TOWN

Small and medium sized towns in their functional territorial context

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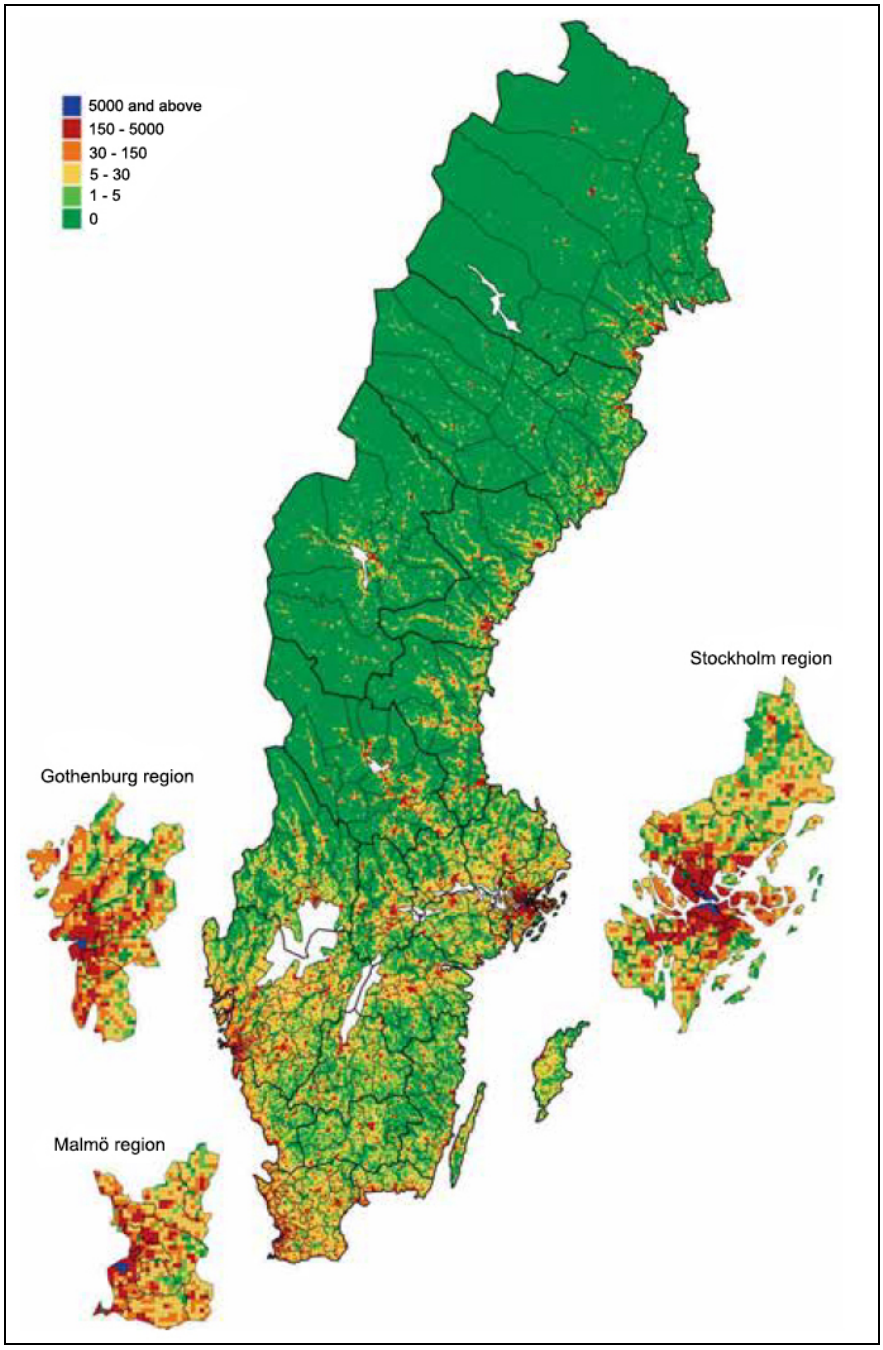
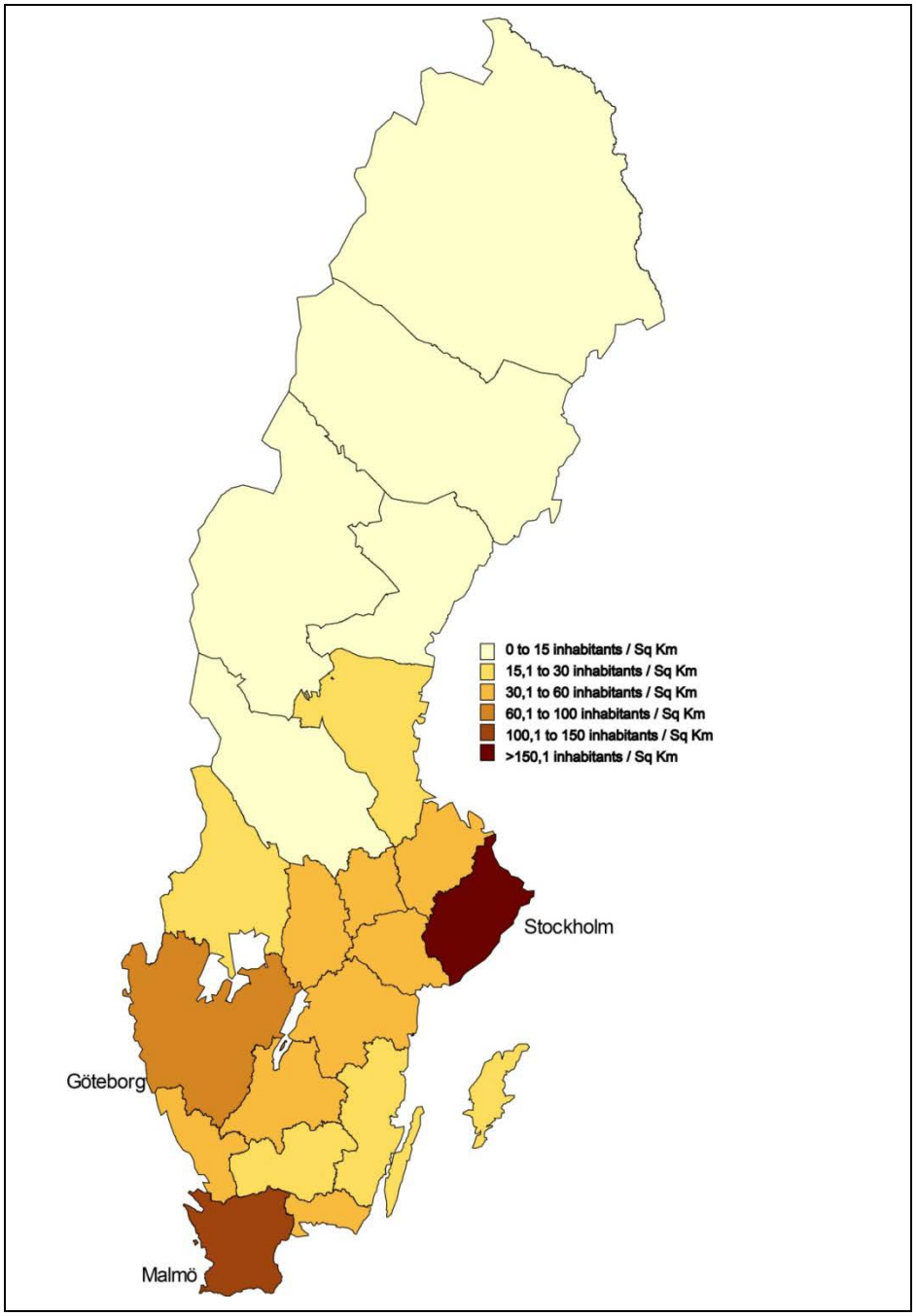
1. NATIONAL CONTEXT

Sweden is a wide and sparsely populated country with only a few metropolitan areas – Stockholm, Gothenburg and Malmö. The population density for the whole country is only 23.4 inhabitants per km^2 (2011) and varies from the relatively densely populated southern parts to the extremely sparsely populated northern parts as shown in Map 1.



Map 1. Inhabitants per km^2 in Sweden. (Source: Statistics Sweden, Statistical Yearbook 2013)

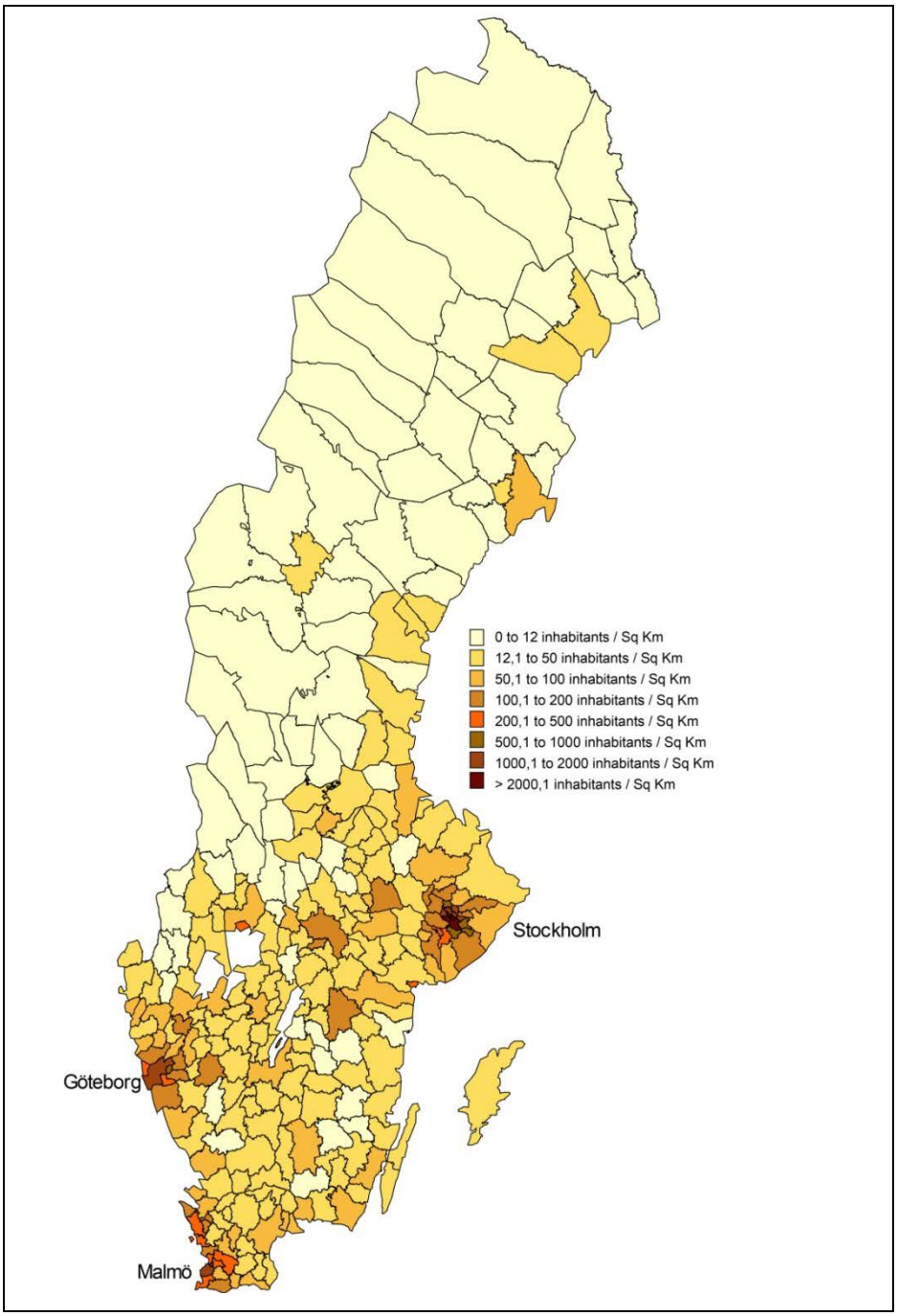
The corridor between Stockholm and Gothenburg is also relatively densely populated with a lot of small and medium sized town and built-up areas. The most densely populated county is Stockholm County (AB) with 321 inhabitants per km^2 and the most sparsely populated counties are Jämtland (Z) and Norrbotten (BC) with only 3 inhabitants per km^2 each as presented in Map 2 below.



Map 2. Population densities in the 21 counties (NUTS 3), 2012. (Source: Statistics Sweden, www.scb.se)

The Swedish settlement pattern with many small towns and built-up areas can be seen as a heritage from the Swedish industrialization process in the end of the 19th and beginning of the 20th century. The most densely populated area is the capital of Sweden, Stockholm, with 4708 inhabitants per km^2 and the neighbouring enclave Sundbyberg – the geographically

smallest town in Sweden – with 4705 inhabitants per km^2. The third most densely populated town is also a Stockholm neighbouring town – Solna with 3694 inhabitants per km^2. This is a symptom of the attractiveness of the (core of) Stockholm region and can be contrasted with the municipalities in the interior of northern Sweden – Sorsele, Arjeplog and Jokkmokk – with the extremely low population densities of 0,3, 0,2 and 0,2 respectively as shown in Map 3 below.



Map 3. Population densities in the 290 municipalities (LAU 2), 2012. (Source: Statistics Sweden, www.scb.se)

Here it must, somewhat paradoxically, be noticed that the "urbanization degree" is high – a huge majority of the population is living in relatively small settlements, the centres, while most of the area in these sparsely populated municipalities can be characterized as wilderness where nobody lives. This can be contrasted to the pattern in the small municipalities in the southern part of Sweden where the settlements are spread over larger areas even if the population densities are relatively low.

Early Swedish industrialization was a rural phenomenon and it was – as in many other countries – connected to migratory movements from rural areas to newly evolved and growing built-up urban areas. Industrial districts and factory towns grew up and the centralization of the residence pattern increased. This development resulted in urbanization where the economic structure was undiversified and there were only few links to other cities and the surrounding rural areas. The social structure – and the labour force – was relatively homogenous and substitutable (see e.g. Gårdlund 1942, Montgomery 1947, Andersson 1987, Nilsson 1989, Schön 2007). As a consequence of the raw material based industrialization it can – at least in some cases – be relevant to talk about small polycentric structures of factory towns/municipalities with similar production and social structures. This can be still seen in some of the old industrial areas today where there still are some small polycentric community structures but where preconditions for renewal and transformation along old lines are lacking.

During the last third of the 20th century, de-industrialization and the growth of the public service sector transformed the Swedish settlement structure in the sense that the service towns – e.g. county towns and university towns – were growing while the old factory towns decreased in size. As a result, their image changed from expanding towards being impeding and even boring. Especially young people moved away resulting in skewed age structures that hampered the inflow of younger people with decreasing reproduction potentials as one consequence. The dividing line between growing urban areas and declining rural ones was even more accentuated leading to the population crises of small and medium sized towns and cities in Sweden, especially then in the northern part.

The Swedish settlement pattern is quite different compared to the continental or English ones. Sweden is, like Finland and Norway, a sparsely populated country – in some parts extremely sparsely populated. This phenomenon characterizes even the urban structure in Sweden with a lot of small and medium-sized towns. In a European context even the medium-sized towns are few and most of the towns are characterized as small towns. Only four cities in Sweden – Stockholm, Gothenburg, Malmö and Uppsala – have more than 200,000 inhabitants and nine cities have a population between 100,000 and 200,000. Thus, a medium-sized town in Sweden is not the same as a medium-sized town on the European continent. Instead, most of the Swedish towns could be classified as either small towns or minor regional centres in rural areas in a European context. The Swedish towns – with a few exceptions in the metropolitan regions – consist also of both built-up centres and surrounding rural areas. This implies that the Swedish community structure consists of relatively few towns and municipalities compared to other parts of Europe. The distribution of towns and municipalities is also focused on metropolitan areas with regard to population size and density (see e.g. ESPON2006 1.1.1, ESPON 2006 1.4.3). The distribution curve with

regard to cities and municipalities is very steep in the beginning and almost completely flat among three fourth of the cities – cities that in best of cases can be considered as medium sized (see Figure 1).

