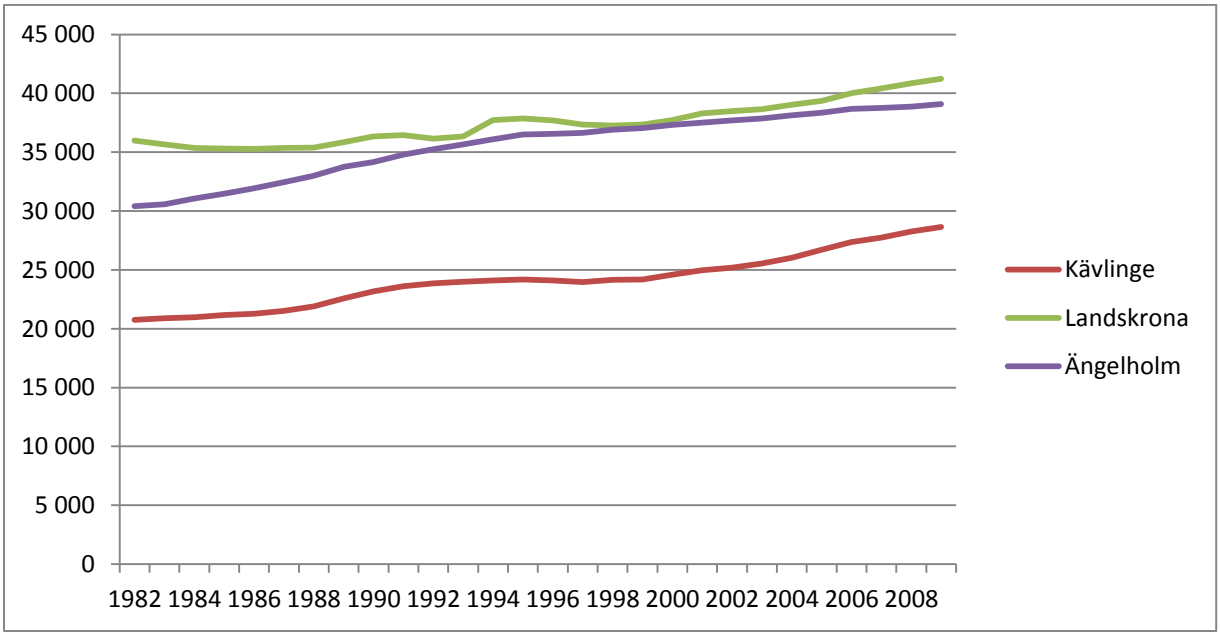


Figure 4.3 Number of travellers Kävlinge

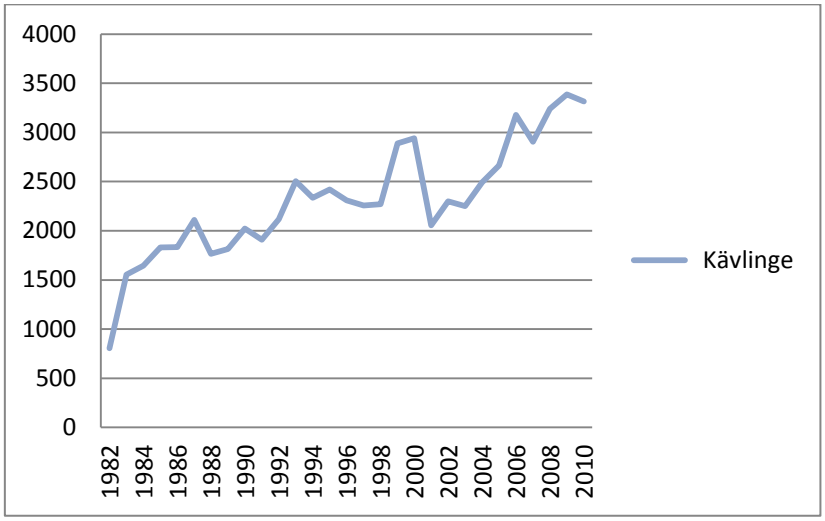


Figure 4.4 Number of travellers Döjesbro

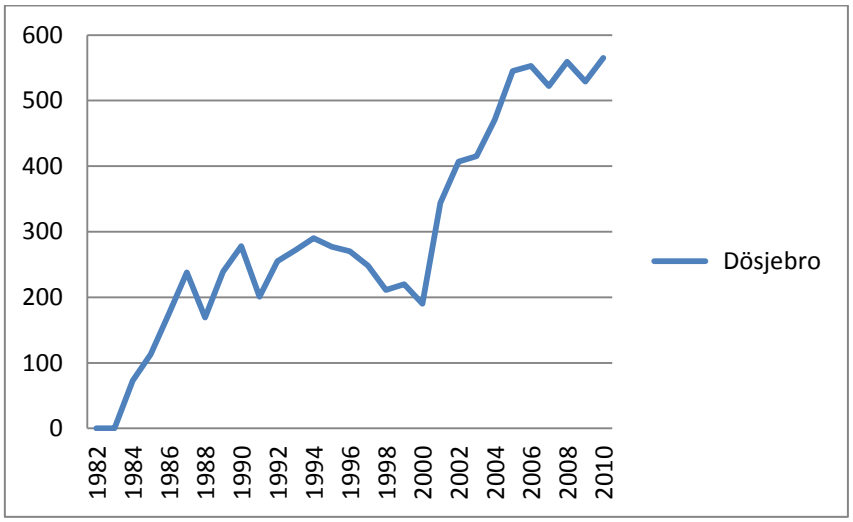


Figure 4.5 Number of travellers Hjälarp

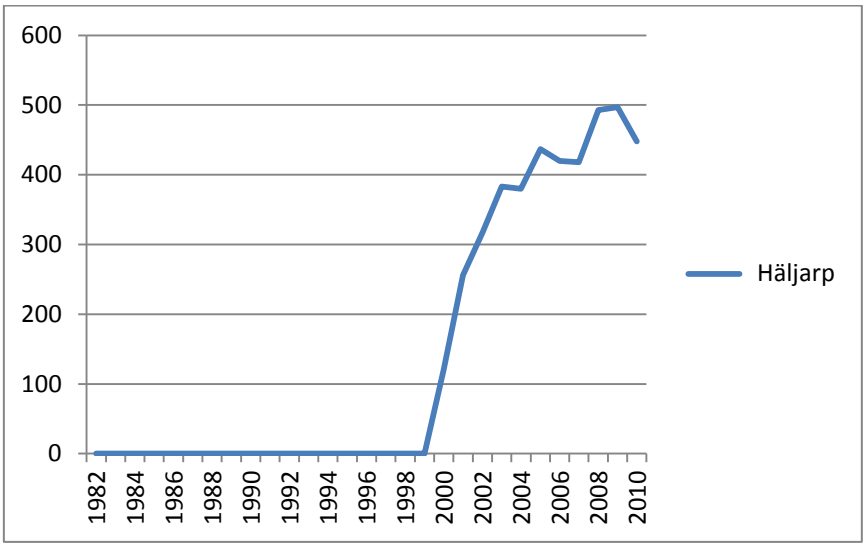


Figure 4.6 Number of travellers Glumslöv

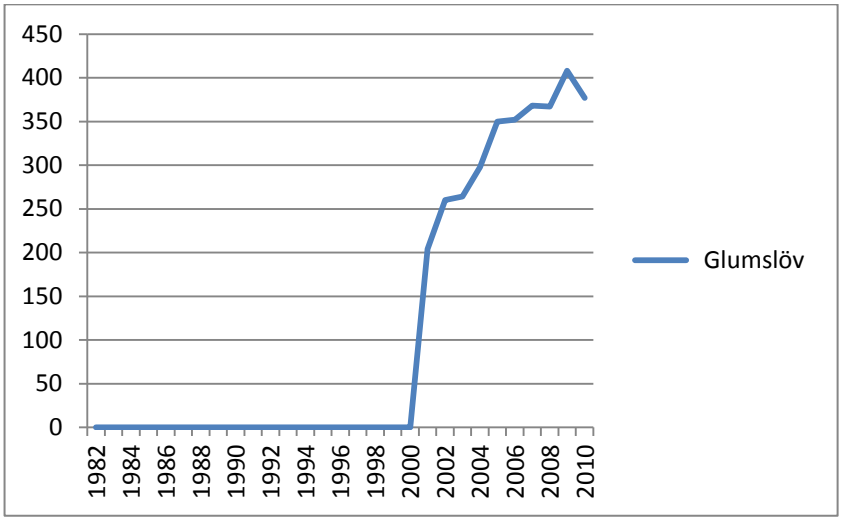


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Figure 4.7 Number of travellers Rydebäck

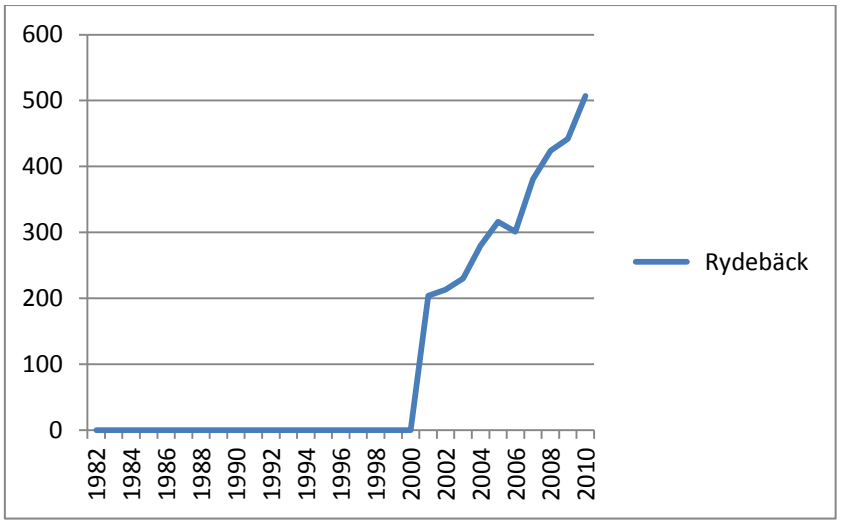


Figure 4.8 Number of travellers Landskrona

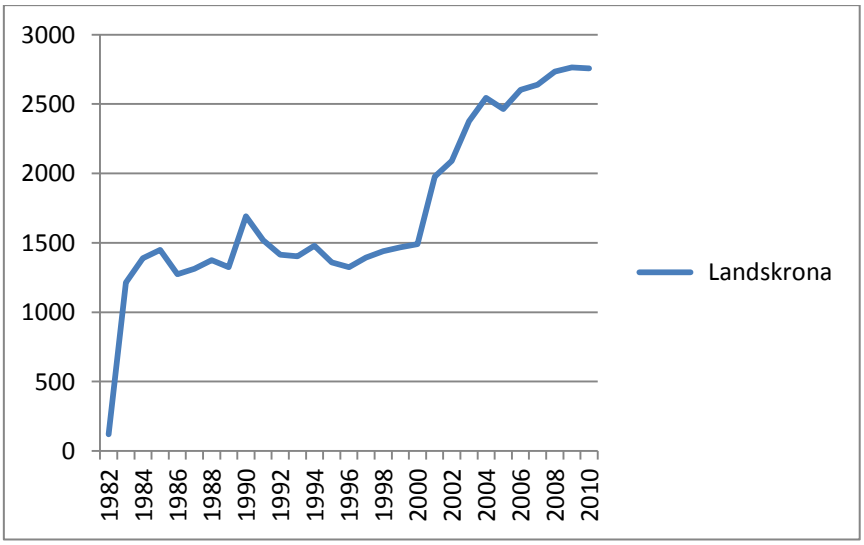


Figure 4.9 Number of travellers Ödåkra

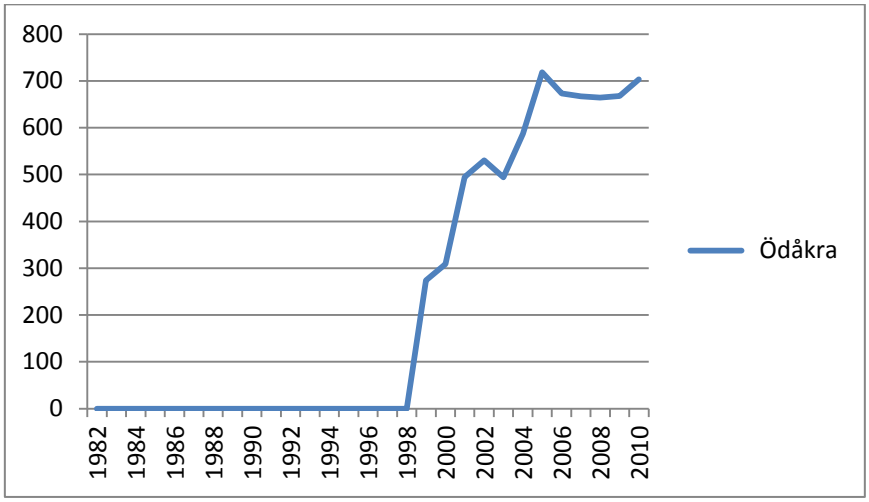


Figure 4.10 Numbers of travellers Kattarp

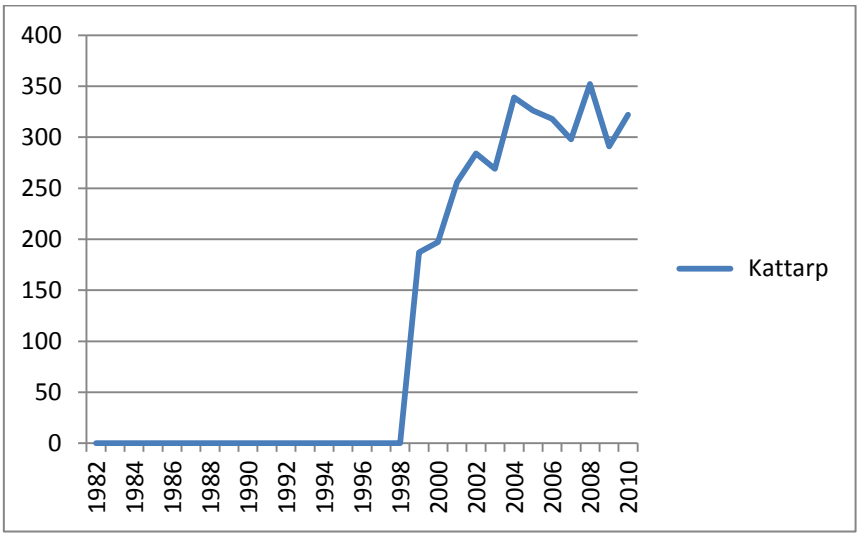


Figure 4.11 Number of travellers Ängelholm

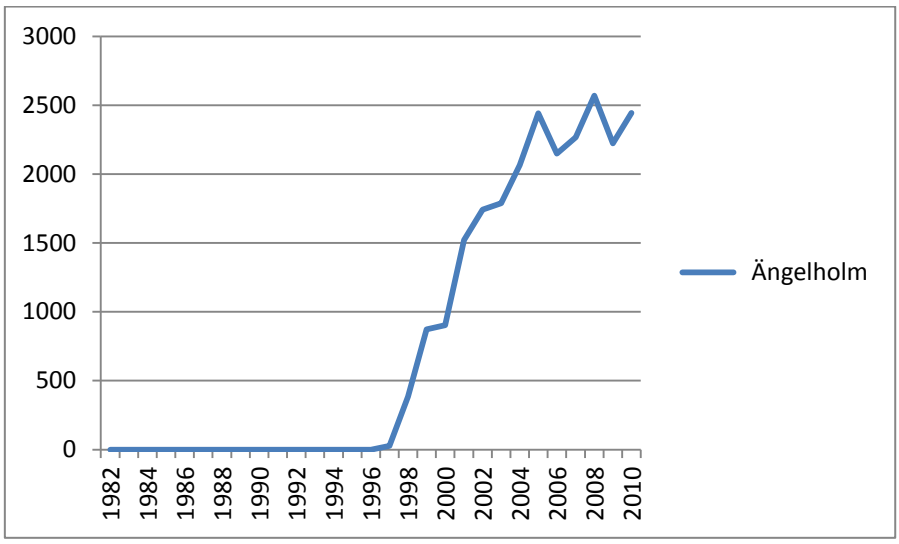


Figure 4.12 Number of commuters out from the muncipalites

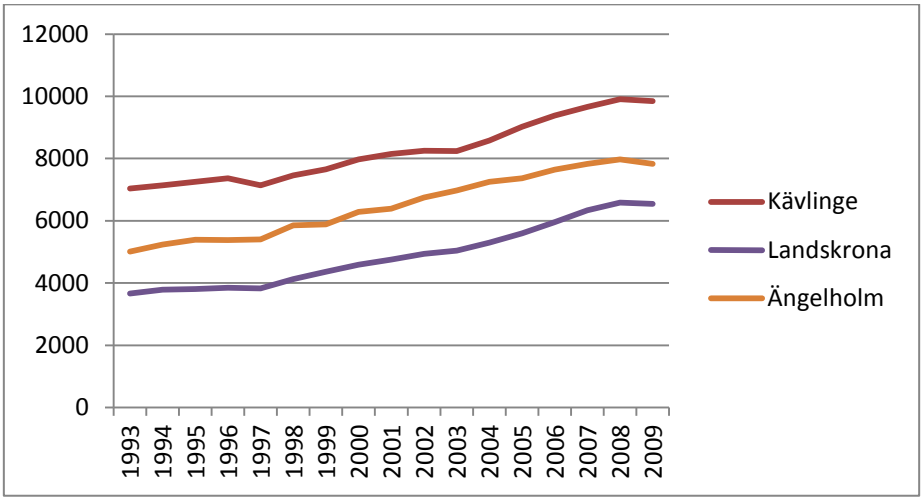
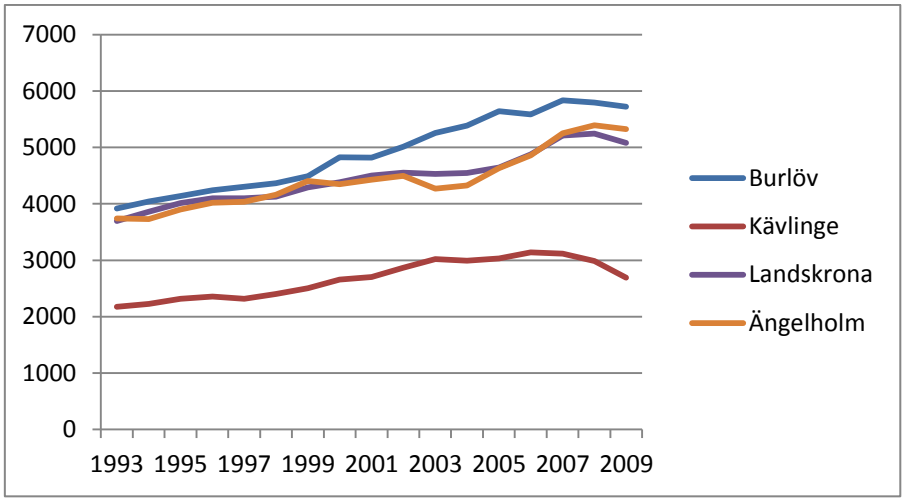