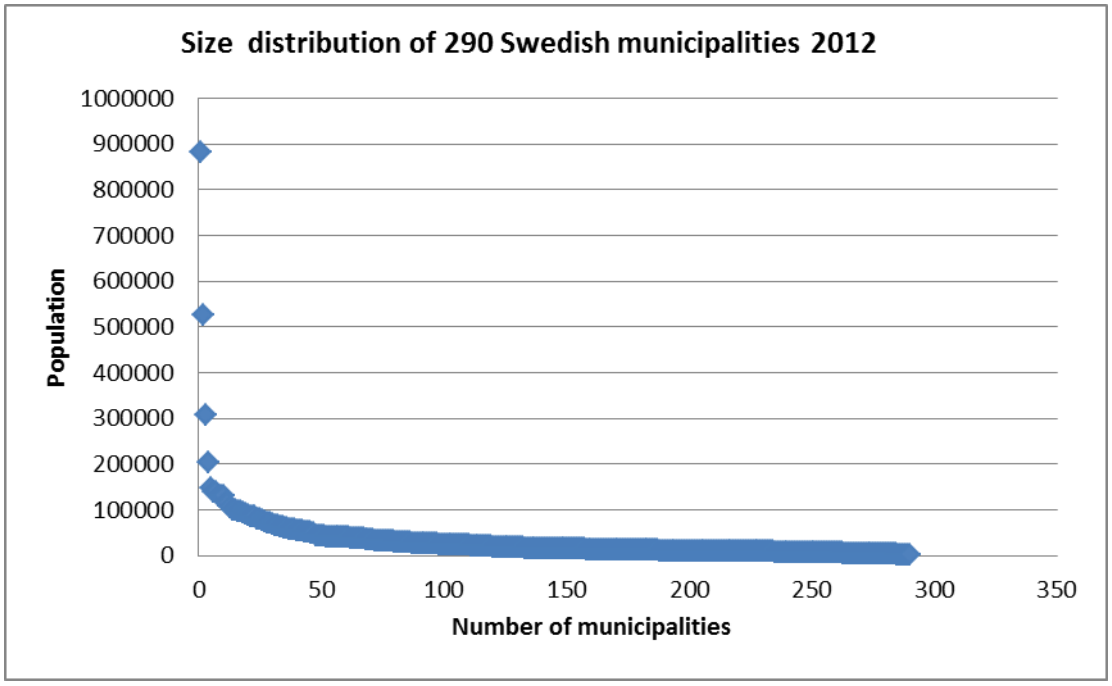
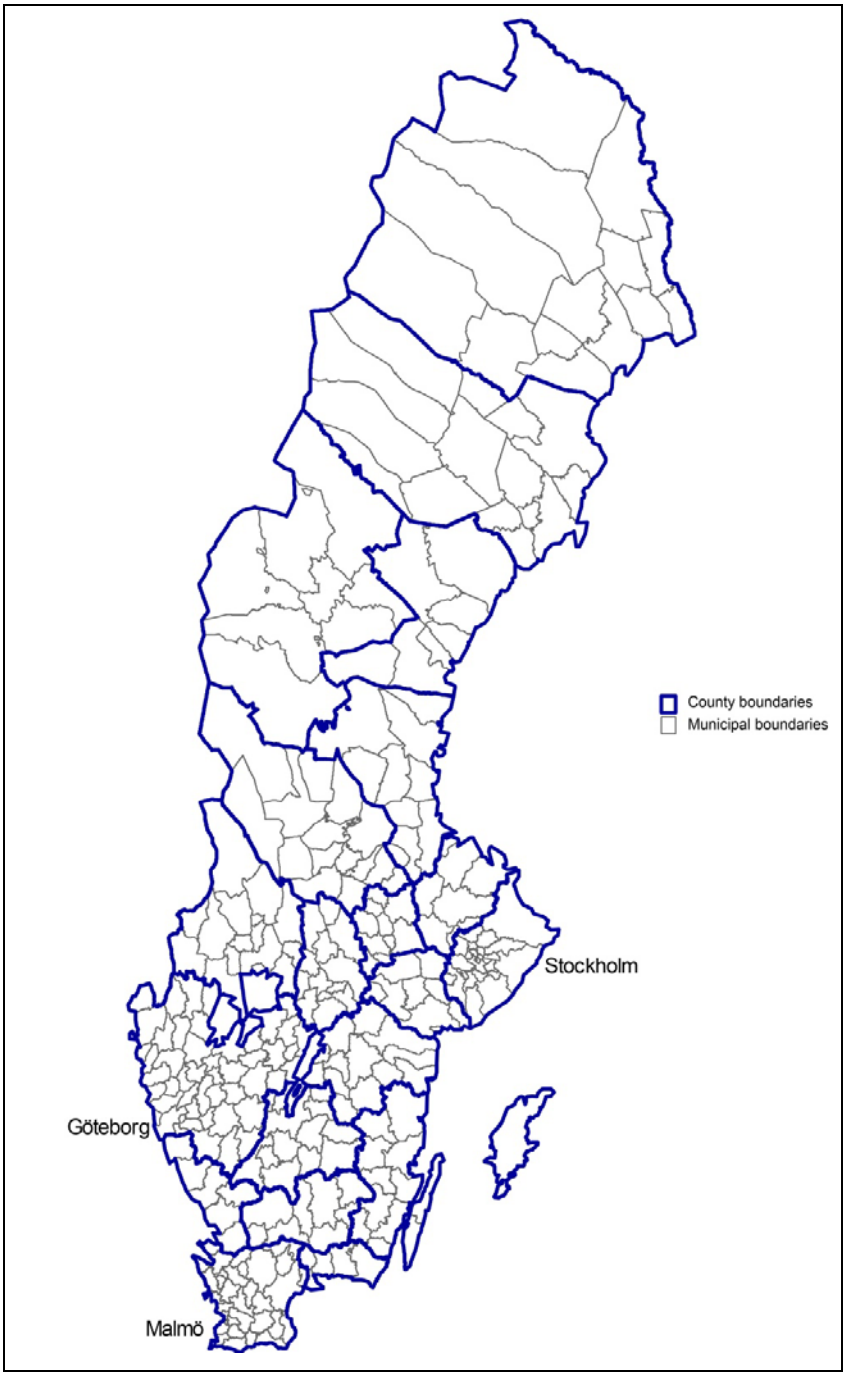


Figure 1. Ranking of towns/municipalities 2012 with regard to size. (Source: Statistics Sweden, www.scb.se)

Since the beginning of the 19th century, Sweden has experienced population decreases only during a few scattered years. During the 1990s a new phenomenon appeared – natural population decrease. In 1997, the number of deaths in the country exceeded the number of births. Without immigration, the Swedish population would have diminished. The low birth rates once again focused attention on the potential crisis in population development – a debate that has frequently recurred since the country experienced huge waves of emigration during the second half of the 19th century. The difference between the modern population crises – at least since the population crisis in the beginning of the 1930s – and the former ones is that today the focus lies on low fertility rates and internal migration and not on emigration. During the first decade of the new century, the fertility rates have been rising again but not so much that the reproduction potential would have been re-established (Statistics Sweden 2013).

Sweden consists of three NUTS1 regions (macro level), seven NUTS2 regions and 21 NUTS3 regions – a reduction from 25 in 1967 to 21 in 1997 (Map 4). It can also be mentioned that there is a discussion nowadays about further reduction of NUTS3-regions in Sweden in order to increase competition and efficiency amongst them. As this is believed not to have so large impacts on the development and preconditions of SMSTs, an in-depth discussion is omitted at present.



Map 4. The delimitations of the 21 counties (NUTS 3) and the 290 municipalities (LAU 2) in Sweden 2012.
(Source: Statistics Sweden, www.scb.se)

On lower level there are 76 LAU1-regions today (functional local labour markets) and 290 LAU2-regions (towns and municipalities). At LAU-levels it must be kept in mind that they are not static with regard to size and numbers. The LAU1-regions are dependent on the commuting patterns between towns and municipalities and the trend towards increased commuting during recent decades has resulted in fewer, but larger LAU-regions. The number of functional local labour markets (LAU1) was 187 in 1970 and 76 in 2010.

It can also be shown that this "regional enlargement" process has been and still is connected to business cycles – upswings have accentuated the enlargement process while downswings have hampered it even though the impact has not been negative in the sense of shrinking numbers of LAU1-regions (Adolphson et.al. 2006, Statistics Sweden, rAps 2013).

The number of LAU2-regions is dependent on administrative reforms that gather or split the municipalities. This is however not explicitly dependent on economic cycles or commuting between towns and municipalities. Indirectly, they can be a consequence of economic and social internal conditions, especially in splitting processes. As a result there will often emerge more homogenous municipalities with regard to socio-economic variables. In general, more well-being parts of the LAU2-regions will form a municipality of their own. Since the beginning of the 1970s when the large municipal reform took place, the number of LAU2-regions has been relatively constant and consists today (2012) of 290 towns and municipalities (shown in Map 4 above).

1.1 National/regional definitions of SMSTs

There is no official definition of SMSTs in Sweden. Instead, some other definitions and delimitations are used where the classifications vary in conjunction with the aim of the topic. The following classification of Swedish towns/municipalities is made by the Swedish Association of Local Authorities and Regions (Sveriges Kommuner och Landsting, SKL, 2011).

1.1.1 Clusters of municipalities based on functionality, density and accessibility

The municipalities are here divided into ten groups on the basis of structural parameters such as population, commuting patterns, tourism and travel industry and economic structure (SKL 2011). Based on 290 towns/municipalities, the following ten groups are identified (Table 1):

Table 1. Classification of Swedish municipalities. (Source: Swedish Association of Local Authorities and Regions (*SKL*), 2011)

1. Metropolitan municipalities (3 municipalities) Municipalities with a population of over 200,000 inhabitants. Stockholm, Göteborg and Malmö. Size (%) of total population 2010: 17,7
2. Suburban municipalities (38 municipalities) Municipalities where more than 50 percent of the night population commutes to work to another municipality. The most common commuting destination is one of the three metropolitan cities. Size (%) of total population 2010: 16,1
3. Large cities (31 municipalities) Municipalities with 50,000 to 200,000 inhabitants. More than 70 percent of the population lives in urban areas. Often county residence cities or regional centres with private and public services, higher education and a flexible labour market. Size (%) of total population 2010: 29,9
4. Suburban municipalities to large cities (20 municipalities) Municipalities in which more than 50 percent of the night population commutes to work in a large city. Size (%) of total population 2010: 3,2

5. Commuter municipalities (51 municipalities) Municipalities in which more than 40 percent of the night population commutes to work in another municipality. Size (%) of total population 2010: 7,4
6. Tourism and travel industry municipalities (20 municipalities) Municipalities where the number of guest nights in hotels, youth hostels and camping sites is higher than 21 nights per inhabitant and the number of holiday homes is higher than 0.20 per inhabitant. Size (%) of total population 2010: 3,1
7. Manufacturing municipalities (54 municipalities) Municipalities where more than 34 percent of the night population aged 16 to 64 is employed in manufacturing, mining, energy, environmental and construction industries. Skewed labour market focused on industry and manufacturing. Size (%) of total population 2010: 8,5
8. Sparsely populated municipalities (20 municipalities) Municipalities where less than 70 percent of the population lives in urban areas and less than eight inhabitants per km^2. Localized particularly in the northern part of Sweden. Size (%) of total population 2010: 1,8
9. Small municipalities in densely populated regions (35 municipalities) Municipalities with more than 300,000 inhabitants within a 112.5 km radius. Localized particularly in the southern part of Sweden. Size (%) of total population 2010: 9,0
10.Small municipalities in sparsely populated regions (16 municipalities) Municipalities with less than 300,000 inhabitants within a 112.5 km radius. Localized particularly in the northern part of Sweden. Size (%) of total population 2010: 3,4

The development of the clusters with regard to population size is illustrated in Figure 2 below where some hints about the redistribution process also can be observed.

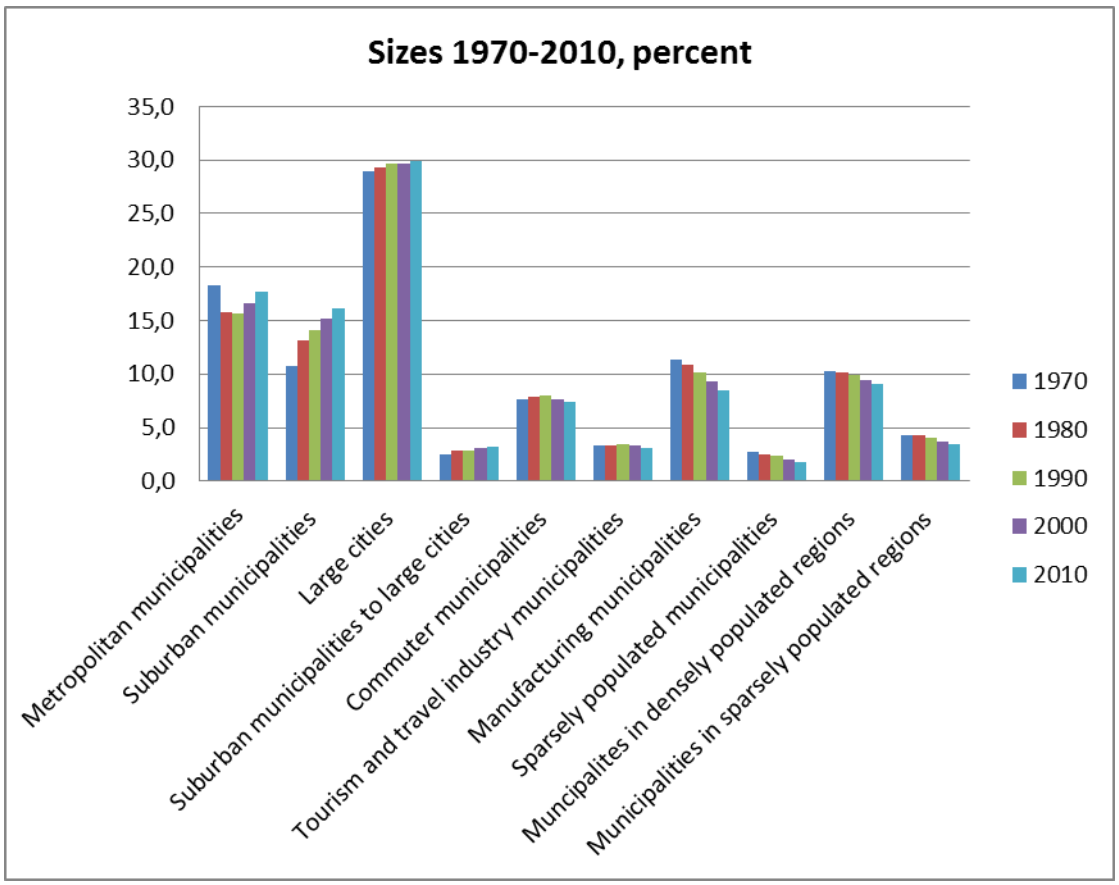


Figure 2. Population development of the ten SKL municipality clusters 1970-2010. (Source: Johansson 2012. Estimations based on data from Statistics Sweden, 2012)

It shall also be kept in mind that the figure does not show the development in absolute terms but relatively, where it is easier to follow the urbanization and suburbanization processes that has been characteristic ingredients in Sweden during these years. By checking the development of the metropolitan cities – Stockholm, Göteborg and Malmö – the decentralization of the settlement is shown. The highest level was reached already in 1970 when 18.3 percent of the population was living in the three metropolitan cities. After that, the process of turning flats into offices in the inner parts of these cities resulted in a population decrease as one consequence. This was especially pronounced in Stockholm that lost almost 98,000 people, or 13 percent of its inhabitants between 1970 and 1980. This was the decade of the "green wave" that struck even the other two metropolitan cities but not as hard as it did for Stockholm. After 1990, the metropolitan cities started to grow again and have more inhabitants today than they did in 1970 but with an almost changed population structure.

The other side of the coin of this process is the suburbanization close to metropolitan areas (municipality type 2). This process gained speed during the 1970s with the "million programme" where one million small houses and flats should be built within a ten year timeframe. Many of these new flats were built in the surrounding areas of the metropolitan core. This phenomenon can be clearly seen in Figure 2 where the sharp rise in the population size is illustrated (see also e. g. Johansson 1993). These suburban municipalities have continued to grow simultaneously after the "million programme" and the "green

wave", that was more a suburbanization project than a revival for the sparsely populated rural areas that continued to lose people. By the way, the "green wave" with regard to a rural revival was more a mass media phenomenon when hippie collectives and other anti-urban people with some forms of self-subsistence ideologies settled down in rural areas than a statistical reality (Johansson and Persson 1991). Instead, the "green wave" was predominantly a peri- or suburbanization process rather than a rural revival in statistical terms.

Clusters 7-10 have experienced a negative population development during the whole period. The de-industrialization process – that started in the middle of the 1960s seen from an employment point of view – struck the manufacturing municipalities hard. Many of these municipalities have a dual labour market in the sense that job alternatives often are lacking especially for women. This was at least partly compensated by the growth of the public sector with a more female-friendly labour market as one result. Compared to category 3 "Large cities", the service sector is still underdeveloped despite the lopsided age structure in these kinds of cities and municipalities. The image of old factory towns is neither a pull-factor for younger people and then, especially not for young women (ESPON/SEMIGRA 2012; Johansson and Rauhut 2012).

As can be seen from Figure 2, clusters 8 and 10 that both are small communities, localized predominantly in the northern part of Sweden have a similar population development with population decreases every decade. This is valid also for cluster 9 "Small municipalities in densely populated regions" but their preconditions are better as they are localized in the more densely populated parts of southern Sweden with better commuting possibilities as one central ingredient.

1.1.2 The Swedish urban-rural system and the north-south divide

Table 2 illustrates the Swedish urban-rural system in a schematic way by combining the type of municipalities and their localization in differing kinds of regions. The metropolitan regions consist of Stockholm's, Gothenburg's and Malmö's functional local labour markets 2008 and are based on the delimitations of 1998 that have been changed up to today through more intensive commuting and regional enlargement processes, especially in the metropolitan and southern areas. Large inland forestlands consist of the former EU-target areas (objective 6) and other forestlands of the local labour markets in the forest counties that not were included in the objective 6 areas. Other regions consist of the rest of the counties inclusive local labour markets. Sparsely populated areas have less than five inhabitants per km^2 and not more than 20,000 inhabitants. "Urban neighbourhood" is defined as a municipality where less than 70 percent of the population is living outside built-up areas and urban areas consist of municipalities with an urbanization share of more than 70 percent (National Rural Development Agency 2000). This means that we get the following delimitations including the share of the Swedish total population and the numbers of municipalities (Table 2).

Table 2. The Swedish urban-rural system based on municipalities and regions. Population shares 2008. (Source: Estimations based on the delimitations by the National Rural Development Agency (*Glesbygdsverket*) and data from Statistics Sweden)

Code	Type of region	Type of municipality	Localization	Number of municipalities	% of municipalities	% of total population
11	Forestland-inland	Sparsely populated	Northern rural	18	6,2	1,3
12	Forestland-inland	Urban	Northern urban but "densely" populated	4	1,4	1,2
13	Forestland-inland	Urban neighbourhood	Northern rural	9	3,1	1,3
21	Forestland-other	Sparsely populated	Northern rural	4	1,4	0,3
22	Forestland-other	Urban	Northern urban	21	7,2	8,2
23	Forestland-other	Urban neighbourhood	Northern rural but "densely" populated	33	11,4	6,8
32	Metropolitan	Urban	Stockholm, Gothenburg, Malmö	40	13,8	34,2
33	Metropolitan	Urban neighbourhood	Metro areas	18	6,2	5,6
42	Other regions	Urban	Southern urban	47	16,2	23,8
43	Other regions	Urban neighbourhood	Southern rural but densely populated	96	33,1	17,4

As can be seen, most of the Swedish population lives in urban areas and the north-south divide is obvious (cannot be seen from Table 2). The more densely populated regions in the south result in more commuting and regional enlargement than in northern Sweden where long distances and few built-up areas hamper this kind of mobility pattern and only a small part of the Swedish population is living in the forestland-inland – less than five percent. The regional enlargement process has also been accentuated especially in the metropolitan areas since the end of the 1990s. Especially in the southern part of Sweden, this process has resulted in a more polycentric development and functional local labour markets.

1.1.3 Local Labour Markets (LAU1) based on commuting flows

The division of Sweden in labour market areas – or functional local labour markets – was developed and presented by ERU and Statistics Sweden 1991 and in English 1993 (Carlsson et.al. 1991, 1993). The counties back then were too large and too heterogeneous to constitute functional local labour markets with a functioning matching process between supply and demand of labour. The solution was to create smaller markets than counties but larger than municipalities based on commuting flows between the municipalities. The municipalities were then the cornerstone in the new functional local labour markets that today correspond to LAU1-level. Compared to the "functional analysis regions" developed by the Swedish Agency for Economic Development (NUTEK, today *Tillväxtverket*), the labour market areas changed some years later over time as a consequence of changing travel to work streams. By using constant commuting flows between municipalities, the regional enlargement process and the development of the functional local labour markets could be analysed by pure statistical means. The base data – population, employment and commuting flows – dated from 1988 and the selection criteria has been kept constant up to today in order to analyse the development of the functional local labour markets (LMAs) and the regional enlargement process (Statistics Sweden 2010). Regional enlargement has since the Government Bill 2001/02:4 also been an explicit objective for the Swedish regional policy as large local and regional labour markets are considered to improve the matching of the labour markets and reduce the matching problems on the labour markets and then the effects of regional and local segmentation (Johansson and Persson 2000, SOU 2000:36).

As mentioned earlier, it is problematic to compare Swedish municipalities and municipality structures with the corresponding ones at the European continent. Sweden is a sparsely populated country with 290 towns and municipalities but only few large towns and compared to many other European countries Sweden has no really small municipalities – the smallest was Bjurholm in Västerbotten county (SE331) that had 2421 inhabitants in 2012 Statistics Sweden 2013). Especially in the northern part of Sweden, the municipalities are wide and very sparsely populated and with low accessibilities to bigger towns and hubs. To be a centre in the local labour market, two commuting criteria need to be fulfilled – one general and one special. The general criterion is 80 percent self-sufficiency, i.e. the total out-commuting rate among the working population living in a municipality has to be less than 20 percent. The second criterion is a more specific one and aims to exclude municipalities with high dependency on any one single other municipality. In order to be self-sufficient and to be a potential centre in a local labour market, the out-commuting to any other municipality should be less than 7.5 percent (for a more thorough discussion, see Carlsson et al. 1991, 1993). Functional local labour markets are here used synonymously with the concept of microregions as both are based on commuting flows with one local centre – sometimes two if the commuting patterns between local centres are symmetrical in the sense that the flows between them are of the same relative size and the two criteria for being a centre both are not fulfilled but they are together acting as an urban centre from a statistical point of view. This is a new phenomenon from the beginning of the 00s and it is still not frequently observed in the Swedish commuting data.

Municipalities that do not fulfil the self-sufficient criterion are instead included in the local labour market to which the out-commuting flows are highest. It must be noted that it is not necessary that the strongest link is to the centre – it can be to another municipality that is linked to the central municipality in the local labour market. In order to avoid the situation where all municipalities are integrated with each other, only three links are accepted. After the third link the connection to a local labour market is broken at its weakest link and two different LMAs are created. This means that we have the following potential links that constitute the functional local labour market and its sub labour markets based on the connections between the municipalities (see Table 3):

Table 3**.** Possible links in a microregion (LAU1)

Type of municipalities and links
11 Local centre (self-sufficient)
20 Linked to a local centre, largest out-commuting to type 11
30 Linked to a second rated municipality, largest out-commuting to type 20
50 Linked to a third rated municipality, largest out-commuting to type 30

By estimating the size and directions of the flows and breaking the links after the third connection the following functional labour markets and sub labour markets can be shown. From Figure 3 it can be discerned that many of the municipalities have no or negligible to other municipalities in the microregion as they are only connected to each other by another municipality often dependent of size and distance. It can be noticed that there are only five type 50 connections in the Sweden (SE0) and that there does not exit anyone in the northern Sweden (SE3). This is an indication of the different preconditions about creating functional local labour markets in Sweden depending on population size, distance and density – all central ingredients in creating functional local labour markets or functional microregions consisting of a bunch of municipalities.

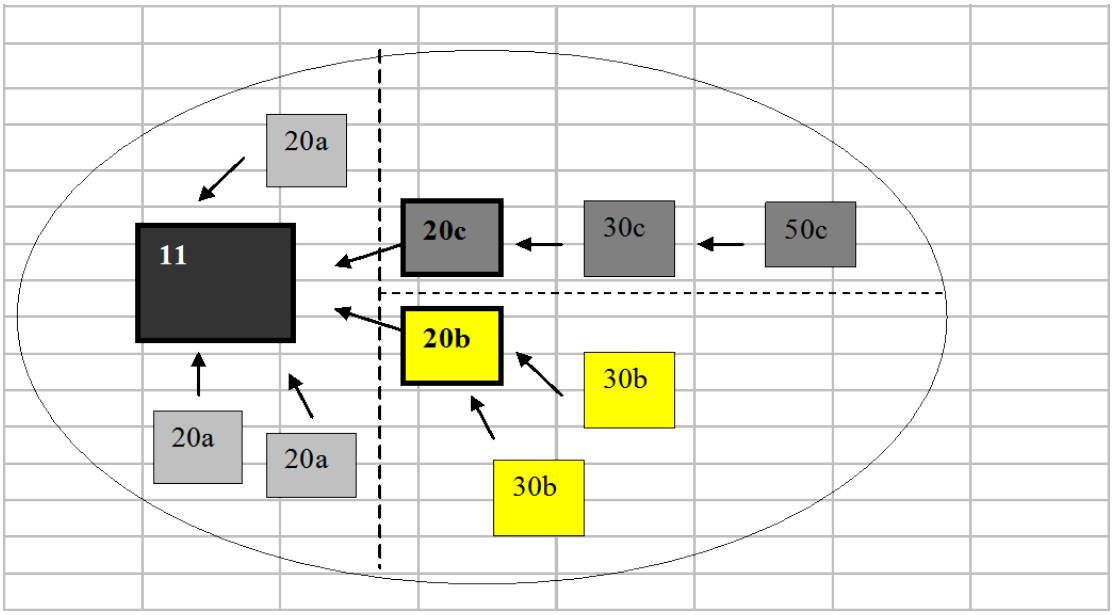


Figure 3. A schematic view of a functional local labour market with one, two and three links. (Source: Statistics Sweden 2010)

1.1.4 Clustering functional local labour markets of similar types

The various LMAs were for analytical reasons clustered in ten Employment Zones based on following characteristics:

1. Size of land area, population and proximity to urban zones
2. Educational standard
3. Sector structure of the economy (shares in manufacturing industry, public services and private services)
4. Company size (the share of the three biggest companies)

By using Ward's Method, ten clusters were created based on the four characteristics (including ten sub-variables). The Ward's method minimizes the square errors at every step for uniting the LMAs. The squared error for the whole clustering of the LMAs is the sum of squared error for all including cluster. The result of the clustering can be seen in Table 4.

Table 4. Employment zones created by clustering LMSs. (Source: Carlsson et al. 1991, 1993. LMAs based on 1988 year's commuting flows. (Data source: Statistic Sweden, clustering by Carlsson et al 1991.)

E-zones	Names	Abbreviations	Amount	Percent
1-3	Metropolitan regions, Stockholm, Gothenburg and Malmö	STO, GOT, MAL	3	2.7
4	Regional Service Centres	RSC	25	22.5
5	Sparsely Populated with a dominant regional centre	SPA	5	4.5
6	Small/Medium sized and Differentiated	SMD	34	30.6
7	Large Scale Industry	LSI	10	9.0
8	Small Scale Industry	SSI	11	9.9

9	Rural	RUR	18	16.2
10	One Company Dominated	OCD	5	4.5
Total		Tot	111	100

Even if almost one third of the towns/municipalities in 1991 were classified as "Small/Medium sized and Differentiated (SMDs)", any official definition of the concept was still conspicuous by its absence and so it is even today. Different (research) reports and investigations have their own classifications that often are based on size and integration in larger agglomerations. One aspect that shall be highlighted is that SMDs have a relatively share of the employment in the manufacturing industry and that the SMDs have experienced a deindustrialization process with population losses as one consequence depending of the problematic branch structure. This was obvious already in the beginning of the 1990s and this development has not changed in any positive way during the past decades. A consequence of this is that the gap – even without any official definitions – between big cities and small and medium sized ones has been accentuated. The relation between medium sized and small towns has then also developed in a direction where both medium sized and small towns have experienced population decreases. It must – once again – be kept in mind that Sweden consists of only 290 town/municipalities. Many of them are geographically speaking wide and – especially in the northern part of Sweden – the built-up areas dominate the local labour markets as the concentration to these agglomerations is a characteristic and central aspect in the local labour markets. What happens in built-up areas has a huge impact on the surrounding villages in the municipalities. The regional enlargement process from 1970 can be seen in Figure 4 below:

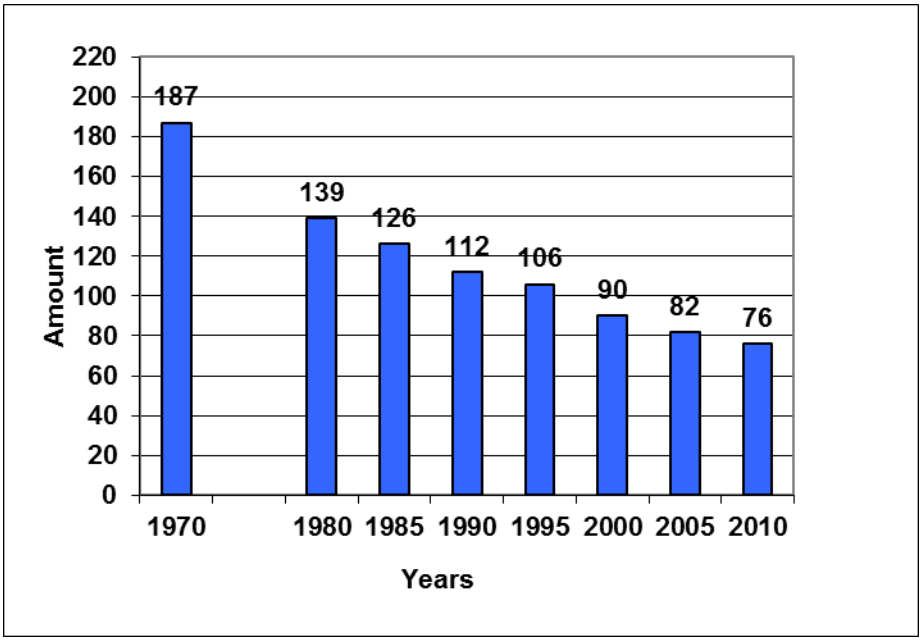


Figure 4. The development of local labour markets, travel-to-work areas (LAU1) in Sweden 1970-2010. (Source: Statistics Sweden, rAps, various years)

By interpreting Figure 4 it must be kept in mind that the regional enlargement process cannot continue *in absurdum*. As mentioned above, the links are broken after three connections (links). This means also that the regional enlargement process slows down over time as many of the municipalities in the more densely populated parts of Sweden already have been connected to each other by commuting flows. It is thus more or less impossible to extend the local labour markets in these regions as many of the newcomers should be linked to the centre over more than three links. This means on the other hand that the enlargement possibilities are greater in sparsely populated areas as many of the local labour markets there consist of only one municipality. If this will be the case or not can only be a qualified guesswork about settlement, migration and commuting patterns in the future. Three restrictions will even in the future be the long distances, the skewed age structures and the low demand for labour in these parts of Sweden.

From Figure 4 it seems that there is a connection between the regional enlargement process and economic fluctuations. The exception is the 1970s – a decade with slow economic growth in Sweden. But the 1970s were a decade of accentuated suburbanization with fast growing municipalities in the neighbourhood of large cities that resulted in increased commuting, fewer local labour markets and, thus, regional enlargement (about suburbanization, se Figure 2, the suburban municipalities staples).

Otherwise it can be shown that regional enlargement is related to economic fluctuations. Good times result in more commuting as the demand for labour increases and the willingness to take jobs in other municipalities is higher. The mismatch on the labour markets decreases alongside a segmentation both on the labour markets and in the region. During economically speaking bad times the opposite seems to be the case. Both commuting and the demand for labour decrease. Regional enlargement and increased commuting seems, however, to be a more or less irreversible process provided that nothing unforeseen disturbances such as substantial economic crises or political laws hamper it. If a municipality has left a local labour market since 1970 it has been an effect of administrative splits and reasons that have reduced the commuting flows from some parts of the original municipality.

1.1.5 Functional Analysis Regions (FA-regions)

These regions are similar to the LMA-regions in the sense that both are based on commuting flows between municipalities. One difference is that the delimitations are fixed to ten years periods before they are changed. Another difference is that the FA-regions' primary aim is to simplify the regional analysis in a more long-term perspective where even the economic structure of the regions is used in the delimitation criteria. In 2013 there are 72 FA-regions including all of the 290 Swedish municipalities.

Like the LMAs, the FA-regions are also clustered in "families". These were in the governmental regional policy report from 2000 the following six (SOU 2000:36):

1. Metropolitan regions
2. University regions

3. Regional centres
4. Secondary centres
5. Small regions with a high share of employed in private sectors
6. Small regions with high share of employed in public sectors

Without any explicit definitions, the medium sized towns can partly be found in the category 2 “University regions” and category 3 “Regional centres”. Here it must be kept in mind that many of the relative big cities in Sweden are localized in those types. Even in category 4 “Secondary centres”, some medium sized cities can intuitively be placed depending on their role in the regional development. Small cities/municipalities are then to be found the smallest categories where the sparsely populated municipalities are dominated by the economic and demographic development in built-up areas that are the central places of those municipalities.

The FA-regions have later been developed by Swedish Agency for Growth Policy Analysis (Tillväxtanalys) but the cornerstones and the delimitations are about the same. These regional families are the following seven:

1. Metropolitan regions
2. Regional centres with universities
3. Other regional centres
4. Local centres, goods-producing
5. Local centres, service-producing
6. Small regions, goods-producing
7. Small regions, service-producing

1.2 SMSTs in national/regional settlement system: a literature overview

The focus in Sweden concerning studies of towns and municipalities is in many aspects a function of historical as well as functional and political/administrative aspects. One central aspect in the discussion about SMSTs is the urban-rural divide and another – closely related – densely vs. sparsely populated areas.

The academic writings about SMSTs emanate – in Sweden as in many other countries – from disciplines as political science, human geography, (economic) history, (urban and rural) sociology, (regional) economics, etc. Even if some SMSTs are and have been county capitals, the focus from an economic and regional point of view concerning the development of SMSTs, the Swedish industrialization and urbanization is the central ingredient in the analysis. This is in many aspects a consequence of the fact that Swedish industrialization in many places was a rural phenomenon based on refining raw material from the earth (iron) and the forest - wood, pulp and paper (see e.g. Gårdlund 1942, Montgomery 1947, Andersson 1987, Nilsson 1989, Westlund 1992, Schön 2007). This was also the reason for the industrialization being most pronounced in the north of Sweden – along Norrland’s coastline – and in the iron belt in the middle of Sweden (Bergslagen, the Swedish rust belt). This

resulted in the growth of SMSTs that have had a lot of transformation problems during the past four to five decades. This has also resulted in a lot of studies both from a historical point of view and in an actual perspective (Aldskougius 1991, SOU 2000:36, Mönnesland, 1994, 1997, Foss et.al. 2004, Nilsson 2011). The historical development of the Swedish regional policy can also be followed in various government reports and bills (see e.g. SOU 1951:6, 1984:74, Government Bills 1970:75, 1972:111, 1984/85:115, 2001/2002:4).

In addition, from the official side the SMSTs have been studied in a lot of governmental reports as a consequence of their structural problems. Many SMSTs have been helped by the government in various support packages in order to avoid the structural crises that these towns and municipalities have gone through. It must be kept in mind that many of the SMSTs are vulnerable to external shocks as an effect of an export dependent economy and the one-sided industrial structure. Today, the government has more or less stopped trying to "rescue" these SMSTs by actions that were frequently occurring during the period from 1970 to 2000. Instead the solution seems to be to accept a transformation of these kinds of towns based on their own resources (Nilsson 1993, Hallin and Lindström 1998, SOU 2000:36, Government Bill 2001/02:4, Foss et. al. 2004, *Tillväxtverket* 201a-c).

Many of the Swedish SMSTs are former regiment cities where the economy to a great deal was dependent on a large class of officers and draftees for both population development and the local economy. During the 1990s a wave of closedowns of the regiments started with huge effects on the local economies in the regiment SMSTs. Surprisingly or not many of these small and mediums sized towns and municipalities succeeded to transform the local economy in a new way – often based on knowledge-intensive activities – such as reallocation of official authorities and founding of new universities or university colleges as compensation from the government. Some of the former military towns had not, however, the same luck – the substitution activities were not enough and/or the official priorities were downgraded.

When discussing the development of small and medium sized town it must also be kept in mind that many small local labour markets have lost their competitive power especially with respect to human capital and the negative spiral has been accentuated. "Dual Sweden revisited" is thus not the same as "black Sweden" of the 1960s and 1970s when the migratory movements were characterized by a net outflow from north to south. Instead, cut-backs in the public finances in combination with de-industrialization has resulted in out-migration and lopsided age structures in most of the Swedish local labour markets. Instead of convergence and polycentric development, the result has been an increased dualization and segmentation between differing local labour markets and regions. Even if there still are small and medium-sized polycentric regions, they have lost much of their competitive power and instead of development towards convergence based on endogenous economic growth, the opposite has in many cases been the result (Johansson 2001).