Figure 4.13 Number of commuters into municipalities



Appendix 5

Figure 5.1 Map of Rååbanan

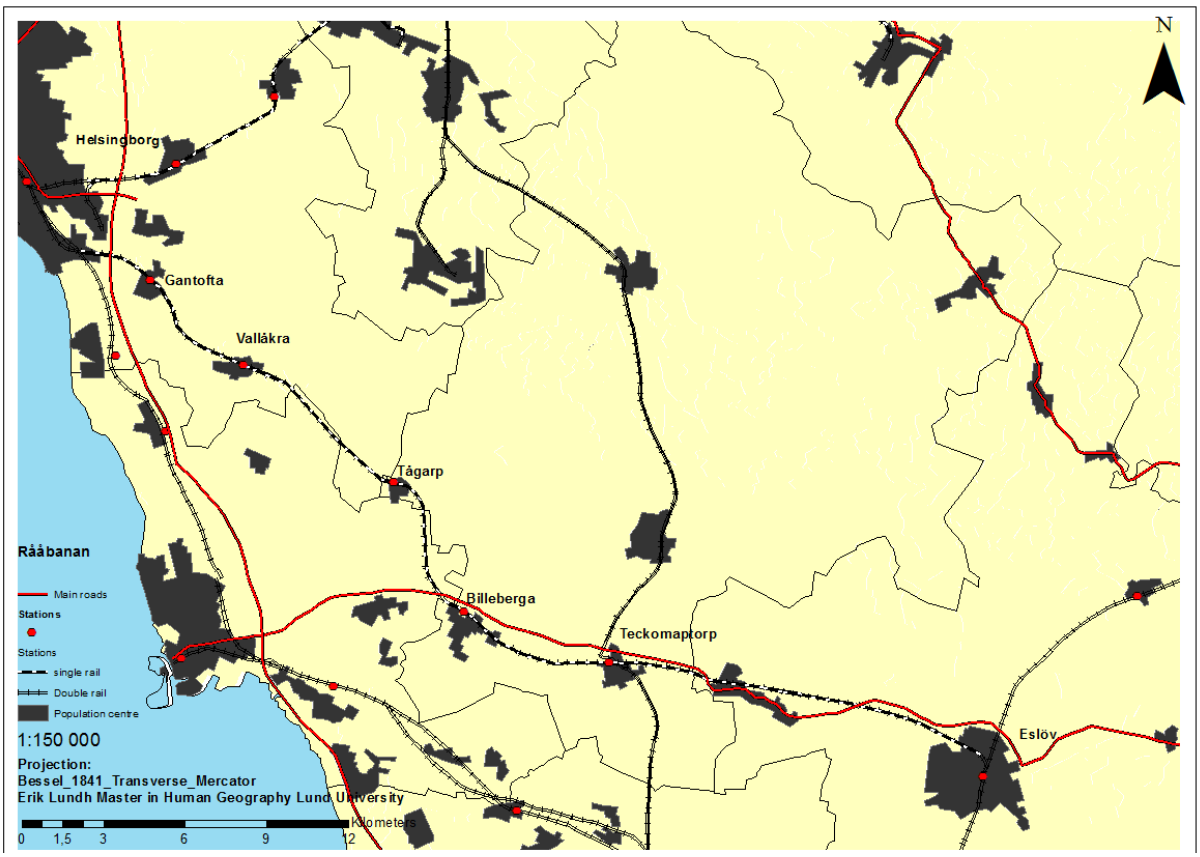


Figure 5.2 Population

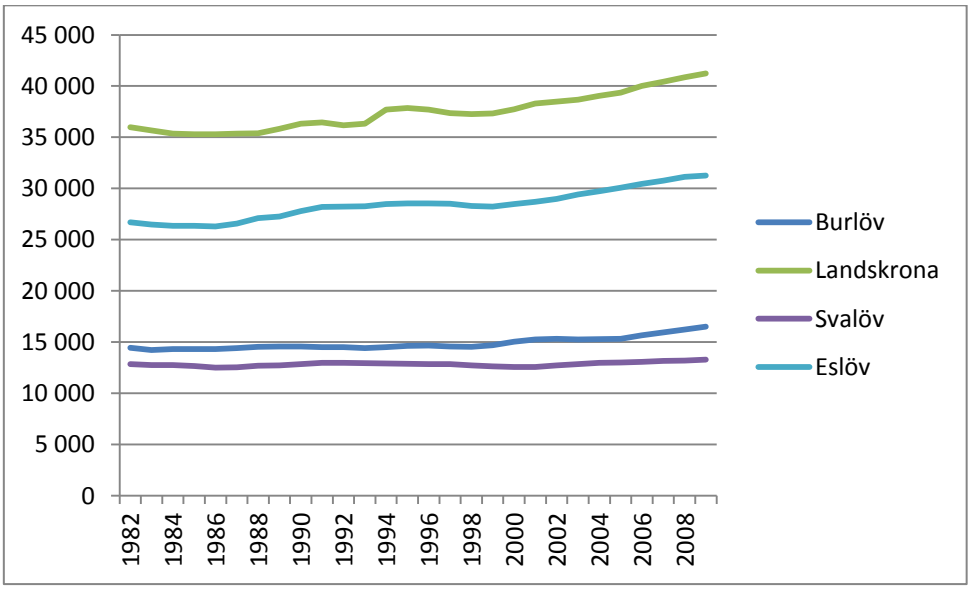


Figure 5.3 Number of travellers Teckomatorp

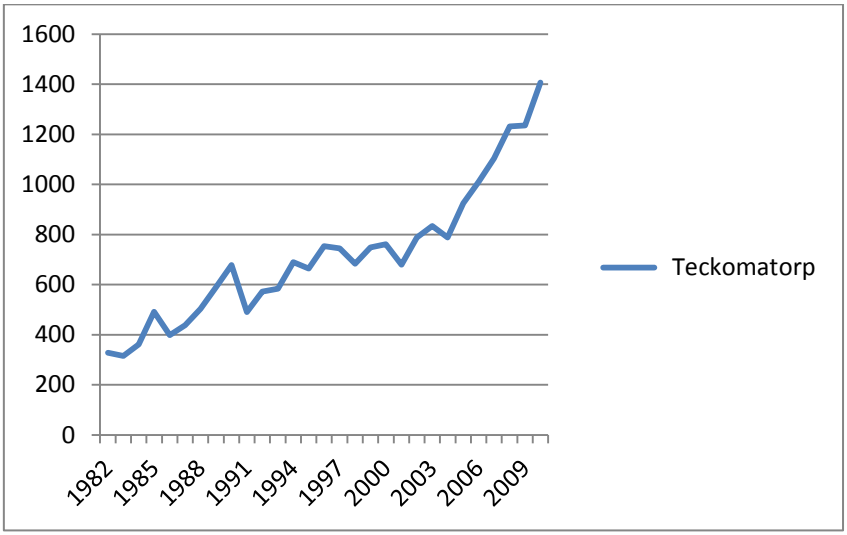


Figure 5.4 Number of travellers Billieberga

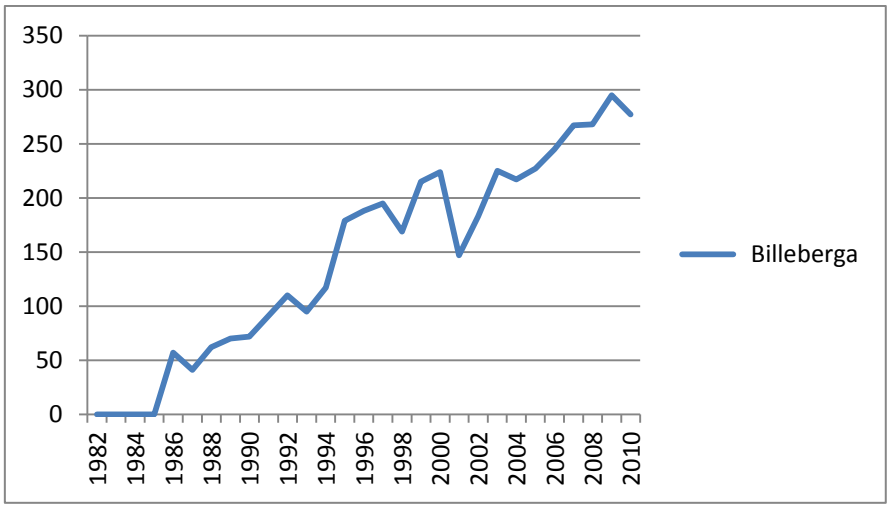