1.3 Territorial organization of local government system

Sweden has three levels of domestic government: the national level with the government and the parliament (*Riksdagen*), the regional level with the counties, the County

Administrate Board (*Länsstyrelsen*) and the County Council (*Landstinget*) and local level with the Municipal/City Executive Board (*Kommunstyrelsen*) and Municipal/City Council (*Kommunfullmäktige*) as most important governmental actors. Beside these, the European level has become increasingly important since Sweden joined the European Union in 1995. As a member of the European Union, Sweden is subject to the EU *acquis communautaire* – the accumulated legislation, legal acts and court decisions that constitute the cumulative body of European Union law. The Swedish Government represents Sweden in the European Council of Ministers, which is the EU's principal decision-making body. Some of the issues that previously were decided by the Swedish parliament (*Riksdagen*) are today decided at EU level.

The Swedish county councils and towns/municipalities are gathered in the Swedish Association of Local Authorities and Regions (SKL) in order to organize and collect information on the regional and local levels to be better prepared to take care of common interests and then also work as a lobby group. It should also be mentioned that the Swedish governmental administration consists of a lot of central government authorities that carry out laws, rules and intentions emanating from the national government or parliament.

1.3.1 The regional level

At the regional level, Sweden is today divided into 21 counties from earlier 25 in the end of the 1960s. In the end of the 1960s (1968), the office of the governor of Stockholm (A-"county", *Överståthållarämbetet*) and Stockholm's County (B-county) were joined to one county – Stockholm's county (AB-county). After 28 years, three counties in the western part of Sweden were put together in one larger county in 1996 – Västergötland's County with Gothenburg as capital. One year later, a next step was taken when the two counties in Scania (*Skåne*) were united into one big county, Skåne County (1997). These administrative reforms can be seen as a response of the changing times and increasing networking between the towns and municipalities but also as a consequences of the regional enlargement process where the functional local labour market were increasing in size and with a more intensive commuting. Many of the municipalities in the local labour markets were also localized in different counties with different administrative borders and internal rules.

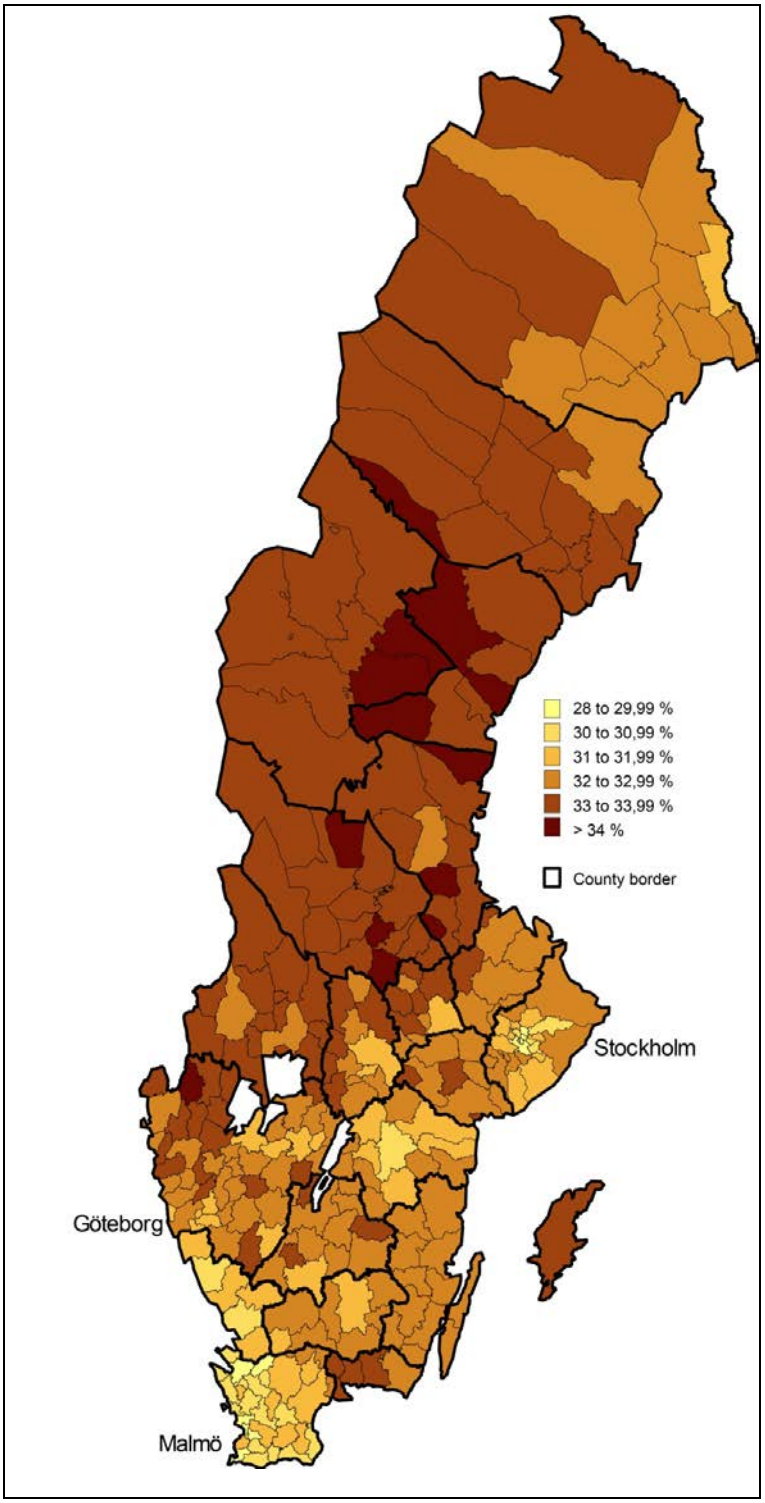
Political tasks at the regional level are undertaken by the county councils. The county councils are responsible for overseeing tasks that cannot be handled at the local level by municipalities but which rather require coordination across a larger region, mostly health care but during the past decades and in the larger counties to an increasingly degree infrastructure and traffic investments. The county councils are entitled to collect income taxes to cover their costs – i.e. county council taxes. At the regional level there are also – as mentioned above – county administrative boards that are not parliaments but government bodies for the counties in order to implement laws, regulations and policies decided at the national level. This can often create conflicts between the central and the regional levels especially then with regard to regional imbalance problems. Somewhat simplified it can be seen as a conflict between top-down (the national level) and bottom-up activities (the regional and local levels).

1.3.2 The local level

At the local level, Sweden is today divided into 290 municipalities, each with an elected assembly or council. The municipal reform 1971 reduced the number of towns and municipalities drastically. In the beginning of the 1930s (1930), the number of towns, there were 2532 country municipalities and urban districts that were reduced to a minimum level of 277 municipalities during 1977 to 1979. “Town” (*stad*) as an official term was abolished and substituted by the term “municipality” (*kommun*). Today 14 municipalities have taken back the earlier name “town”, meaning that Sweden nowadays officially consists of 14 “towns” and 276 municipalities.

Even if Sweden is sparsely populated, this means that the smallest municipalities are relatively large from a European point of view and they yield a lot of responsibilities with regard to governance and active participation – not only in everyday life activities within the communes – but also in a broader context. The small and medium sized towns/municipalities are responsible for a wide range of facilities and services including housing, roads, water supply and wastewater processing, schools, public welfare, elderly care and childcare. The municipalities are entitled to collect income taxes on individuals in order to finance the municipal activities. They also charge for various services. As a result, municipalities have significant room to manoeuvre in deciding what services they should offer and which ones to omit. They are however legally obliged to provide certain basic services such as child care, elderly care as well as primary and secondary education.

As the taxes are different in various parts of Sweden and in various municipalities, there are some compensatory transfer grants – the “Robin Hood tax” – between the municipalities in order to avoid to large differences in incomes from taxes and then also in living conditions . Municipal tax differences are visualized in Map 5 below. In general, money is transferred from the metropolitan cities and municipalities to the small ones and from the southern communes to the northern ones with the purpose to avoid too large gaps in tax incomes and in the course in living standard. One of the central goals of the Swedish regional policy is that the preconditions for life shall be about the same wherever you live in the country – a goal that, however, was not any more explicitly pronounced in the last regional government bill.



Map 5. Municipality taxes (including county council taxes) 2012. (Source: Statistics Sweden, www.scb.se)

1.3.3 Regional and local planning

Regional planning was formally and officially introduced in Sweden 1947 with the Building Act. Before that, more informal regional plans had been made in large cities – in Stockholm during the 1930s and in Gothenburg during the 1940s. During the 1950s and 1960s, some forms of official or unofficial regional planning was developed – often at county level – but it

was first in the beginning of the 1970s and with the municipal reform 1971 that regional planning was substituted by town or municipal planning. The primary reason was that the towns and municipalities then were large enough to take care of their own local plans and it was only in the metropolitan regions where regional planning still was needed and developed. It must be kept in mind that there is a dividing line between regional planning at county level and local planning at town/municipal level.

In Swedish town/municipal planning, the primary objective is to estimate the future goals and the resources that are at disposal for the realization. In short, the local planning consists of two parts – physical and economic planning. According to the Swedish law, some specific local planning is obligatory, e.g. concerning child care, housing, energy and local traffic. There are, however, not any specific and uniform rules about local planning and its content and volume. It shall also be added that in the Swedish (indicative) planning system, towns and municipalities have from a European point of view a strong position against the central and regional levels. The rules about local physical planning have more or less been unchanged since 1987 when the "Plan and Building Act" was taken by the Swedish parliament (Government Bill 1987:10). This act has now been changed and substituted by a new and more simplified one (Government Bill 2010:900).

As a consequence of the huge gap in size but also in economic resources, the Swedish municipal structure is characterized by large differences in preconditions with regard to economic development and transformation. The Swedish regional policy that earlier was focused on equalizing these differences is nowadays downgraded in the sense that it is more focused on the regions' and municipalities' own preconditions for endogenous growth. This has also resulted in a regional policy away from more transfers and towards supporting new employment opportunities with public means to mobilizing internal resources for growth and development – today called regional development policy or regional growth policy (for a more detailed and chronological presentation of the changes in the Swedish regional policy since the middle of the 1960s, see Foss et.al 2004 and various Government Reports and Bills, see the reference list). The population goal – constant regional population shares – that earlier was a cornerstone in the Swedish regional policy is now more or less only a prestige word that is used at special occasions and was not explicitly highlighted in the last regional government bill 2001/2002:4. This is partly an effect of the increased globalization and with structural transformation, accentuated out-migration from rural and remote areas, including small and medium sized towns that have lost a lot of their inhabitants. The exodus of young people – especially then, young women – from these kinds of regions and municipalities is not new but has been accentuated with ageing and skewed gender structure as one outcome. This is also valid for the four cities/municipalities (Avesta, Timrå, Östersund and Kiruna) that will be analyzed more in-depth in this case study report.

2. TERRITORIAL INDENTIFICATION OF SMSTS

2.1 Validation of the identification of SMSTS based on morphological/geomatic approach

The correct morphology and extent of SMST and HDUC polygons could be verified by visually checking each and every polygon against Google Earth/Maps background information. The initial information of very small Swedish settlements was incomplete and was updated for the whole country with the most recent information from *Lantmäteriet*, the Swedish national mapping agency as point-shapefiles. Eventually, all settlement shapefiles containing all relevant and correct information plus the municipal borders were limited to the SE-3 region for further analysis. From the originally classified SMST/HDUC-polygons, 38 polygons were considered erroneous. The proposed revision tasks are summarized in Table 5 below.

Table 5. Proposed revision of SMST/HDUC polygons

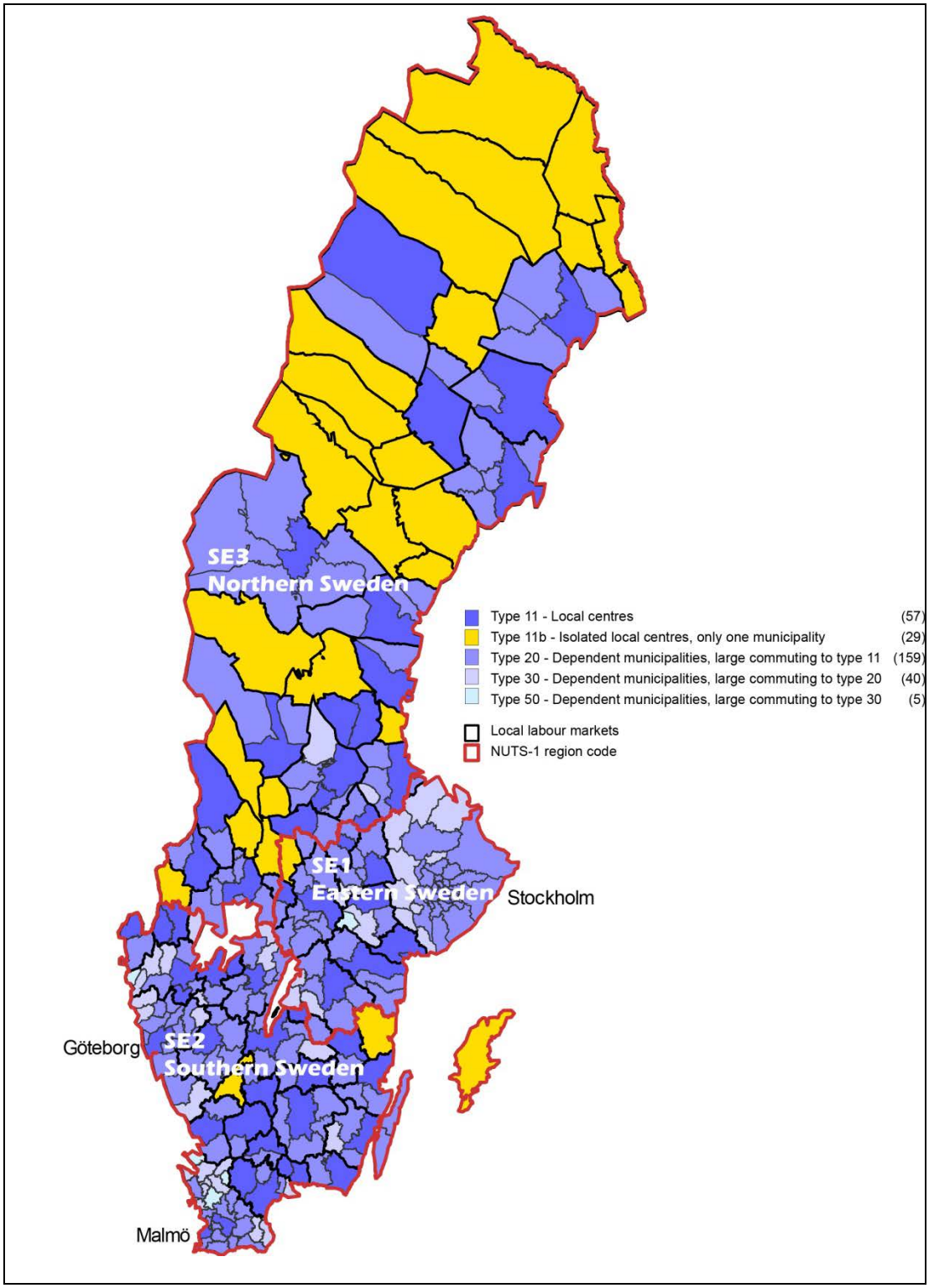
Error code	Error type	Occurrences
1	The polygon should include other contiguous grid cells	11
2	The polygon should not include some grid cells	0
3	The polygon should be joined with other polygon(s) of the same or different class	4
4	The polygon should be split in different polygons	0
5	Wrong classification	9
6	Other (often deletion of a polygon that is not part of the study area	14

From these 38 polygons, 6 proposed corrections were considered necessary and revised. No merging of SMST and HDUC was needed.

2.2 Identification of SMSTS territorial arrangements – autonomous, networked, agglomerated in large city regions

2.2.1 Functional local labour markets and microregions in the deviating Northern Sweden

The regional, functional and administrative structure for northern Sweden (SE3) is shown in Table 6 below. Northern Sweden (SE3) consists of seven counties – NUTS3 regions – and 85 towns and municipalities (LAU2) that today are integrated in 41 functional local labour market regions or microregions (LAU1). As can be seen in Map 6 below, there seems to be a connection between north-south location and municipalities per microregion. This is valid both for the whole of Sweden (SE0) as for northern Sweden (SE3).



Map 6. Local labour markets in Sweden (LAU1, N=86 in the map above) and the included 290 municipalities. (Source: Statistics Sweden, rAps, www.scb.se)

Here it must, as mentioned before, be kept in mind that the regions/counties are of various sizes with regard to population, area and population density as well as distance and accessibility. There are also signs that wide and sparsely populated counties dominated by one big town are characterized by monocentric population settlements. In the three most northern counties – Norrbotten (SE332) Västerbotten (SE331) and Jämtland (SE322) –

distances between the local centres and the peripheral municipalities are long enough to restrict and hamper daily commuting. In Norrbotten, the county capital Luleå is dominating with respect of the surrounding municipalities and four municipalities are integrated in the Luleå microregion on type 20 basis. Otherwise, all other municipalities except one are local centres of their own and they have one thing in common; they are all geographically speaking wide and sparsely populated where the majority of the inhabitants are living in built-up areas. It must be remembered that Norrbotten is one of the most urbanized counties in Sweden – at least from a statistical point of view – because the overwhelming part majority of the inhabitants are living in small but urbanized rural villages, at least according to the Swedish definition. It is only a small share of the population that lives in the rural wilderness.

Västerbotten shows a similar settlement and commuting pattern with the county capital and also the university town Umeå. Umeå is the biggest town in SE3 with 117,000 inhabitants in 2012. With its more diversified and flexible labour market, Umeå is even more dominating that Luleå is in Norrbotten. Among 14 municipalities five are dependent of Umeå for out-commuting and jobs. This indicates that the commuting flows are even more asymmetrical than they are in Norrbotten. One reason for this might be that the coastline around Umeå is more densely populated than the corresponding areas around Luleå and that distances between the municipalities in Västerbotten are shorter than they are in Norrbotten. There are also two microregions that are made up of two municipalities, respectively – Skellefteå along the Bothnia coastline and Lycksele in the interior of Norrland. The other four municipalities are small local centres of their own as the microregions consist of only one municipality along the border to Norway and far away from big local centre Umeå. Even if these four municipalities have relatively high out-migration intensities, none of them can be characterized as “dependent” of any other local centre or “link type”. Despite the smallness they are instead of link type 11 – a small but self-sufficient local centre.

Jämtland’s county consists of eight municipalities integrated in three microregions. This county is dominates by one functional local labour market – Östersund’s microregion – that is an agglomeration of six municipalities (including the local centre) as an effect of the commuting flows from the surrounding municipalities. One municipality, Strömsund, is not integrated in the microregion of Östersund despite its localization as neighbour to Östersund. The reason for this deviating pattern is that the local centre is relatively far away from Östersund, the local centre in the big microregion. This hampers out-commuting that was 16 percent in total and seven percent to Östersund, both criteria thus below the delimitation criteria even if with small margins. The other municipality that is an own local centre is Härjedalen but it is only two percent of the working part of the population in Härjedalen that commute to Östersund for work. The commuting pattern in Jämtland is, thus, a typical case where one big town dominates the commuting flows and the only hampering factor seems to be the long distances that also have negative effects on accessibility.

Västernorrland (SE321) consists of seven municipalities and four functional microregions. The structure is also here dominated by one by town – Sundsvall – that is the local centre for four municipalities (including Sundsvall). As is the case for many microregions consisting of

more than three municipalities it is one town that dominates the commuting flows both as a consequence of its size and its more diversified labour market. This is also the case with regard to Sundsvall's microregion even if towns as the factory town of Timrå and the county capital Härnösand are integrated in the microregion. The three independent municipalities are too far away from Sundsvall and not integrated in any other municipality even if they are neighbours. The highest commuting flows of these self-sufficient municipalities occur between Kramfors and the county capital Härnösand. The percentage of out-commuting from Kramfors is 16 in total and five percent toward Härnösand. If Kramfors should be linked to Härnösand, the final result should be integration in Sundsvall's functional microregion through a link type 30, i.e. the connection consists of two links and the out-commuting municipality is not connected directly with the local centre as can be seen in Table 6 below:

Table 6. Microregions and municipalities in SE3 2010. (Source: Statistics Sweden)

Microregion		**Municpality**		**Type**	**Linked to**	**%C1**	**%C2**	
Code	**Name**	**Code**	**Name**		**municipality**			
31	Torsby	1737	Torsby	11	1766	15	4	networked-d
31	Torsby	1766	Sunne	20	1737	25	8	networked-s
32	Årjäng	1765	Årjäng	11	1780	11	3	autonomous
33	Karlstad	1780	Karlstad	11	1761	18	3	LC
33	Karlstad	1781	Kristinehamn	20	1780	29	10	agglomerated
33	Karlstad	1785	Säffle	20	1780	23	7	agglomerated
33	Karlstad	1715	Kil	20	1780	56	41	agglomerated
33	Karlstad	1761	Hammarö	20	1780	67	57	agglomerated
33	Karlstad	1762	Munkfors	20	1780	27	7	
33	Karlstad	1763	Forshaga	20	1780	61	45	agglomerated
33	Karlstad	1764	Grums	20	1780	40	26	agglomerated
33	Karlstad	1492	Åmål*	30	1785	26	9	
34	Filipstad	1782	Filipstad	11	1780	20	4	agglomerated
35	Hagfors	1783	Hagfors	11	1762	18	4	
36	Arvika	1784	Arvika	11	1730	18	7	networked-s
36	Arvika	1730	Eda	20	1784	26	16	networked-s
39	Karlskoga*	1760	Storfors	20	1883	49	19	
42	Vansbro	2021	Vansbro	11	2023	18	3	autonomous
43	Malung-Sälen	2023	Malung-Sälen	11	2021	12	2	autonomous

44	Mora	2062	Mora	11	2034	17	4	autonomous
44	Mora	2034	Orsa	20	2062	45	30	
44	Mora	2039	Älvdalen	20	2062	22	11	
45	Falun-Borlänge	2082	Säter	20	2081	54	25	agglomerated
45	Falun-Borlänge	2026	Gagnef	20	2081	51	28	agglomerated
45	Falun-Borlänge	2029	Leksand	20	2081	30	7	agglomerated
45	Falun-Borlänge	2031	Rättvik	30	2029	34	8	agglomerated
45	Falun-Borlänge	2080	Falun	11	2081	22	12	LC
45	Falun-Borlänge	2081	Borlänge	11	2080	22	12	LC
46	Avesta	2084	Avesta	11	2083	18	4	autonomous
46	Avesta	2083	Hedemora	20	2084	27	6	agglomerated
47	Ludvika	2061	Smedjebacken	20	2085	46	26	agglomerated
47	Ludvika	1864	Ljusnarsberg*	20	2085	33	11	
47	Ludvika	2085	Ludvika	11	2061	15	4	autonomous
48	Ljusdal	2161	Ljusdal	11	2184	16	4	autonomous
49	Gävle	2180	Gävle	11	2181	17	7	LC
49	Gävle	0319	Älvkarleby*	20	2180	58	40	
49	Gävle	2101	Ockelbo	20	2180	39	18	
49	Gävle	2181	Sandviken	20	2180	24	16	networked-s
49	Gävle	2104	Hofors	30	2181	24	12	agglomerated
50	Söderhamn	2182	Söderhamn	11	2183	19	6	networked-s
51	Bollnäs-Ovanåker	2183	Bollnäs	11	2121	22	6	networked-s
51	Bollnäs-Ovanåker	2121	Ovanåker	11	2183	22	13	networked-s
52	Hudiksvall	2184	Hudiksvall	11	2161	13	2	autonomous
52	Hudiksvall	2132	Nordanstig	20	2184	39	23	agglomerated
53	Sundsvall	2260	Ånge	20	2281	15	8	agglomerated
53	Sundsvall	2262	Timrå	20	2281	56	48	agglomerated
53	Sundsvall	2280	Härnösand	20	2281	20	10	agglomerated
53	Sundsvall	2281	Sundsvall	11	2262	11	3	LC
54	Kramfors	2282	Kramfors	11	2280	17	5	autonomous

55	Sollefteå	2283	Sollefteå	11	2282	14	4	autonomous
56	Örnsköldsvik	2284	Örnsköldsvik	11	2480	07	1	
57	Strömsund	2313	Strömsund	11	2380	16	7	agglomerated
58	Härjedalen	2361	Härjedalen	11	2380	11	2	autonomous
59	Östersund	2380	Östersund	11	2309	11	3	LC
59	Östersund	2303	Ragunda	20	2380	22	11	
59	Östersund	2305	Bräcke	20	2380	37	19	
59	Östersund	2309	Krokom	20	2380	48	40	agglomerated
59	Östersund	2321	Åre	20	2380	22	9	agglomerated
59	Östersund	2326	Berg	20	2380	29	21	
60	Storuman	2421	Storuman	11	2481	14	4	autonomous
61	Dorotea	2425	Dorotea	11	2313	19	4	autonomous
62	Vilhelmina	2462	Vilhelmina	11	2481	17	3	autonomous
63	Åsele	2463	Åsele	11	2481	17	3	autonomous
64	Umeå	2480	Umeå	11	0180	09	1	LC
64	Umeå	2401	Nordmaling	20	2480	38	27	
64	Umeå	2403	Bjurholm	20	2480	41	19	
64	Umeå	2404	Vindeln	20	2480	27	17	
64	Umeå	2409	Robertsfors	20	2480	38	27	
64	Umeå	2460	Vännäs	20	2480	49	42	agglomerated
65	Lycksele	2418	Malå	20	2481	22	9	
65	Lycksele	2481	Lycksele	11	2480	12	3	autonomous
66	Skellefteå	2482	Skellefteå	11	2480	06	2	LC
66	Skellefteå	2417	Norsjö	20	2482	20	10	
67	Arvidsjaur	2505	Arvidsjaur	11	2506	15	3	autonomous
68	Arjeplog	2506	Arjeplog	11	2505	15	3	autonomous
68	Arjeplog	2422	Sorsele	20	2506	20	6	
69	Jokkmokk	2510	Jokkmokk	11	2523	14	4	autonomous
70	Överkalix	2513	Överkalix	11	2580	15	4	autonomous
71	Övertorneå	2518	Övertorneå	11	2580	19	5	autonomous

72	Pajala	2521	Pajala	11	2584	19	7	agglomerated
73	Gällivare	2523	Gällivare	11	2584	06	2	autonomous
74	Luleå	2580	Luleå	11	2582	11	3	LC
74	Luleå	2514	Kalix	20	2580	16	8	agglomerated
74	Luleå	2560	Älvsbyn	20	2580	26	8	agglomerated
74	Luleå	2581	Piteå	20	2580	19	12	agglomerated
74	Luleå	2582	Boden	20	2580	31	25	agglomerated
75	Haparanda	2583	Haparanda	11	2514	15	5	agglomerated
76	Kiruna	2584	Kiruna	11	2523	05	1	autonomous

* Not localized in SE3
LC – large independent city
autonomous - without any significant flows,
agglomerated - with significant flows only for themselves (share on EA population of source centre),
networked S - with significant outgoing flows also for destination centre (with significant share on its no. of jobs) and linked to this destination SMST – they are networked with SMST as source (NETW-SMST-S)
networked D - with significant incoming flow(s) from other SMST – they are networked with SMST as destination

A primary reason for this is that the municipalities are geographically wide and that there are too long distances between the central build-up areas in these peripheral municipalities. As mentioned earlier, distance is an important factor with respect to commuting possibilities between the municipalities in regions like northern Sweden. A more or less qualified guess is, however, that Sundsvall's functional microregion will be expanded by an integration of Kramfors as a link type 30 through its commuting relations to Härnösand.

Gävleborg's county (SE313) with a population concentration along the Bothnia coastline has eleven municipalities and five microregions. The largest is Gävle's functional labour market located in the southern part of the county that includes five municipalities that all are linked on type 20 basis. There are also two microregions of two municipalities each. One is a small microregion, Bollnäs-Ovanåker, which is made up of two municipalities that both can be characterized as local centres as a consequence of the symmetrical flows between them. The other is Hudiksvall's microregion that is more asymmetrical with a dominating local centre. The two remaining municipalities are both isolated local centres of their own with no connection to other municipalities according to the official commuting flows. Söderhamn, a small municipality along the Bothnia coastline is, however, very near to the upper limit for being a dependent municipality and integrated in Gävle's functional local labour market and this will doubtless happen soon if today's trends will continue. Even Ljusdal might lose its position as an isolated local centre in the future but will be included in Hudiksvall's functional microregion instead of the larger and more diversified Gävle's microregion. Even in this case, distance is thus of importance.

Dalarna (SE312) has also a skewed population distribution with the south-eastern parts relatively densely populated and the north-western part sparsely populated. This has implications for the creation of functional local labour markets as in the case of Västerbotten and Norrbotten and their western parts where the sparsely populated but geographically wide municipalities have resulted in isolated microregions with scattered population settlements with small built-up areas. Instead the more developed microregions are localized in the more densely populated south-eastern part of the county with shorter distances between the local centres. Falun-Borlänge's functional local labour market includes six municipalities where the relations between Falun and Borlänge are characterized by symmetrical commuting flows about the same size. The attractiveness of large and diversified labour markets is demonstrated by the flows from Rättvik that is integrated through a type 30 connection to Leksand through its link to Borlänge instead of being integrated with the neighbouring and larger municipality of Mora.

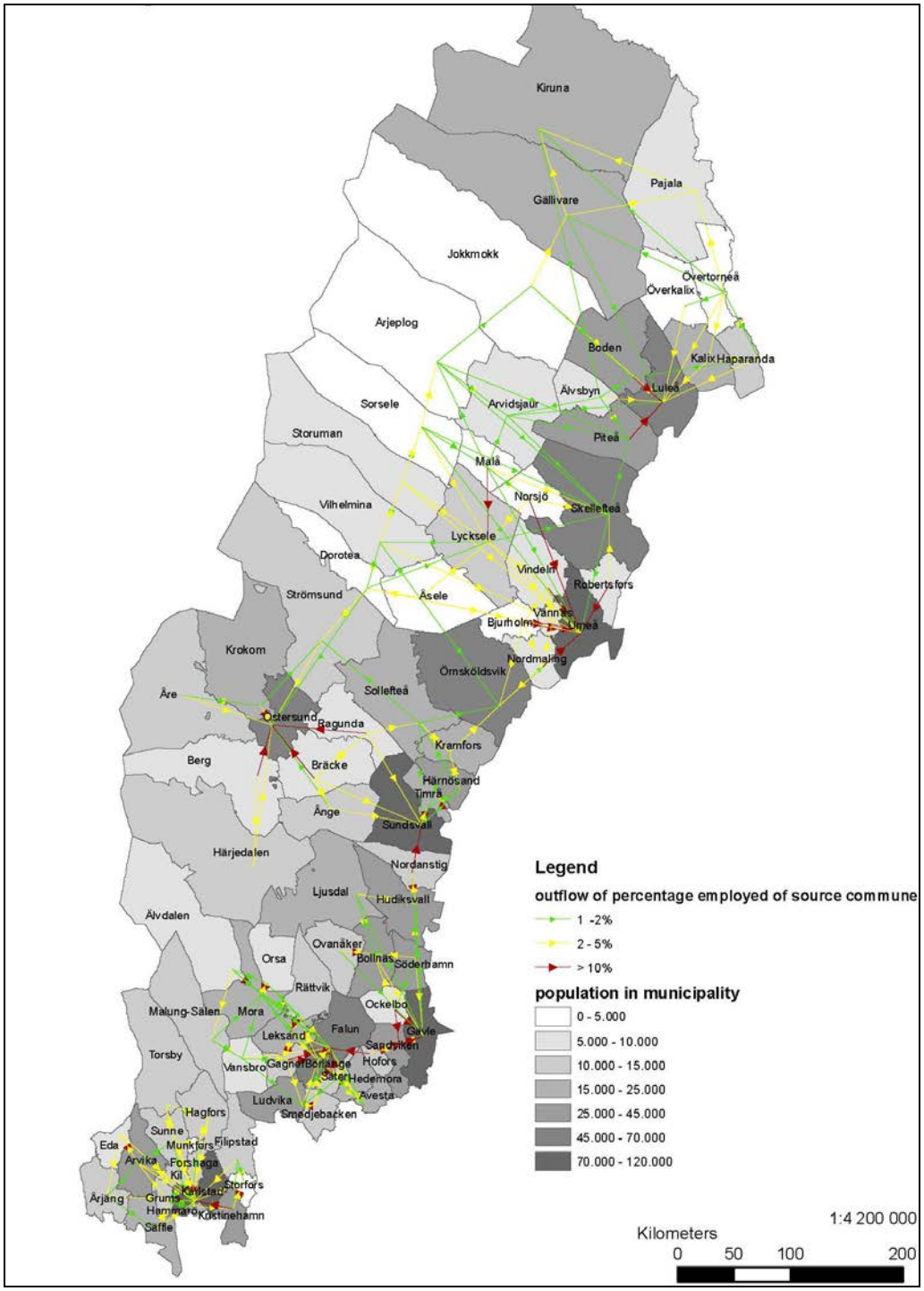
The county of Värmland (SE311) is – like south-eastern Dalarna, Gävleborg and Västernorrland – an old industrial region dominated by raw-material based industries that have gone through a de-industrialization process during the past decades. The population is concentrated in the southern part of the county and it is also here where the largest microregions are to be found. Karlstad's functional microregion is dominating with nine municipalities. Seven of these are directly linked to Karlstad (type 20 connections) and one indirectly linked (type 30 connections). Two microregions consist of two municipalities each and the remaining three are one municipality microregions. An overview of SE-3 counties and their functional labour markets is presented in Table 7 below.

Table 7. Counties, functional local labour markets (microregions) and municipalities in SE3.