Figure 5.5 Number of travellers Tågarp

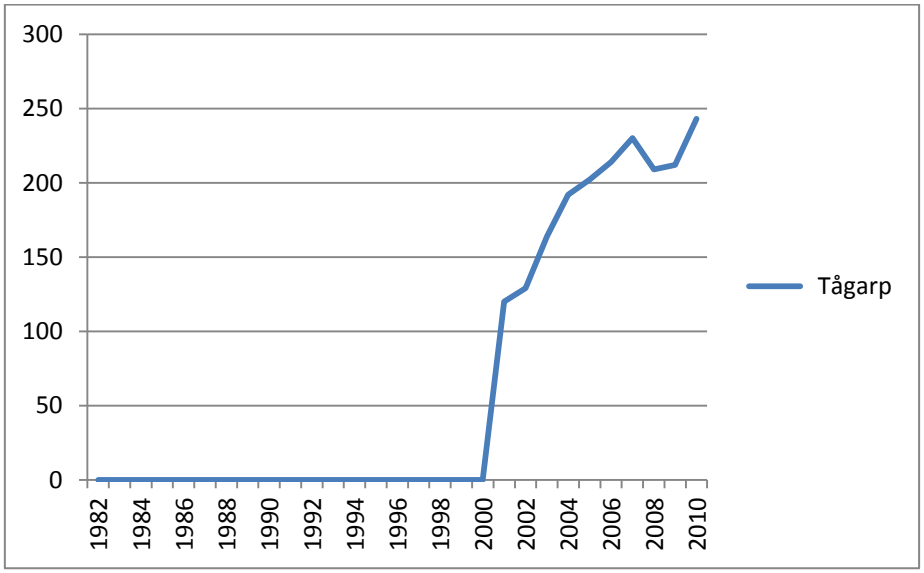


Figure 5.6 Number of travellers Vallåkra

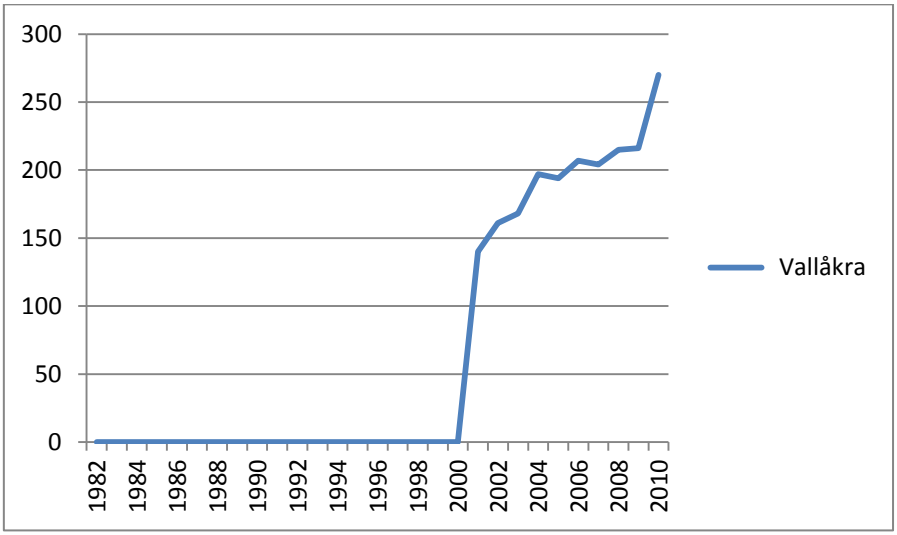


Figure 5.7 Number of travellers Gantofta

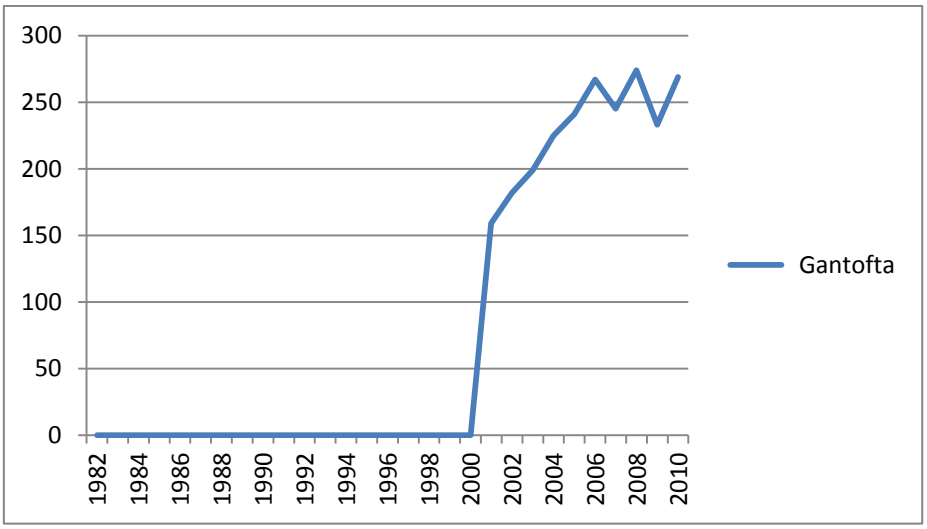


Figure 5.8 Number of commuters into the municipalities

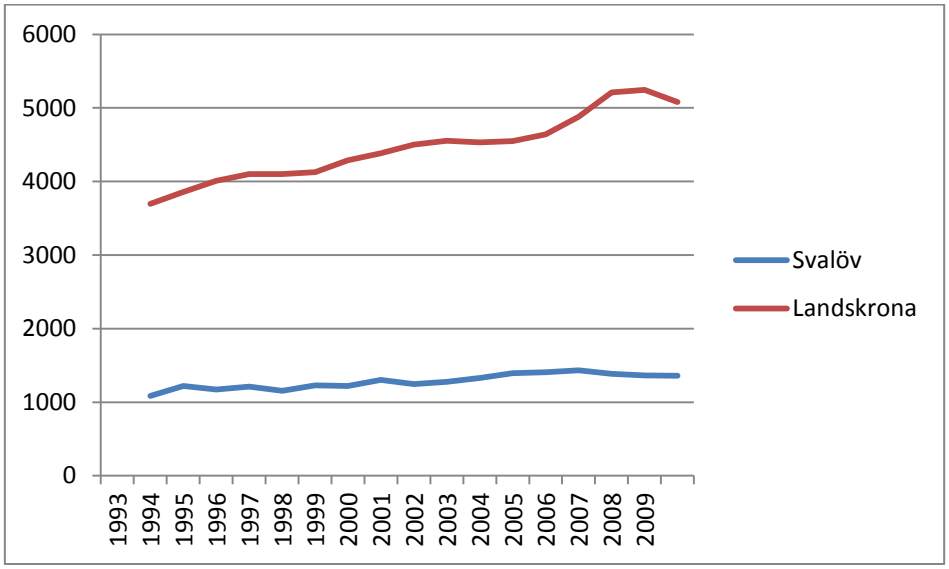
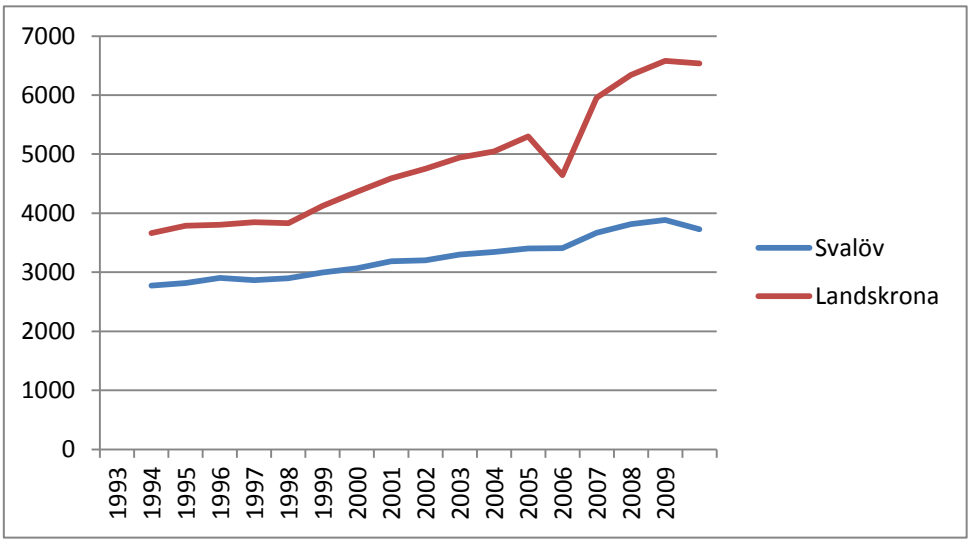


Figure 5.9 Number of commuters out from the municipalities



Appendix 6

Figure 6.1 Skånebanan

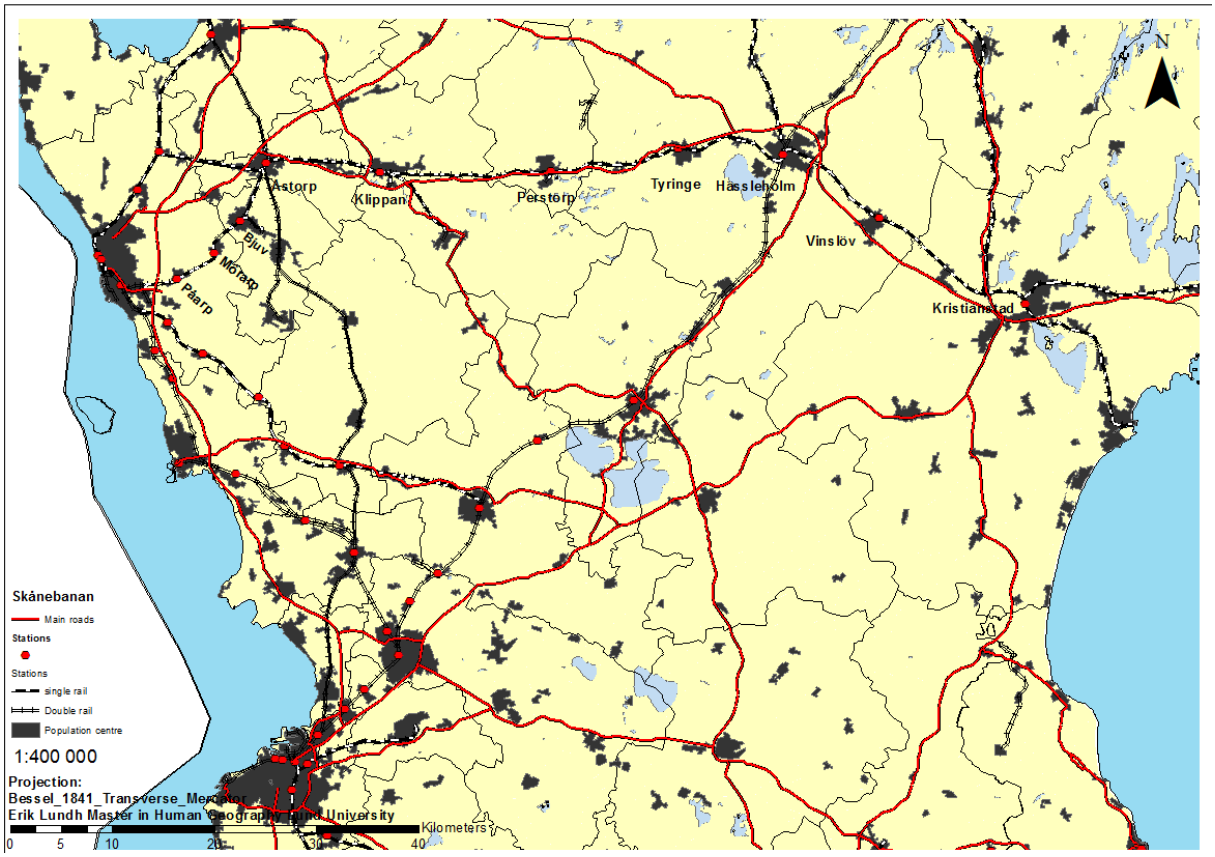


Figure 6.2 Population

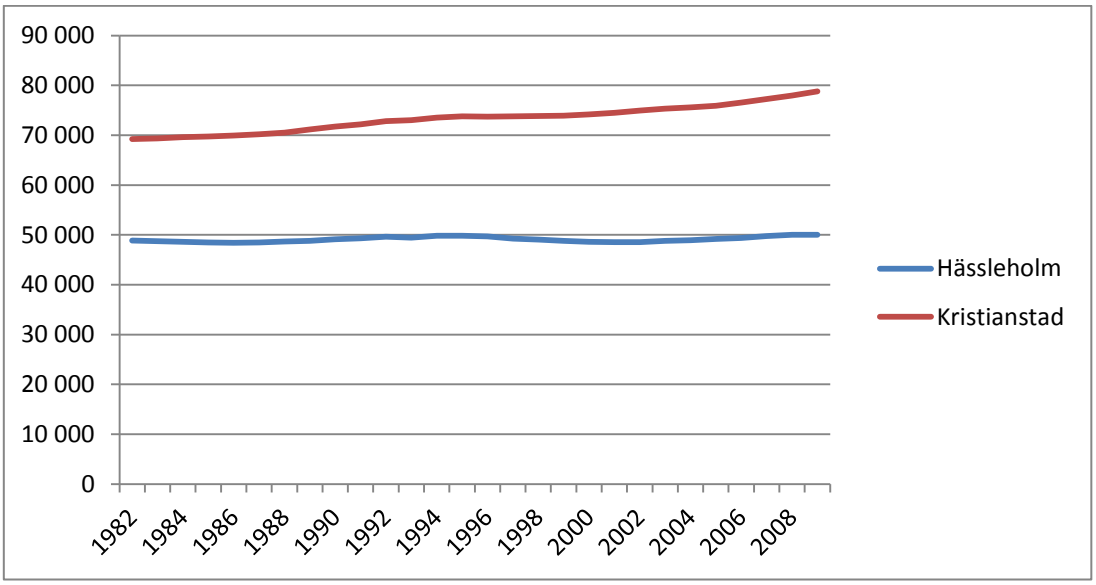


Figure 6.3 Population

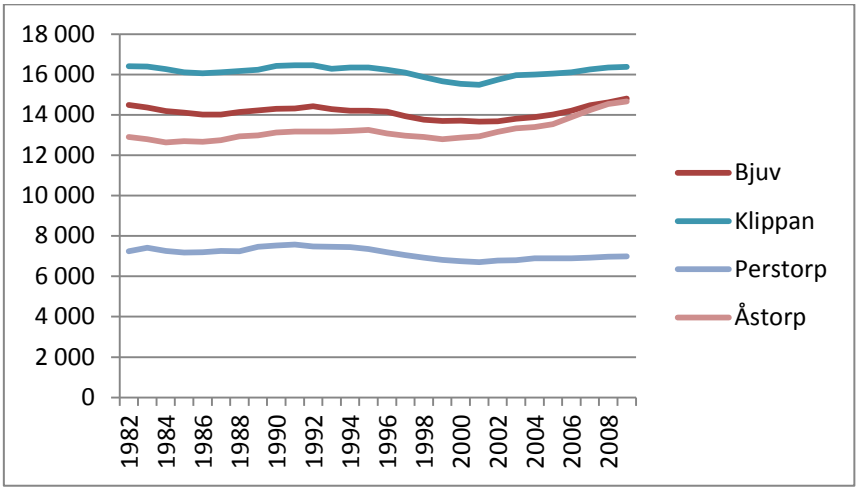


Figure 6.4 Number of travellers Påarp

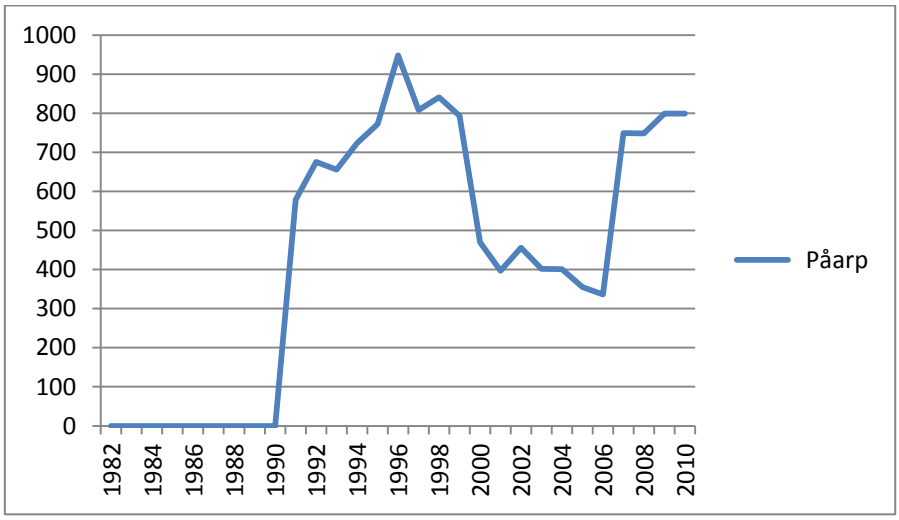


Figure 6.5 Number of travellers Mörarp

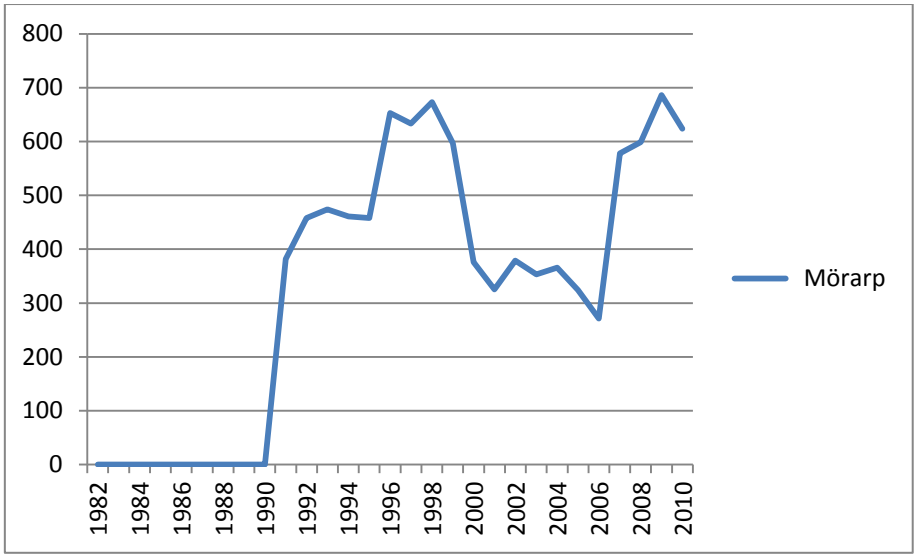


Figure 6.6 Number of travellers Bjuv

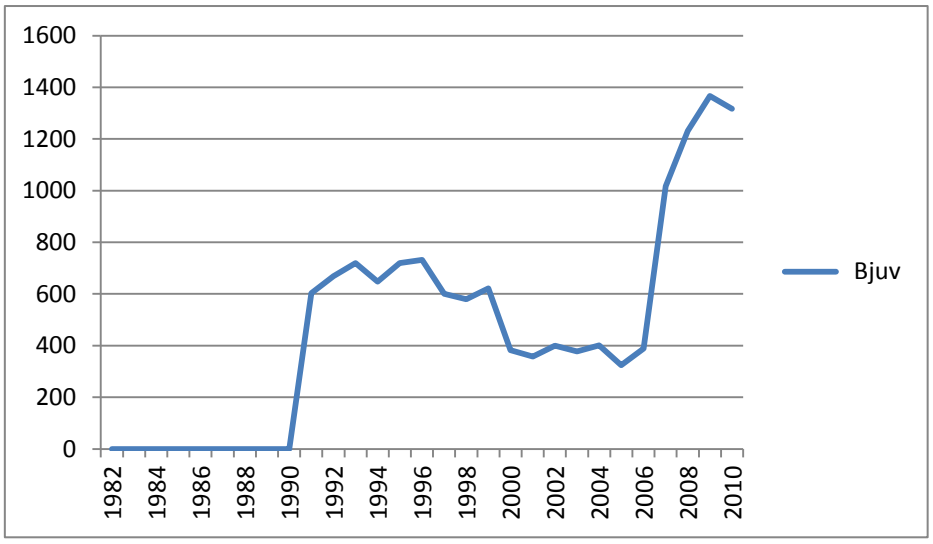