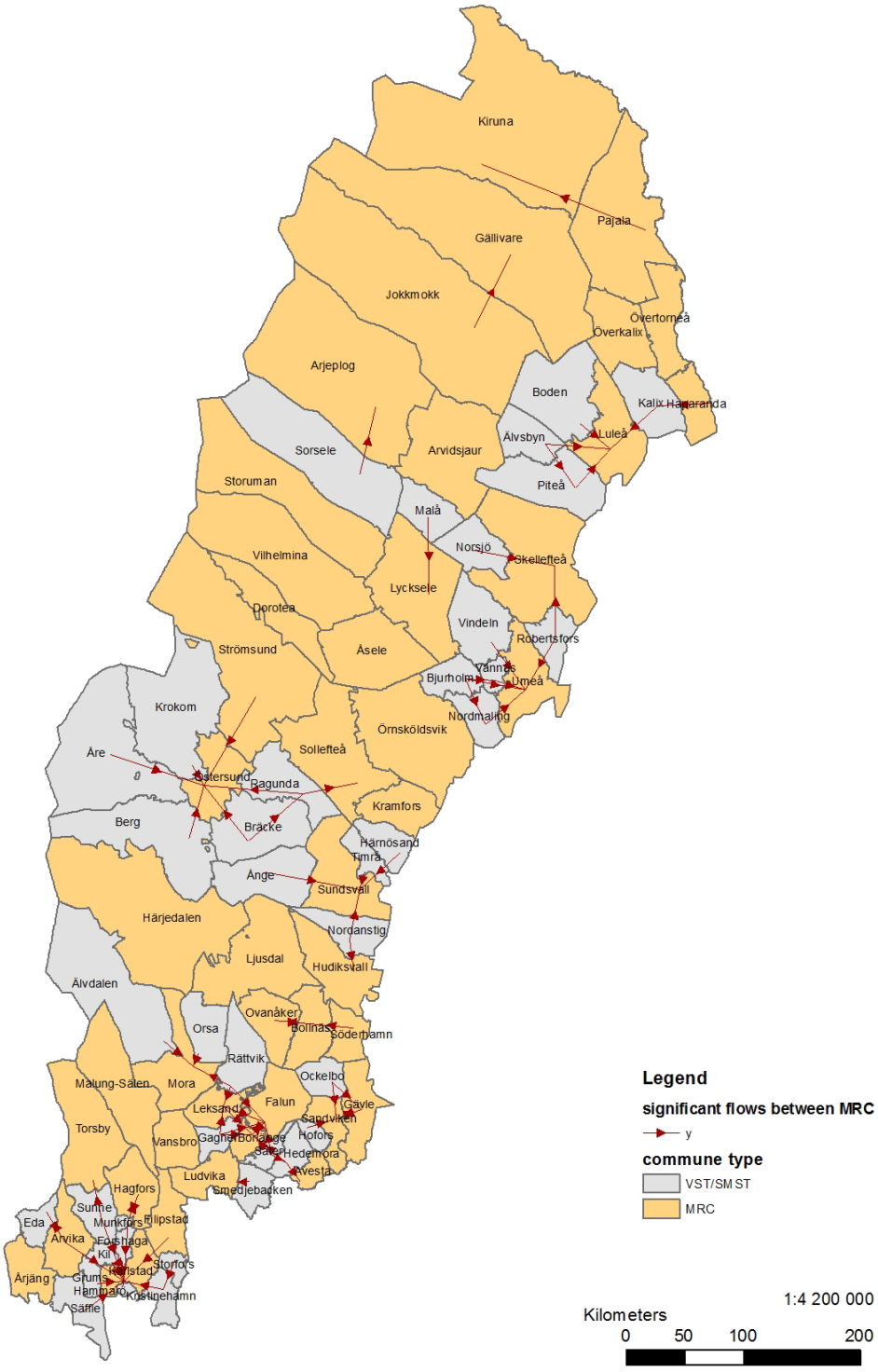
Counties (NUTS3)	Population 2012	Microregions (LAU1)	Municipalities (LAU2)	Municipalities per microregion
Norrbotten (SE332)	248,637	10	15	1,50
Västerbotten (SE331)	260,217	7	14	2,00
Jämtland (SE322)	126,201	3	8	2,67
Västernorrland (SE321)	241,981	4	7	1,75
Gävleborg (SE313)	276,637	5	11	2,20
Dalarna (SE312)	276,555	6	14	2,33
Värmland (SE311)	273,080	6	16	2,67
Northern Sweden, SE3		41	85	2,07
Sweden, SE0		76	290	3,82

The relevant commuting flows for SE-3 are visualized in Map 7 below. The flows are directed on communal level and placed for visualization purposes in the largest city or town of the commune. The flows do thus not represent the flow from cities and towns to other cities

and towns but must be seen as aggregated from the municipality as a whole. The flows are categorized in 3 classes (1-2 percent, 2-5 percent and 10 percent or higher of the active working population of the source commune). Here, both significant and insignificant flows are shown. Largest flows are displayed in red, weakest in green and medium flows in yellow. The arrow away from the commune denotes out-flow of the commune whereas an arrowhead pointed towards commune indicates inflow. As can be seen, largest commuting-flows in northern Sweden are directed away from MR (VST or SMST) towards MRCs in form of HDUCs and LCs, i.e. Umeå, Luleå, Gävle, Östersund, Falun and Karlstad. This becomes even more apparent when inspecting Map 8 that shows only the significant commuting flows in Northern Sweden. The threshold for significance is set here to 5 percent of the economically active population of the source municipality.



Map 7. Inter- and intra-microregional commuter flows in Northern Sweden (SE3) in 2011. (Source: Estimations based on data from Statistics Sweden 2013).



Map 8. Significant microregional commuter flows 2011. (Source: Estimations based on data from Statistics Sweden 2013).

2.2.2 Differing preconditions – differing outcomes

As indicated in the descriptive parts above (2.2.1 and 2.2.2), the construction of microregions in Sweden differs a lot from south to north. This is also valid also for northern Sweden (SE3). The differences are based on the differing preconditions in the establishment of functional microregions based on commuting criteria. A gravitation model approach where population size and distances are of great importance seems to be helpful in

explaining the variations in numbers of functional microregions but also labour market conditions such as diversification and flexibility might to be of importance when the growth of microregions and the amount of included dependent municipalities shall be analysed.

Table 6 above presented all municipalities and microregions 2010 both with regard to microregional centres (MRC) and integrated partners (MR). In Table 8 below, the number of employed/number of jobs in the municipalities is presented (EMPLDAY) as well as the number of employed of the inhabitants in the municipalities (EMPLNIGHT). This will give a first hint about the attractiveness and the functionality of the centres in the different microregions with regard to work and commuting. By comparing column 9 (EMPLDAY, including in-commuters) that shows how many people (including in-commuters) are employed in the MRC or MR with column 7 (EMPLNIGHT, including out-commuters) that shows how many of the inhabitants (including out-commuters) are working, a first hint about the attractiveness will be given. As indication of attractiveness of a municipality or a region, at least concerning labour market conditions and job opportunities, is if EMPLDAY is larger than EMPLNIGHT. This means that in-commuting is larger than out-commuting. The relation between EMPLDAY and EMPLNIGHT can be seen in column 10 where an index over 100 is an indication of net in-commuting to MRC or MR. As a consequence of the definitions of the MRs and MRCs where the MRCs often are a function of in-commuting from the surrounding municipalities the MRC index ought to be over 100 but the contrary is the case with regard to the MR index as a consequence of the larger out – than in-commuting flows.

It is, however, possible that MR have a higher index than MRC. This indicates that the MR is more attractive in relative terms than the MRC with respect to jobs and employment. At first, both can be out-commuting areas but the out-commuting to regions and municipalities outside the MR is bigger for MRC than for the MR totally. This means that the relation between MRC index and MR index will be less than 100 (see column 12). This might happen when people move away from declining areas that are localized in the neighbourhood of other expanding regions and localities. This can be seen in the case of Arvika MR, where the out-commuting is relatively higher than for the total out-commuting from the MR. Here it must be noticed that the closeness to Norway and its expanding economy with a lot of in-commuters from Värmland (SE311) disturbs the official commuting statistics between the regions on both sides of the border.

Another and perhaps simpler measure for the MRCs attractiveness is to construct an index that shows the relation between MRC and MR expressed in one figure. This is presented in column 12 where the MRC index is related to the MR index. Multiplied by 100, a measure of the relation between the indices is estimated. A value above 100 means that the MRC is in a better situation than the MR in total. A value below 100 is subsequently an indication that the MRC is in a worse situation than the MR. It must be kept in mind that this is only a hint about the relative competitiveness between the MRC and MR. Both MRC and MR can be attractive and expansive with indices over 100 but also – as in the case of Arvika MR – show indices below 100. It is only the relation between MRC and MR that is shown in the index. Another explanation for this phenomenon might be the demographic structure in MRC and MR in total. Elderly people in regions like Arvika MR have probably a higher tendency to commute to the MCR by tradition whereas younger people have probably a higher

propensity to commute to outside regions and then migrate (in this case to Norway); a fact that results in disturbing and unanticipated figures.

The relations between the MRC and the MR or the surrounding municipalities are based on different reasons. From Table 8, the following statements seem to have some validity for the functioning of the MRs in SE3 and the following ones are worth to be highlighted:

- The number of municipalities integrated in the MR – MRs with a large amount of municipalities are often more dependent of one big centre than MRs with only a few municipalities
- The sizes of the integrated municipalities in relation to the MRC – skewed municipality structures with regard to size and labour market diversification increase the attractiveness of the MRC
- The distance between MRC and the surrounding municipalities – long distances hamper commuting and also formation of MRs
- The attractiveness of and competition from other municipalities within as well as outside the MR as out-commuting destinations – declining MRs yield relatively more out-commuting than expanding MRs.

Table 8. Functional microregions (LAU1) consisting of more than one municipality (LAU2) in SE3 by year 2010. (Source: Estimations based on data from Statistics Sweden)

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
MR	MRC		No of LAU2	MRpop	MRC/ MR Pop %	EMPL NIGHT	MRC/ MRnight %	EMPL DAY	MRC/ MRday %	Index Day/Night	Index MRC/MR
31	Torsby	SMST	2	12,414	48,4	5,556	46,7	5,822	50,4	104,8	107,9
	MRtot			25,669		11,909		11,562		97,1	
33	Karlstad	LC	9	85,753	45,6	41,140	47,6	48,729	57,5	118,4	120,9
	MRtot			188,163		86,514		84,755		98,0	
36	Arvika	SMST	2	26,034	75,3	11,678	77,6	10,947	75,5	93,7	97,3
	MRtot			34,558		15,054		14,505		96,4	
44	Mora	SMST	3	20,153	58,8	9,594	60,5	10,240	66,2	106,7	109,3
	MRtot			34,282		15,857		15,479		97,6	
45	Falun	LC	6	56,044	36,8	27,278	37,9	27,394	38,4	100,4	101,2
45	Borlänge	LC	6	49,251	32,3	22,392	31,1	26,563	37,2	118,6	119,6
	MRtot			152,332		71,927		71,364		99,2	
46	Avesta	SMST	2	21,583	58,7	10,051	58,7	10,220	59,9	101,7	102,1

	MRtot			36,747		17,130		17,067		99,6	
47	Ludvika	SMST	3	25,810	62,3	11,596	62,5	12,354	70,6	106,5	112,9
	MRtot			41,456		18,551		17,504		94,4	
49	Gävle	LC	5	95,055	60,6	44,358	61,4	45,081	62,7	101,6	102,1
	MRtot			156,751		72,285		71,944		99,5	
51	Ovanåker	SMST	2	11,440	30,4	5,451	31,5	5,278	31,9	96,8	101,3
51	Bollnäs	SMST	2	26,248	69,6	11,880	68,5	11,286	68,1	95,0	99,4
	MRtot			37,688		17,331		16,564		95,6	
52	Hudiksvall	SMST	2	36,849	79,3	17,321	79,5	17,514	83,9	101,1	105,5
	MRtot			46,460		21,774		20,868		95,8	
53	Sundsvall	LC	4	95,732	64,5	45,867	65,9	48,836	70,2	106,5	106,6
	MRtot			148,386		69,637		69,567		99,9	
59	Östersund	LC	6	59,416	57,1	29,312	57,6	32,362	64,3	110,4	111,6
	MRtot			104,052		50,884		50,318		98,9	
64	Umeå	LC	6	115,473	79,2	57,683	80,1	59,820	84,3	103,7	105,3
	MRtot			145,783		72,028		70,936		98,5	
65	Lycksele	SMST	2	12,376	79,1	6,026	79,5	6,199	81,2	102,9	102,1
	MRtot			15,650		7,579		7,635		100,7	
66	Skellefteå	LC	2	71,641	94,3	34,521	94,6	34,138	94,9	98,9	100,3
	MRtot			75,945		36,499		35,975		98,6	
68	Arjeplog	VST	2	3,161	53,6	1,551	55,4	1,636	58,6	105,5	105,8
	MRtot			5,897		2,802		2,794		99,7	
74	Luleå	LC	5	74,178	44,3	36,159	45,1	40,342	50,8	111,6	112,7
	MRtot			167,616		80,211		79,436		99,0	

LC: 45,000 - 12,000 inhabitants
SMST: 7,500 - 45,000 inhabitants
VST: 0 – 7,500 inhabitants

As can be seen from Table 8, there seem to be some connections between MRC sizes and the amount of MR municipalities. All LCs have four or more municipalities integrated in the respective microregion except Skellefteå that consists of only two municipalities where the dependent municipality is very small (4,304 inhabitants vs. 71,641 for Skellefteå in 2010). The weak "dominance" (see the percent share in column 6) among the LCs is a misleading concept as the MRs are including several municipalities lower than the percentage. Instead it

should be interpreted in a reversed way – many links will reduce the percentage but increase the dominance and attractiveness as many municipalities are "dependent" on the function of the LCs. Attractive MRCs (often LCs with diversified labour markets) create consequently many links within the MR, a story that can be followed at least from 1970 (see below part 2.2.4).

Another distinguishing trait are the MRCs that are characterized symmetrical within one MR. With respect to the Falun-Borlänge microregion, both towns are of the same size and both the gross commuting flows and the flows between them are of the same size despite their differing economic structures. Borlänge is an old factory town while Falun is the county capital with a large administrative sector. The gross out-commuting rates are 22 percent each and the directed flows between them are 12 percent each – i.e. a more or less polycentric municipality structure with regard the commuting flows and perhaps also with respect to complementarity. One interesting thing is that the inflows from the other municipalities in the MR are particularly directed to the factory town Borlänge and not to the administrative centre Falun (see Tables 6 and 8). The growth of the microregion between 1970 and 2010 is shown in Table 9 below. During 1970 and 1980 Borlänge was an MRC in an MR entailing three municipalities. During 1990, Borlänge was linked to Falun and Falun was MRC in an MR containing six municipalities. By 2010, the picture was partly changed and the symmetrical MR was created as the size of the two-way commuting flows were changed and showed the symmetrical character of today. This can be seen as a typical illustration of the regional enlargement process when the functional local labour markets are expanding with the result that the number of local labour markets decreases alongside an increase in labour market size and integration of more and more municipalities over time.

Another MR with two MRCs is Bollnäs-Ovanåker MR that consists of only two SMSTs – Bollnäs and Ovanåker. The gross out-commuting flows are of the same relative size – even here, 22 percent each – but the directed flows differ. Out-commuting from Ovanåker to Bollnäs is 13 percent while the out-commuting from Bollnäs to Ovanåker is 6 percent. The differing sizes can be explained by the different population sizes in the two MRCs as Bollnäs is about two times larger than Ovanåker and that Ovanåker does not have the capacity to take care of the same amount of commuters as Bollnäs. In relative sizes the in-commuting shares are about the same for both MRCs. The same process as for Borlänge-Falun can be seen in Bollnäs-Ovanåker – a development from two separated MRs to one symmetrical one 2010 (see Table 9).

The development of the microregions in SE3 is presented in Table 9. The development is similar to the one for the whole of Sweden (SE0) with some minor variations. One is the number of municipalities integrated in the microregions that in generally are fewer in northern Sweden (SE3) than for the whole country (SE0). This is partly a consequence of the low population density in northern Sweden but also the long distances between the MRCs that hamper especially daily commuting. Another deviation is that the municipalities in northern Sweden are directly linked to the MRCs with two exceptions that are type 30 connections. That is Rättvik to Leksand that is in turn linked to Borlänge in Dalarna's county and Hofors linked to Sandviken that is linked to Gävle in Gävleborg's county – regions that both are relatively densely populated and not far away from large towns. A third deviation is

apparent during the 1990s when Sweden was struck by an economic crisis with a jobless growth and a slow-down in regional enlargement processes. This crisis seemed to hit northern Sweden harder – at least regarding commuting, with only one new municipality that was integrated in an MR participating in the regional enlargement process during the ten year period in the 1990s. This slow increase is in contrast to other parts of Sweden and especially in contrast to the big city regions that continue with the integration process but at somewhat lower speed. On the other hand the high rate during the first decade of the new century seems to be higher than for the rest of Sweden. If this is a function of the low level – a "starting from scratch" phenomenon – or not is difficult to give a straightforward answer to. Even in this case it seems obvious that population size and density as well as distance are of great importance in the regional enlargement process – it is the large city regions that are locomotives in this process throughout the whole of Sweden.

Another characteristic trait in northern Sweden that is different from the southern parts is that the microregions are rather monocentric which is especially obvious in the inland of SE3. Here it is only Östersund MR that differs with its six involving municipalities. This is, however, also a monocentric MR in the sense that Östersund is a magnet for all other municipalities and the commuting flows are asymmetrical and one-way directed. Many microregions are "one-town-regions" and the integration of neighbouring municipalities to "more-than-one-town" MRs is relatively more frequent in the southern parts of Sweden than they are in the northern parts. As mentioned above, one indication of the monocentric structures is that the municipalities in northern Sweden are directly linked to the MRCs with only two exceptions with type 30 links. This deviation is a function of the low population density and it is not surprising that the type 30 links are localized in a relatively densely populated area in the south-eastern part of Dalarna and the western part of Gävleborg with relatively short distances and three large towns in the MRs (Borlänge/Falun and Gävle).

Table 9. The growth of functional microregions (LAU1) consisting of more than one municipality (LAU2) in SE3, 2010. (Source: Estimations based on data from Statistics Sweden)

MR Code	MRC 2010	No of LAU2 1970	No of LAU2 1980	No of LAU2 1990	No of LAU2 2000	No of LAU2 2010
31	Torsby	1	1	1	2	2
33	Karlstad	5	5	5	6	9
36	Arvika	2	2	2	2	2
44	Mora	2	3	3	3	3
45	Falun*	1	1	6	6	6
45	Borlänge*	3	3	-	-	6
46	Avesta	1	1	1	2	2
47	Ludvika	2	2	3	3	3

49	Gävle	2	2	4	4	5
51	Ovanåker**	1	-	-	-	2
51	Bollnäs**	1	2	2	2	2
52	Hudiksvall	2	2	2	2	2
53	Sundsvall	2	2	2	2	4
59	Östersund	4	4	6	6	6
64	Umeå	5	5	6	6	6
65	Lycksele	1	1	2	2	2
66	Skellefteå	1	1	2	2	2
68	Arjeplog	1	1	1	1	2
74	Luleå	1	4	4	2	5
No. included LAU2		38	42	52	53	71

* Two separated microregions 1970, 1980. Borlänge is integrated in Falun's microregion 1990 and 2000. One symmetrical (two-way flows) microregion 2010.

** Two separated microregions 1970. Ovanåker is integrated in Bollnäs' microregion 1980, 1990 and 2000. One symmetrical (two-way flows) microregion 2010.