Figure 6.7 Number of travellers Åstorp

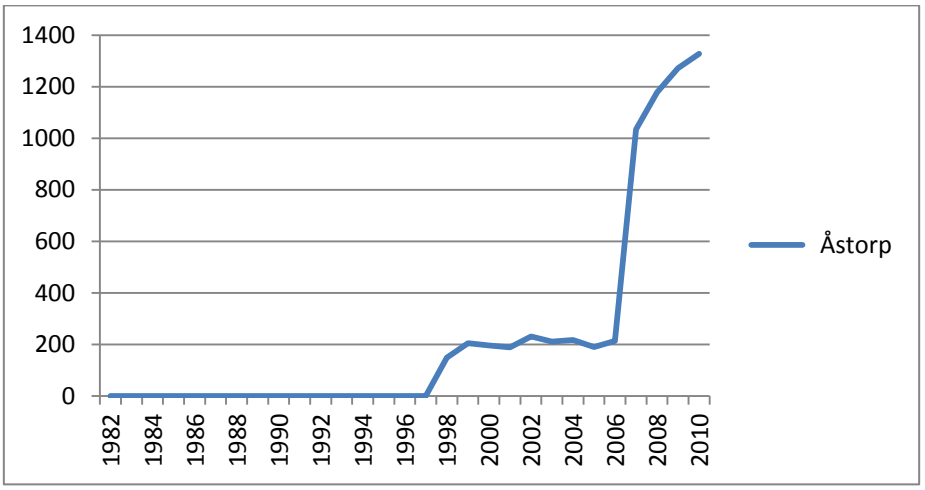


Figure 6.8 Number of travellers Klippan

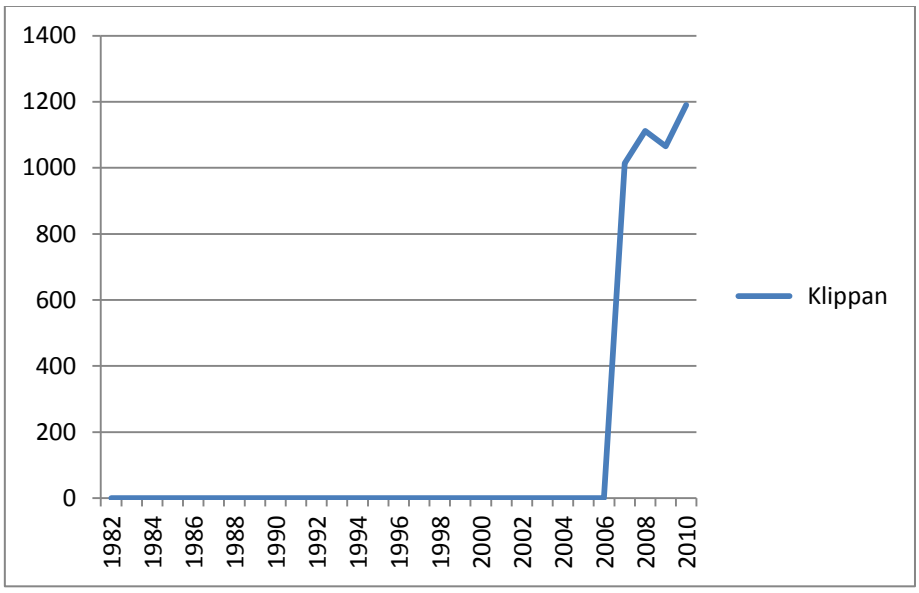


Figure 6.9 Number of travellers Perstorp

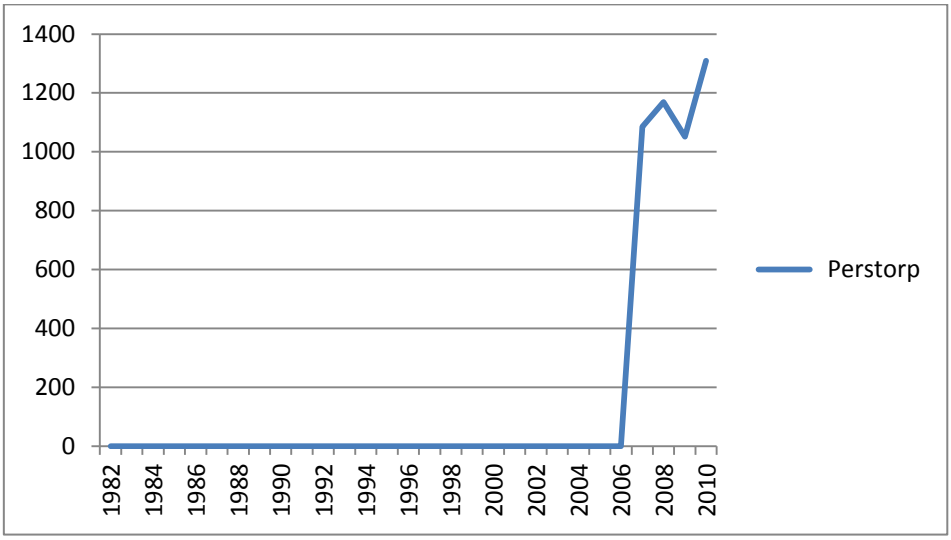


Figure 6.10 Number of travellers Tyringe

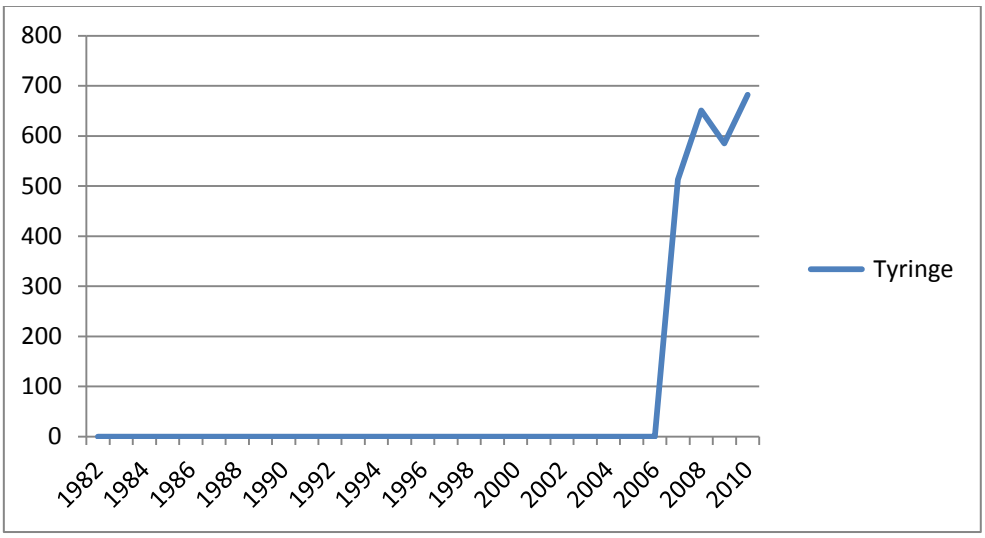


Figure 6.11 Number of travellers Hässleholm

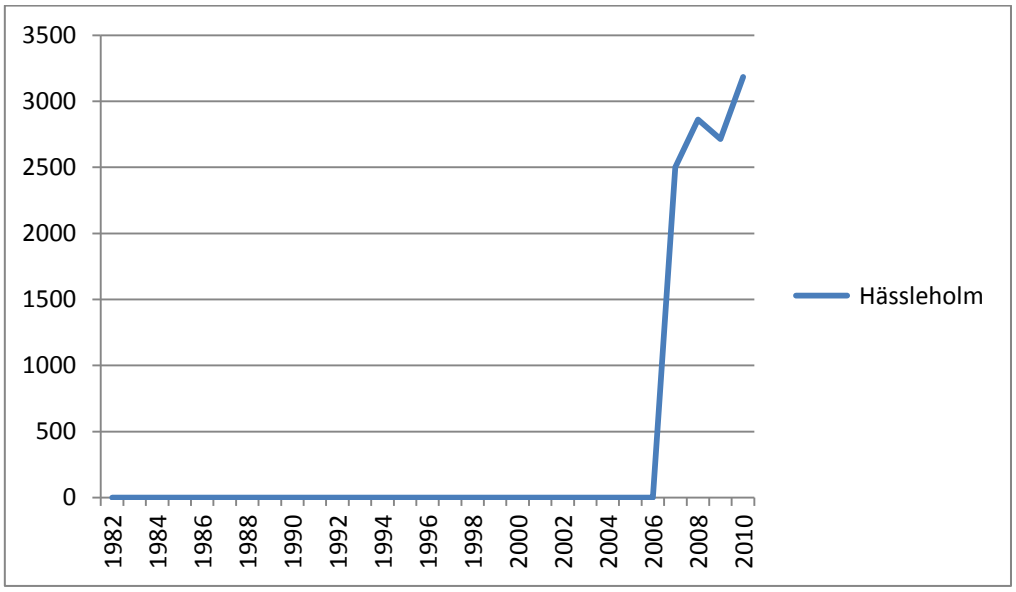


Figure 6.12 Number of travellers Vinslöv

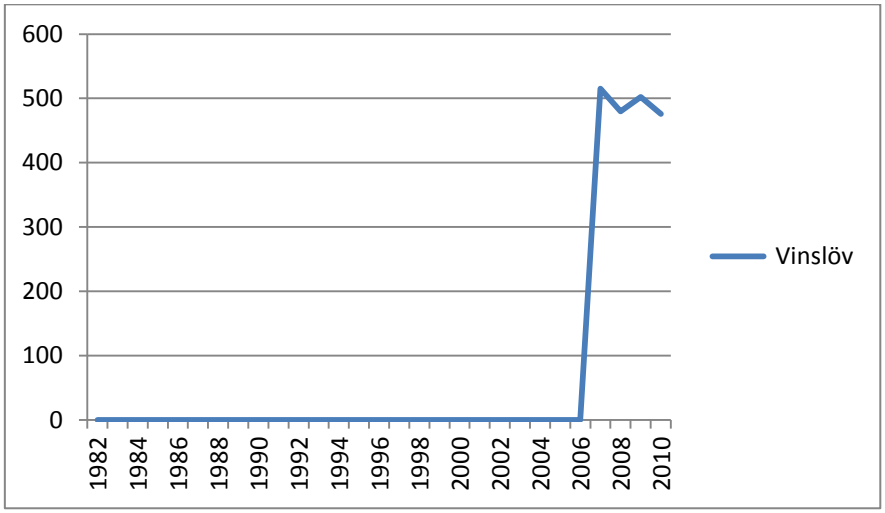


Figure 6.13 Number of travellers Kristianstad