3. TERRITORRIAL PERFORMANCE OF SMSTS

3.1 Selection criteria and choice of sub-cases

When discussing small and medium sized towns it must be mentioned that the "town concept" is not formally accepted anymore in Sweden after the municipal reform in 1971. When "town" is used in combination with names it is more in an informal way to change the image of the municipality. Today there are fourteen municipalities that name themselves "town". As a consequence, towns and municipalities are used synonymous in Sweden. The municipality structure in Sweden with few very small municipalities but also few large metropolitan cities must also be kept in mind. Only four municipalities out of 290 had more than 200,000 inhabitants in 2012 and the smallest municipality had only 2,400 inhabitants. Almost four fifths (79 percent) of the towns were in the interval 5,000 to 50,000, an interval that was designated as limit for small and medium sized towns in the specifications from the ESPON CU. The spatial size distribution is a consequence of the municipal reform from 1971 when small municipalities were aggregated into to larger ones. For a more detailed presentation of the distinctions, see the administrative part in chapter 1. This means that the choices of four towns are all in the interval from 18,000 to 60,000, a span that consists – at least from a subjective Swedish point of view – of both small and medium-sized towns (Timrå) and relatively large ones (Östersund).

When analysing the commuting flows in Sweden it is more or less impossible to estimate them within the municipalities. This is a pity as the Swedish municipalities consist of a lot of

relatively small built-up areas often with one dominant urban centre with regard to jobs, schools, health and care institutions, shops, banks, etc. Many of the villages and built-up areas in the northern municipalities are also too large so that commuting is more or less impossible between many of the municipalities and their urban centres. Distances between the villages in the northern part of the country isolate also in many cases the villages from each other even if they are localized in the same municipality. This is a restriction regarding analysing mobility patterns in these kinds of wide areas.

The case study towns have been selected with the aim of covering a large variety of contexts and characteristics, in order to provide additional contributions to the understanding of the pan-EU analysis conducted in other ESPON/TOWN research activities. This has resulted in the choice of the following four differing towns in Northern Sweden (SE3) that differ with respect to population, size, employment opportunities and economic and social structures. Some characteristics with regard to the four Swedish case study towns are presented in Tables 10 to 14 below where some of the different traits are shown:

Kiruna, isolated and remote town in the peripheral part of northern Sweden (the county of Norrbotten, NUTS3 code: SE332) dominated by mining and one dominant big company, out-migration and population decrease;

Östersund, localized in the interior of Norrland in the county of Jämtland (NUTS3 code: SE322) and dominated by trade, small businesses and administration, today a university town, population increase;

Timrå, in the county of Västernorrland (NUTS3 code: SE321) and localized at the Bothnia Sea coastline is an old industrial town based on exports of pulp and wood products, growing unemployment, out-migration and population stagnation;

Avesta, an old industrial town in the Swedish "rust belt" in the county of Dalarna (NUTS3 code: SE312) is dominated by steel and iron works, characterized by de-industrialization, out-migration and population decrease;

Table 10. Central LA-figures for the four Swedish case study towns, from south to north. (Source: Estimations based on data from Statistics Sweden 2013).

	Pop. 2010	Pop change (%) 1970-2010	Pop density (km^2)	Area	No. of built-up areas	LA, no. of municipalities	LA, position	Out-commuting 2010 (%)
Avesta	21,583	-24	35,0	613,25	5	2	Centre	18
Timrå	17,990	+2	22,9	783,3	6	4	Linked	56
Östersund	59,416	+20	26,9	2208,31	10	6	Centre	11
Kiruna	22,944	-25	1,2	19140,33	7	1	Centre	5

Table 11. Municipality structures in the four Swedish case study towns 2010. (Source: Estimations based on data from Statistics Sweden 2013).

Avesta		%	Timrå		%
UC	Avesta	67,2	UC	Timrå	58
B-u	Fors	3,8	B-u	Bergeforsen	8,7
B-u	Horndal	5,2	B-u	Stavreviken	1,2
B-u	Nordanö	2	B-u	Söråker	12,9
B-u	Näs bruk	1	Sparsely	All others	19,2
Sparsely	All others	20,8	Total		100
Total		100			
Östersund		%	Kiruna		%
UC	Östersund	74,6	UC	Kiruna	79,1
B-u	Brunflo	6,5	B-u	Jukkasjärvi	2,4
B-u	Häggenås	0,5	B-u	Karesuando	1,3
B-u	Lit	1,8	B-u	Kuttainen	1,5
B-u	Marieby	0,4	B-u	Svappavaara	1,8
B-u	Ope	0,8	B-u	Vittangi	3,4
B-u	Optand	0,4	B-u	Övre Soppero	0,9
B-u	Orrviken	0,4	Sparsely	All others	9,6
B-u	Tandsbyn	0,6	Total		100
Sparsely	All others	86,1			
Total		100			

Table 12. Educational level (percent with tertiary education) in the four Swedish case study towns 2010, ages 20-64, year 2011. (Source: Statistics Sweden 2013).

Avesta	Timrå	Östersund	Kiruna	Sweden
22,4	25,0	39,4	26,4	37,4

Table 13. Unemployment and vacancy rates (percent) in the four Swedish case study towns 2010, ages 20-64, year 2011. (Source: Statistics Sweden 2013).

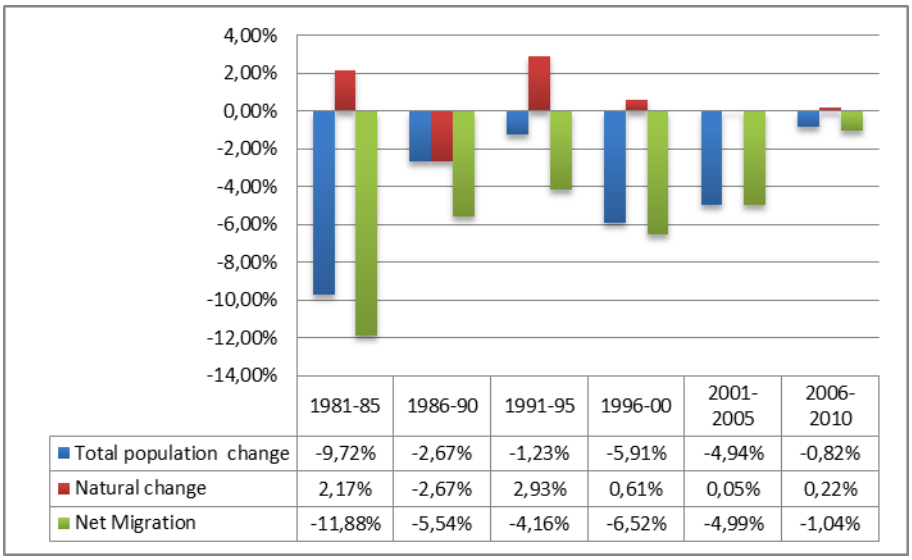
	Avesta	Timrå	Östersund	Kiruna	Sweden
Unemployment	3,8	4,6	4,2	2,5	3,8
Vacancy rates	3,6	1,5	3,2	9,9	4,8

Table 14. Municipal taxes (percent) in the four Swedish case study towns 2010, ages 20-64, year 2013. (Source: Statistics Sweden 2013).

	Avesta	Timrå	Östersund	Kiruna	Sweden
Municipality	22,44%	22,34%	22,37%	23,05%	20,62%
County council	11,16%	10,99%	10,85%	10,18%	11,11%
Total taxes	33,60%	33,33%	33,22%	33,23%	31,73%

3.2 Case study 1: Kiruna

Kiruna is an isolated town located up in the utmost northern part of Sweden (in *Norrbotten*, NUTS3 code: SE332) and the only real urban centre in the functional local labour market. Kiruna had 22,944 inhabitants in 2010 of which 18,148 were living in the urban centre (79 percent). The population has decreased since the 1980s as a consequence of long term out-migration. The built-up areas localized in the municipality are small and far away from the urban centre. The settlement structure is then characterized as monocentric with one dominant centre. This indicates a monocentric structure both within the town and with regard to the surrounding municipalities.



	1981-85	1986-90	1991-95	1996-00	2001-2005	2006-2010
Total population change	-9,72%	-2,67%	-1,23%	-5,91%	-4,94%	-0,82%
Natural change	2,17%	-2,67%	2,93%	0,61%	0,05%	0,22%
Net Migration	-11,88%	-5,54%	-4,16%	-6,52%	-4,99%	-1,04%

Figure 5. Total population change, natural change and net migration in Kiruna 1985 - 2010. Percent per period. (Source: Estimations based on data from Statistics Sweden 2013).

Kiruna's development is intimately connected to the detecting of iron and mining. Even before the great expansion in the end of the 19th century, it was known that the soil contains large amounts of iron ores but the harsh climate, bad accessibility and a high share of phosphor in the iron ores resulted in bad competitive power. The basic cast iron process - the Thomas-Gilchrist method – changed this diametrically and is an illustrative example of how a foreign innovation can influence the economic conditions of a country or region. The Swedish iron trade from better located places (e.g. *Bergslagen*) had come under increasing competitive pressure during the second half of the 19th century through different innovations (i.e. the Bessemer and Martin processes) in iron and steel production (Montgomery 1966, Schön 2007).

These led to other countries having the ability to produce steel in large quantities at low cost. The Thomas-Gilchrist method came, however, as a saviour for the Swedish iron extraction in the end of the 1870s (1878) and brought with it the ability to use ore containing phosphor, and thus a market for the previously unusable phosphor-rich ore in Norrbotten and resulted in a location shift from mid-Sweden to the northern part (Johansson 1996).

The relocation of the mining industry to Norrbotten meant, thus, that a shift occurred with respect to nation-wide mining activities, a shift somewhat reminiscent of that which affected the forest industry. Swedish ore production increased tenfold from the beginning of the 1870s until the First World War. The mining industry itself changed during this period with a shift in character from a domestic to an export industry. The construction of the "ore railway" between Luleå and Kiruna in 1888 and its extension between Kiruna and Narvik, with its ice-free harbour, facilitated export resulting in large production growth in 1903. Earlier, poor shipping ports had been an obstacle to expansion. When this problem was solved, expansion progressed very fast and the mines in Norrbotten accounted for three fourths of all Swedish ore export by the outbreak of World War I (Montgomery 1947). The rapid development of the ore fields in Norrbotten also resulted in the rise of new towns and communities in the wilderness, which were characterized by skewed age and sex structures. Despite the fact that roads were still missing, the introduction of the railroad attenuated the isolation of Kiruna to a certain degree (Theander et al., 2000; Persson and Johansson 2000). During the three first decades of the 20th century, the road network expanded and developed but the accessibility was still low as a consequence of the harsh climate and the long distances to other towns and municipalities.

The economy has since then been dependent on the mining industry and one big company (*Loussavaara-Kiirunavaara Aktiebolag*, LKAB), founded in 1890. A further dependency is connected to fluctuations in prices of raw material and especially on iron. The economy can still be characterized as an enclave economy but not as pronounced as earlier as the public local sector is a large employer – as it is in many of the towns and municipalities in SE3. Kiruna is a functional local labour market of its own and today characterized by huge long-distance in-commuting as a consequence of the good prices and high demand of iron.

The influence of LKAB on the economy and local policy can be seen by the moving of the city to new settlement areas. As a consequence of the increased demand of iron the town centre is on the move from the nowadays location to another place in order to remove the real and potential hindrances for territorial expansion of the mining activities.

The economic development based on iron mining has since the end of the 19th century also had an impact on the demographic development and structure. During the first decades of colonization at the end of the 19th century, the population development was to a large degree dependent of male in-migration from other parts of Sweden, both from Norrland and other parts of Sweden. This created a skewed gender structure that hampered the natural population development even if it has been positive at least since the 1980s. Still today there are only 88 females per 100 males in the active ages from 20 to 44. Some reasons for this skewed gender balance are the traditional male-oriented labour market and the shortage of higher education possibilities but also the macho image of Kiruna as well as

many other towns and villages in Norrland and especially then Norrland's interior (ESPON2013/SEMIGRA, 2012).

The huge out-migration from the 1980s has dropped but was still negative in 2012. One of the reasons for the slow-down in out-migration figures is the increasing importance of the immigration from abroad that has been positive since the end of the 1980s. This is not unique for Kiruna – instead many of the out-migration municipalities are dependent on immigration of people from abroad in order to keep their population rather stable (Statistics Sweden 2013, for more information about demographic development and structure, see the Appendix).

Besides immigration from abroad, most in-migrants are coming from the surrounding municipalities – Luleå, Umeå, Pajala and Gällivare. The metropolitan Stockholm is on the sixth place in order with regard to in-migration and Gothenburg is on the eighth. The corresponding figures for out-migration are Luleå, Umeå, abroad, Pajala and Stockholm. For all destinations except abroad, Kiruna shows net out-migration figures. This might perhaps be surprising as Kiruna today has a shortage of labour – at least within some segments – as a consequence of the good times within the mining industry. One way to get out of this problem has, however, been increased in-commuting on weekly basis (Statistics Sweden 2013, for more information about commuting, see the Appendix).

As mentioned earlier, Kiruna is isolated and remote and dependent on air communications and therefore it must be kept in mind that short-distance commuting in this part of Sweden must be interpreted with utmost care as all distances are more or less long distances from an ordinary commuting point of view. This has also resulted in the fact that Kiruna is the local centre of its own microregion consisting of only one municipality. In-commuting is also regarded as being "short" from the surrounding localities such as Gällivare and Pajala. This pattern corresponds only partly with the out-commuting pattern where, except Gällivare, towns like Luleå, Stockholm (very long-distance commuting, 1200 km), Umeå and Boden are among the top five rated destinations. Many of the medium and long distance commuters are weekend-commuters and the pull factor are both with regard to in- and out-migration job opportunities. With regard to in-migration, it is primarily the demand for labour in mining activities but also the high-tech and knowledge-based company Esrange Space Centre with 225 in-commuters as of 2012 among the employed. Among the out-commuters to Stockholm the more diversified labour market might be the motive for long distance commuters where one person in the household is working in Stockholm while the other one works in Kiruna.

Despite the economic crisis during the last years the unemployment rate has dropped in Kiruna and was only 60 percent of the national level in 2012 (2.3 vs. 3.7 percent for the age group from 20 to 64). The youth unemployment (ages 18-24) are, however, somewhat higher than for Sweden (4.3 vs. 4.1 per cent). The vacancies are also about two times higher in comparison to the total for Sweden (9.9 vs. 4.8 for the ages 20-64).

Despite some knowledge-based activities, the educational level is, as in many other towns with out-migration, relatively low. In 2011, the percentage of the population with tertiary education was 26.3 as compared to 37.4 for total Sweden. The level of women is considerably higher than of men, like in most parts of Swedish towns, but the skewed gender balance with a low share of women accentuates this gap with regard to the national level. This might partly be an effect of the traditional male-dominant activities of enclave economies that characterize many mining towns in Sweden as well as abroad. The peripheral and isolated localization is then not a pull-factor with regard to in-migration of highly educated people in general and females specifically.

Figure 6. Kiruna from above where the old opencast can be seen, but also the wilderness at the horizon that highlights the dual and enclave character of the town. The city is now on internal move as a consequence of the increased demand for iron and the expansion of the subterranean mining activities that is hampered by the settlement pattern of today. From the picture it can also be seen that Kiruna is a geographically isolated town with an enclave economy as a consequence of the mining since the end of the 19th century.

3.3 Case study 2: Östersund

Östersund is the centre of a large functional local labour market consisting of five linked communities (out-commuting to Östersund) and had 59,416 inhabitants in 2010 with around 44,327 people living in the central urban part (75 percent). Östersund is also centre in a geographically wide local labour market consisting of six spatially large municipalities. The settlement structure is monocentric and the commuting pattern is asymmetrical and predominantly directed to Östersund without any interconnected links. The built-up areas within the town are predominantly localized in a string along the lake *Storsjön*, the fifth largest lake in Sweden, where the overwhelming part of the inhabitants is living.

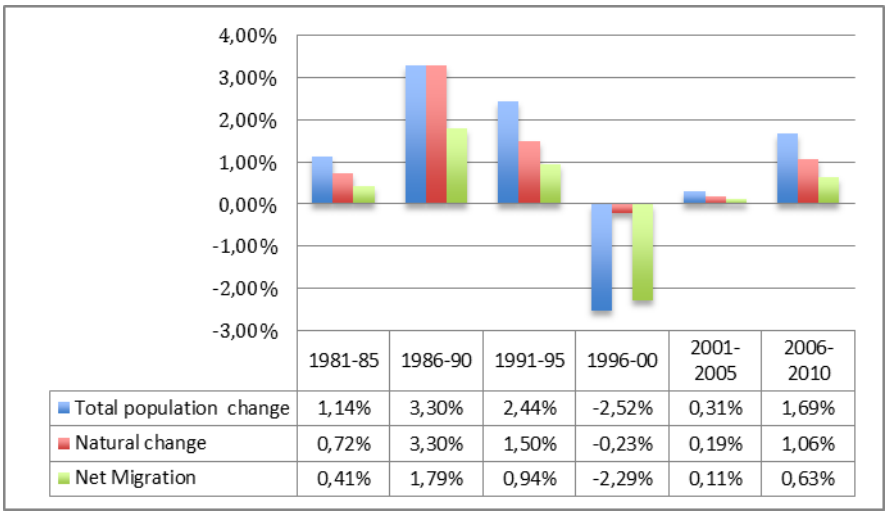
Östersund has a long history as marketplace for the surrounding farmers and artisans. The town was founded in order to create a trade monopoly for the Swedish state over the county of *Jämtland,* in order to take a share of the profits from the lucrative trade. The intention was to persuade the local farmers to deliver merchandise to middlemen in Östersund, but the population opposed this economic philosophy, and Östersund long remained small. It was not before the end of the 19th century that Östersund became a real town as a consequence of the arrival of the railroad and economic liberalization.

Like the rest of Jämtland and Norrland's inland, Östersund has from a Swedish point of view a high share of the employment in small businesses. The city is still the centre of trade and commerce and the retail trade's turnover is 30 percent higher than it ought to be, given the number of inhabitants the city has.