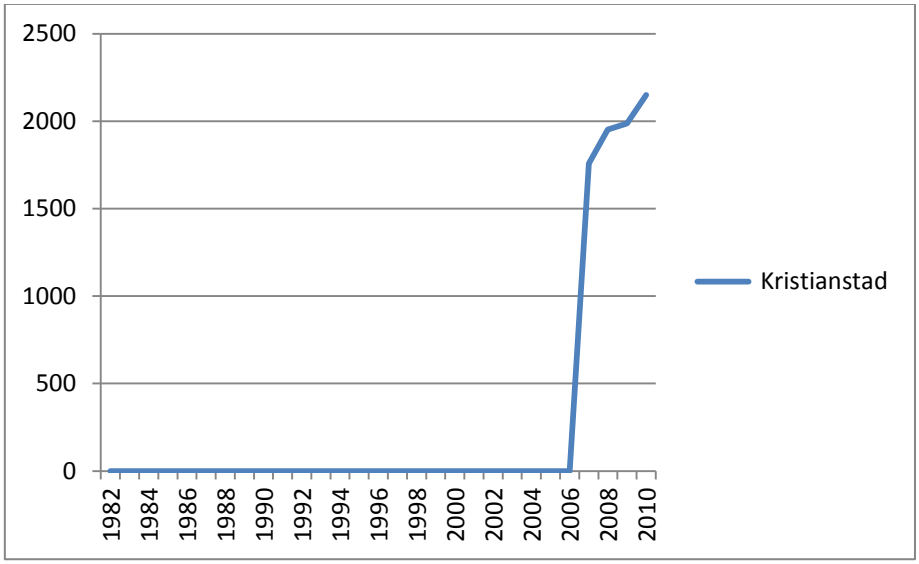


Figure 6.14 Numbers of commuters out from the municipalities

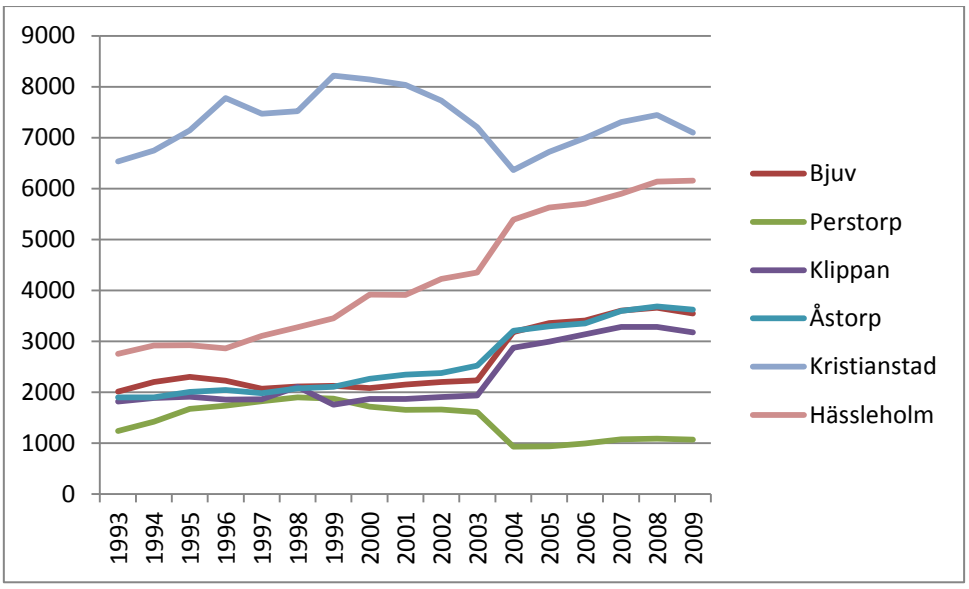
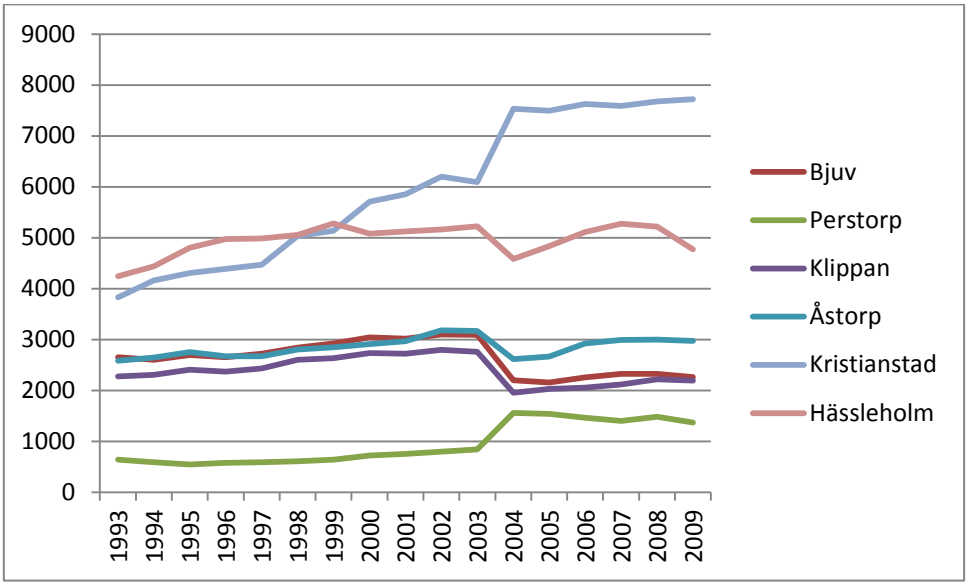


Figure 6.15 Numbers commuters into the municipalities



Appendix 7

Figure 7.1 Number of commuters into Helsingborg

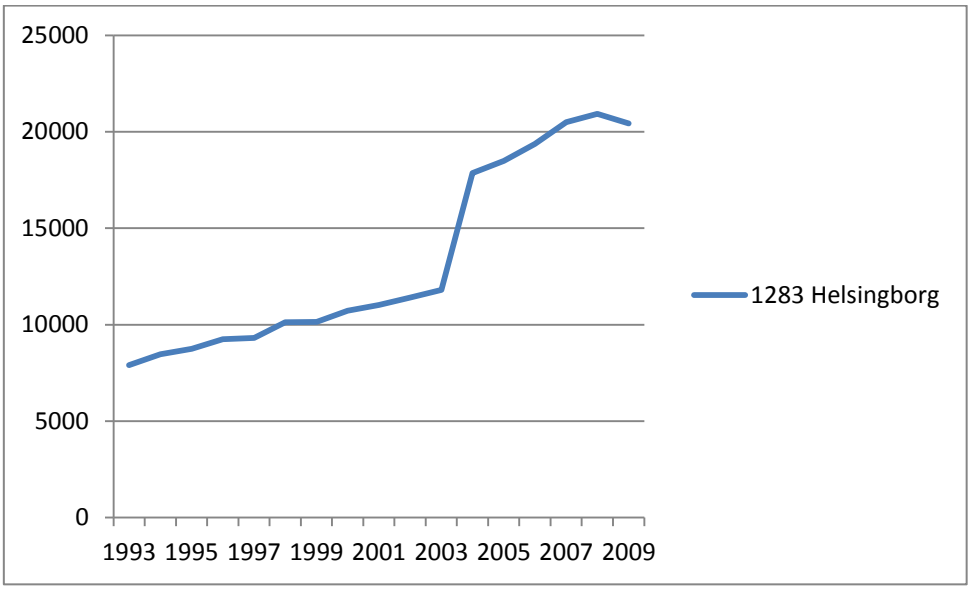
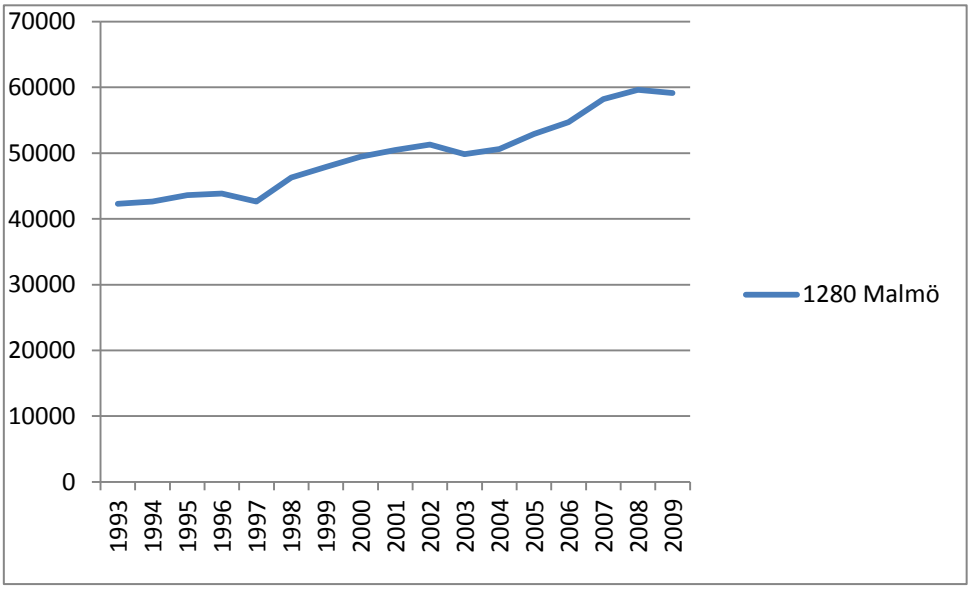


Figure 7.2 Numbers of commuters into Malmö



Appendix 8

Figure 8.1 New regional station cites and municipalities without future investments

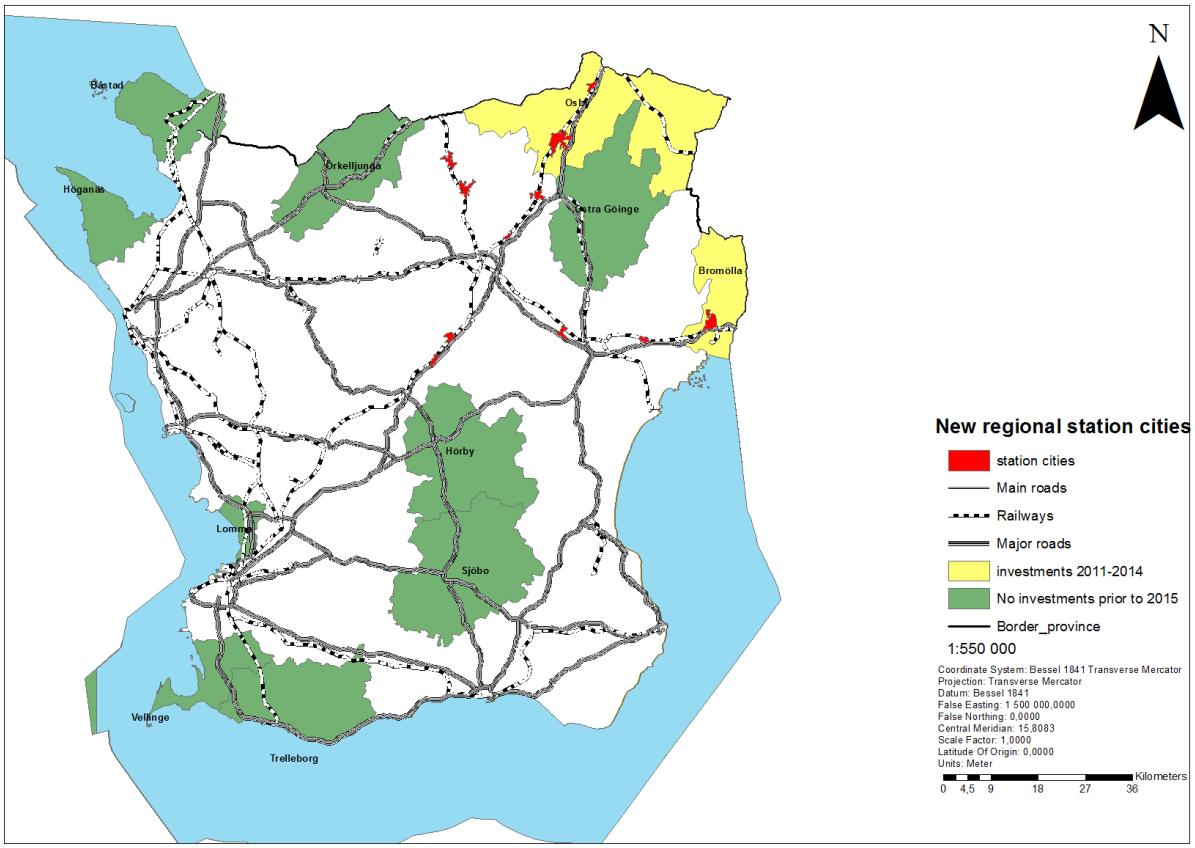


Figure 8.2 Population in new station cities

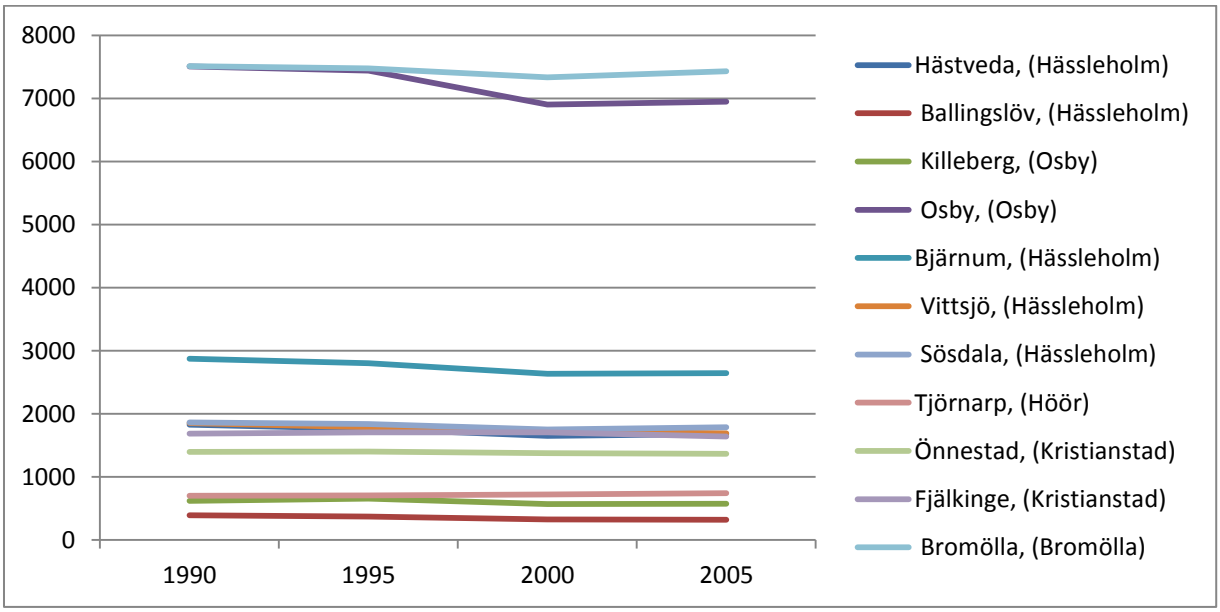


Figure 8.3 Municipalities in southwest Skåne

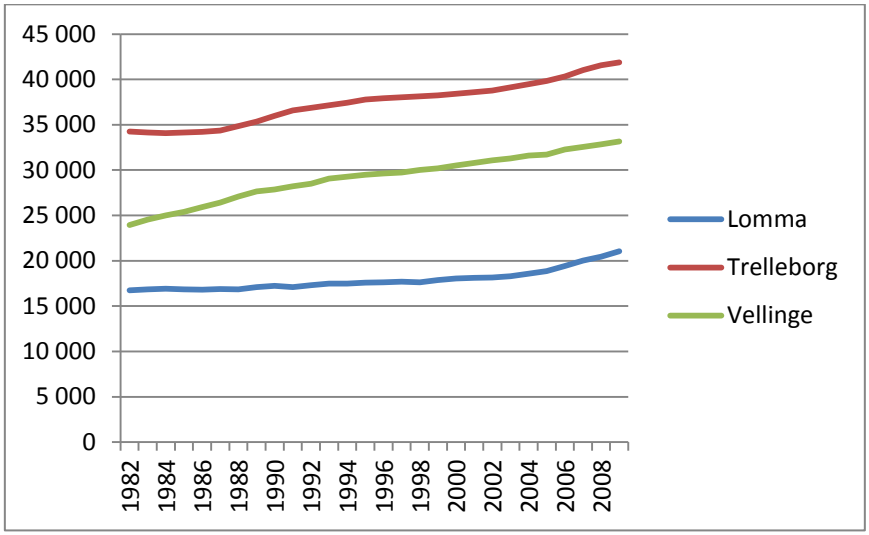


Figure 8.4 Municipalities in Northeast Skåne

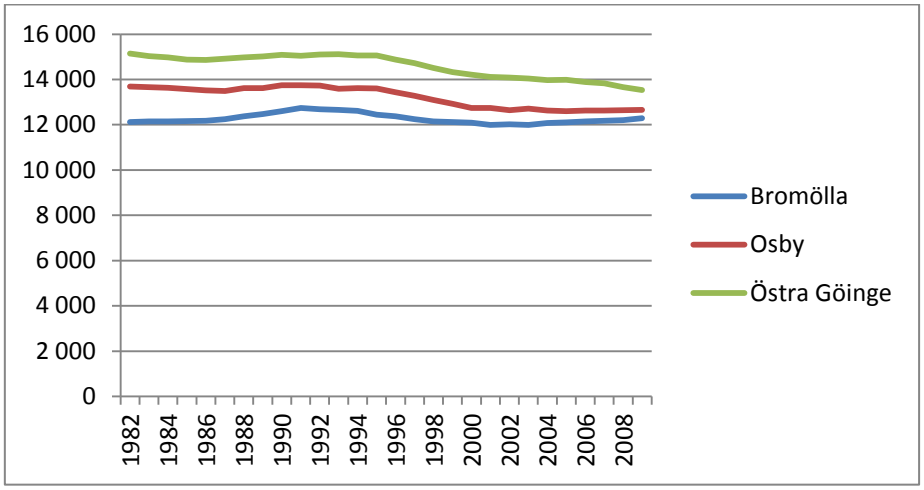


Figure 8.5 Municipalities in Northwest Skåne

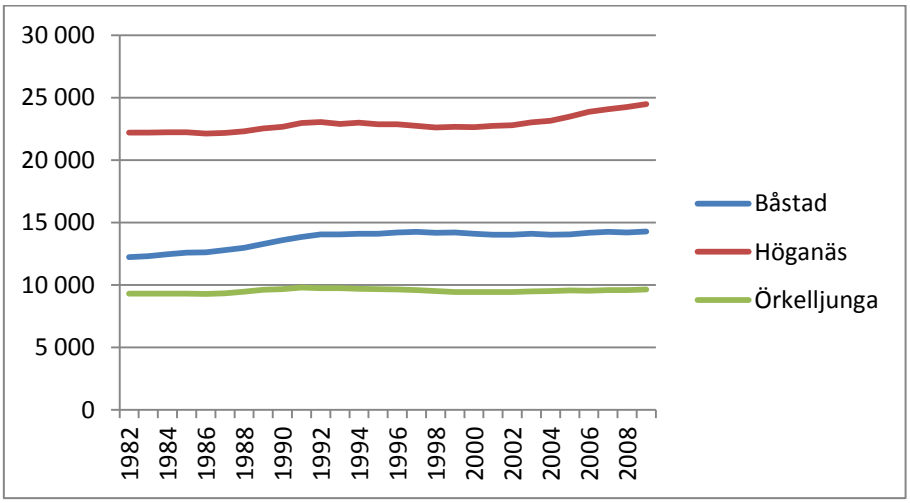


Figure 8.6 Municipalities in mid Skåne