The economy is and has been for a long time to a large degree dependent of the public sector. Östersund was from the end of the 19th up to the end of the 20th century heavily dependent on military employment. During the 1990s, the Swedish military sector was transformed with a lot of closedowns of regiments as one result. This hurt also Östersund but as substitutes for the closedowns of the regiments the university college (*Mitthögskolan*) has been transformed to a full university (*Mittuniversitetet*, the Mid Sweden University) and a lot of public authorities were also out-localized to the town. One consequence of this was that the employment and population structure was changed as well as the commuting patterns. The population decrease was, at least partly, slowed down and the population is now increasing. The changed employment structure has also resulted in high long distance in- and out-commuting to Stockholm – in at the beginning of the week and out, at the end.

Contrary to many towns in Norrland, Östersund has experienced a small population increase during the past decades. Except for a sharp dip with regard to the net inflow of people 1996-2000, Östersund has had positive migratory balances for migratory flows but since 1996 negative domestic flows occurred that are counteracted by larger positive international flows. This is not unusual for Swedish peripheral towns nowadays. It must, however, be kept in mind that inflows of refugees create a second stream after some years when the immigrants can move freely within the country. This results in a stream from the first destination to a second one – often one of the big cities – in the second phase when the residence permit has been granted (Statistics Sweden 2013, for more information, see the Appendix).

The net inflow of people is coming from the surrounding municipalities of which many are integrated in Östersund's functional local labour market such as Krokom, Åre, Bräcke, Berg and Ragunda but even from the neighbouring municipality Strömsund the inflow is important. The net inflow from abroad is also positive and stimulates population growth in Östersund. The net balance with regard to migratory movements to metropolitan Stockholm is as in many other Swedish cases negative despite Östersund's status as a university town.



	1981-85	1986-90	1991-95	1996-00	2001-2005	2006-2010
Total population change	1,14%	3,30%	2,44%	-2,52%	0,31%	1,69%
Natural change	0,72%	3,30%	1,50%	-0,23%	0,19%	1,06%
Net Migration	0,41%	1,79%	0,94%	-2,29%	0,11%	0,63%

Figure 7. Total population change, natural change and net migration in Östersund 1985-2010. Percent per period. (Source: Estimations based on data from Statistics Sweden 2013).

Östersund is the local centre of a functional local labour market consisting of six municipalities. The in-commuting pattern is consequently dominated by flows from the surrounding municipalities that are included in the microregion – Krokom, Berg, Bräcke, Åre and Ragunda – but also other neighbouring municipalities such as Strömsund and Härjedalen, which are not integrated in Östersund's functional local labour market, have many out-commuters to Östersund.

Out-commuting shows similar patterns with some deviations. Stockholm (long distance commuting, 600 km) is the second rated out-commuting town but also Sundsvall (medium distance commuting, 180 km) and Umeå (300 km) have more in-commuters from Östersund than corresponding out-commuters. Facts that might be of importance are that all are university towns and have flexible and diversified labour markets that are attractive to many highly educated people. Sundsvall and Östersund are both partners in the Mid Sweden University that creates symmetric commuting flows.

Despite the industrial structure of Östersund with focus on small businesses and trade, the educational level has traditionally been relatively high as a consequence of the military sector and public services such as public administration and health care. Even after the closedowns of garrisons, the educational level is still higher than the Swedish average and the establishment of the latest university in Sweden might be a contributing factor. The share with tertiary education is around 40 percent – 39.4 percent in 2011 vs. 37.4 in Sweden – for the ages 20-64. As in many other municipalities in Sweden, there are more women with higher education than men. The corresponding figure for women in 2011 is as high as 45.1 percent as compared to the Swedish level of 41.2 percent.

The labour market conditions in Östersund have improved during the past decades comparing to the national situation. Unemployment and vacancy rates are now about the same as for total Sweden. The unemployment rate was 2.3 percent in 2012 – lower than the national rate that was 3.7 per cent in 2011. The vacancy rate was 9.9 percent of the

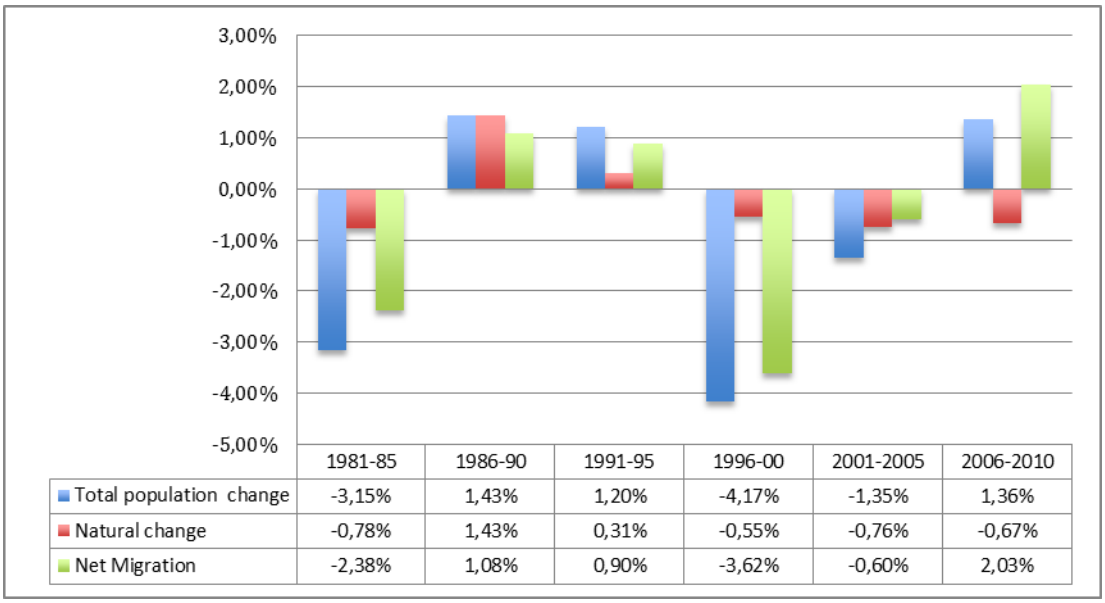
inhabitants between 20 and 64 compared to the national average of 4.8 percent. This can perhaps, at least partly, be explained by the employment structure in Östersund with a high share of employment in the public sector that is not as vulnerable to the economic crises as private businesses, including manufacturing and trade.

Figure 8. Östersund and the Town Hall (to the left) and the main building of the Mid Sweden University (to the right). The magnificent building to the left can be seen as a result of the great plans (and dreams) from the beginning of the 20th century about the town's future development. The building to the right is a good example of successful transformation of Östersund from a garrison to a university town and localization of many public agencies with a lot of highly educated employees.

3.4 Case study 3: Timrå

During the past decades, Timrå has experienced – as many other towns in Northern Sweden – net internal out-migration. This has also had an impact on natural population change since especially women in the age of 20 to 30 are moving out and this in combination with fertility rates below the reproduction level has resulted in negative natural population changes since the mid-1990s. However and despite the net out-migration, Timrå has had a total migratory net surplus due to positive immigration from abroad and during the last years.

The migration patterns with regard to origin and destination are typical for a town like Timrå. The old truth that migration is dependent of size and distance is valid even for Timrå. The exception is, as for all other towns, immigration from abroad that is dependent of laws and rules as well as priorities and family/social networks. Immigration from abroad also shows the second largest in-flows to Timrå in 2012. The largest flow (both in- and out-flows) is directed towards and from the county capital and local centre Sundsvall – a fact that is not surprising as Sundsvall is much bigger than Timrå.



	1981-85	1986-90	1991-95	1996-00	2001-2005	2006-2010
Total population change	-3,15%	1,43%	1,20%	-4,17%	-1,35%	1,36%
Natural change	-0,78%	1,43%	0,31%	-0,55%	-0,76%	-0,67%
Net Migration	-2,38%	1,08%	0,90%	-3,62%	-0,60%	2,03%

Figure 9. Total population change, natural change and net migration in Timrå 1985-2010. Percent per period. (Source: Estimations based on data from Statistics Sweden 2013).

Timrå is a town located between several other towns in the county of *Västernorrland* (NUTS3 code: SE321) with 17,990 inhabitants of which 10,443 (58 percent) lived in the central urban part (2010). Timrå is not a local labour market of its own but integrated in Sundsvall's geographically large, but for northern Sweden, relatively polycentric functional local labour market consisting of four municipalities despite its dependency of the raw-material based industries and the commuting dominance of Sundsvall. It can be highlighted that three of the municipalities – including the county capital Sundsvall – are localized along the Bothnia coastline.

It was, thus, in this district that the export-based industrialization started in the middle of the 19th century based on the wood industries that still to a large degree characterize the settlement pattern. The industrial district of *Västernorrland* is also associated with the "industrial revolution" in Sweden during the end of the 19th century that was based on export of wood and pulp. Timrå and the county's economy are both still based on forest industries. The timber was transported through the rivers and streams to their destination on the coastline in the southern part of the Gulf of Bothnia, especially after the innovation of the steam sawmill. This resulted in clusters of export based industries and in-migration from other parts of Sweden, especially from the surrounding areas. This caused a rapid urbanization along the coastline and the working class was growing fast, socially as well as politically. This has characterized the region since the end of the 19th century economically, socially and politically with strike**s** and conflicts as central occurrences. The expansion in the Swedish raw-material based industries during the past decades has, however, more or less been synonymous with jobless growth – good profits but negligible or small employment increases.

The labour market structure with a lot of people working in the goods-producing sector has also an impact on the educational level of the labour force. As can be expected, the

percentage of people with tertiary education is lower than the Swedish average. The share with tertiary education was 25 percent in 2011 compared to the national level of 37.4 percent.

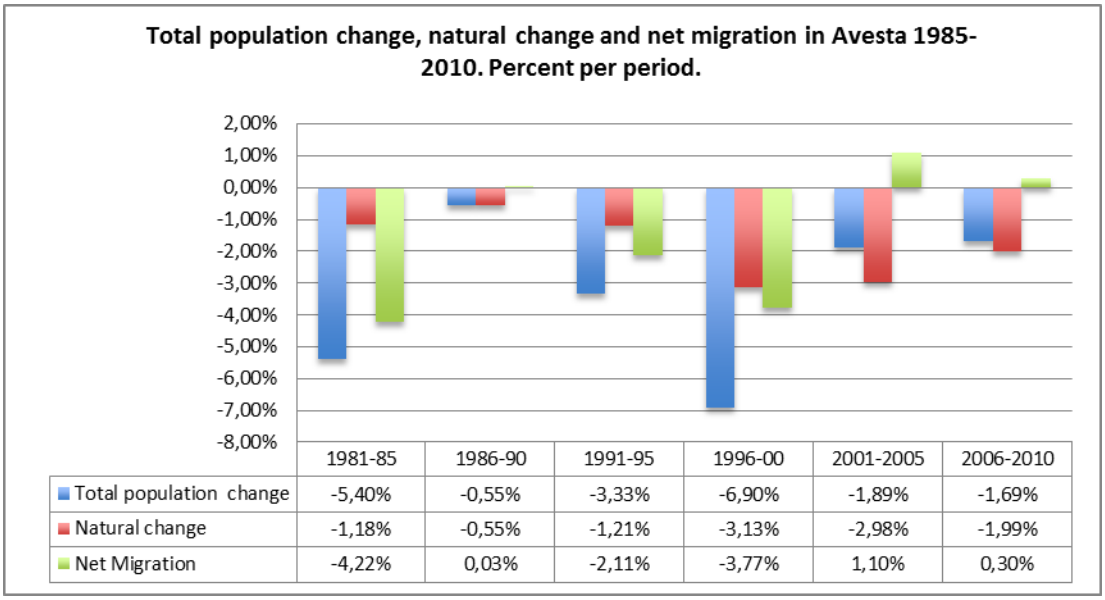
Like many other towns in Sweden that have a high share of inhabitants in the manufacturing industry, Timrå is vulnerable to business cycle fluctuations even if the concept "jobless growth" indicates that it has reduced the impact on short term unemployment rates and vacancies. As Timrå is integrated in Sundsvall's functional local labour market (microregion), the job alternatives by commuting are better today than before. Still, the unemployment rate has been higher in Timrå compared to Sweden in total since the end of the 1990s. The gap compared to the national level has, however, diminished and was in 2011 only 3.9 percent (3.6 for Sweden). The vacancy rate for the inhabitants in the age group 20 to 64 was three times higher for Sweden than for Timrå in 2011 – 4.8 percent for Sweden vs. 1.5 percent for Timrå. But as indicated above, Sundsvall's functional local labour market with its more diversified and flexible labour market with a high share of highly educated people has a higher vacancy rate than Timrå. This means that there are job possibilities for the inhabitants of Timrå in the neighbouring town if they choose to commute.

The commuting patterns are also characterized by Timrå's functional role as linked to another larger urban centre – Sundsvall – that dominates the functional labour market with its larger and more diversified supply of jobs and both in- and out-commuting in comparison to Timrå. Despite the neighbouring town Sundsvall, the flows to other towns are small. This also applies to towns like Härnösand – the county capital – and the big towns of Stockholm and Umeå, whose importance as commuting partners is very small. This indicates that Timrå is dependent on Sundsvall both for recruiting labour and for the inhabitants to find jobs. Here it must be mentioned that Sundsvall and Timrå are very closely integrated with each other concerning labour market topics and the fact that the distance between the two cities is short ought to hinder many out-moves to Sundsvall.

Figure 10. Östrand's capital-intensive and high-tech pulp mill in Timrå is one of the biggest employers in Timrå, owned by the big company SCA, one of the biggest companies in Sweden. The industrial structure and companies like this with capital-intensive and high-tech industries is one of the reasons behind the high productivity of the industry in the Västernorrland County.

3.5 Case study 4: Avesta

Avesta is a town located in the county of *Dalarna* (Dalecarlia, NUTS3 code: SE312) with 21,583 inhabitants 2010 of which 14,506 were living in the central part of the town (67 percent). Avesta is localized in a relatively densely populated region and is the local centre in a functional local labour market (microregion) consisting of old built-up areas often based on raw-material industries in *Bergslagen*, the Swedish rust belt. Avesta is still a typical industrial town dominated by a few big companies within the raw-material based industry with the steelworks as largest private employer and with in-migration from the surrounding municipalities and settlements. This has, however, not stopped the population decrease of the town as can be seen in Figure 11 below. Instead, out-migration has for a long time been the prime driving force behind the population losses even if the picture has been somewhat changed during the last decade as a consequence of increased refugee immigration, a situation that is not unusual in small and medium-sized towns in the northern part of Sweden. The earlier out-migration has like other out-migration municipalities decreased the reproduction potential with negative effects on natural population change.



	1981-85	1986-90	1991-95	1996-00	2001-2005	2006-2010
Total population change	-5,40%	-0,55%	-3,33%	-6,90%	-1,89%	-1,69%
Natural change	-1,18%	-0,55%	-1,21%	-3,13%	-2,98%	-1,99%
Net Migration	-4,22%	0,03%	-2,11%	-3,77%	1,10%	0,30%

Figure 11. Total population change, natural change and net migration in Avesta 1985-2010. Percent per period. (Source: Estimations based on data from Statistics Sweden 2013).

Already in the Middle Ages a blast furnace was founded in a place that was nowadays Avesta. In 1636, the construction of a giant copper mine was begun near the rapids in Avesta. The town Avesta received partial town privileges in 1641 under the city of Falun, and in 1644 a copper mint was built. Copper coins were continued to be minted until 1831 and the copper works were in function until 1869.

The town is, thus, already from the beginning localized in the Swedish "rust belt" (*Bergslagen*), an early industrial district and known for steel works and earlier also iron mines and iron works. As almost all of the "old" industrial towns Avesta has experienced a de-industrialization process since the 1970s with closedowns and high structural unemployment, out-migration and population losses as results. Many old mines and iron works are today tourist attractions in Avesta as well as in the neighbouring municipalities even if Avesta Iron works still is the dominant private employer.

Despite the dependency on one big raw-material based company, the unemployment rate is not higher than it is for the Swedish average – in, 2011 the rate was 3.3 percent for Avesta but 3.6 for Sweden. The vacancy rate was, however, somewhat higher for Sweden than for Avesta – 4.8 percent vs. 3.6 percent for the inhabitants in the age group 20 to 64. The high share of employed in goods-producing activities has also had an impact on the education level among the people in the ages from 20 to 64. Only 22.4 percent of them have tertiary education, a low level compared to the Swedish national level that was with 37.4 percent in 2011 considerably higher.

Despite the relatively low unemployment rates, Avesta has – as many towns in the Swedish "rust belt" – experienced internal out-migration and population decreases since quite a long time (at least since the beginning of the 1970s). The negative effects of internal out-migration have, however, decreased by increased immigration from abroad. The population decrease since the beginning of the new century is instead an effect of the negative natural

population change, an effect of the combination of out-migration of young females and fertility rates below the reproduction level. The effects of out-migration of relatively young females can be seen in the skewed gender structure in the ages 20-44 – 13.1 percent vs. the national level of 16 percent in 2012.

The migration patterns concerning origin and destination are analogous to other towns in a similar situation. The largest "origin" is from abroad but also from Hedemora that is integrated in the microregion. Apart from Stockholm, in-migration to Avesta comes originates from Avesta's surrounding municipalities. Concerning out-migration, the distribution is flatter and to other counties almost non-existent. Instead the largest flow is directed to Hedemora and thereafter to Stockholm.

Avesta's functional local labour market consists of only two municipalities – Avesta as local centre and Hedemora linked to the neighbouring Avesta as an effect of the commuting patterns. Hedemora is thus the municipality with the most frequent in- and out commuting with regard to Avesta. Other towns and municipalities with many in-commuters to Avesta are Norberg, Sala, Säter and Fagersta. Concerning out-commuting Hedemora, Borlänge, Fagersta, Falun and Stockholm (long-distance commuting) have the largest out-commuting flows. Of these, Borlänge and Falun are relatively large towns and Stockholm is the largest city in Sweden. All of them are characterized by flexible and diversified female-friendly local labour markets with large service sectors. This results in, as indicated above, that the functional labour markets surrounding Avesta might reduce the effects of the more vulnerable labour market of Avesta itself.

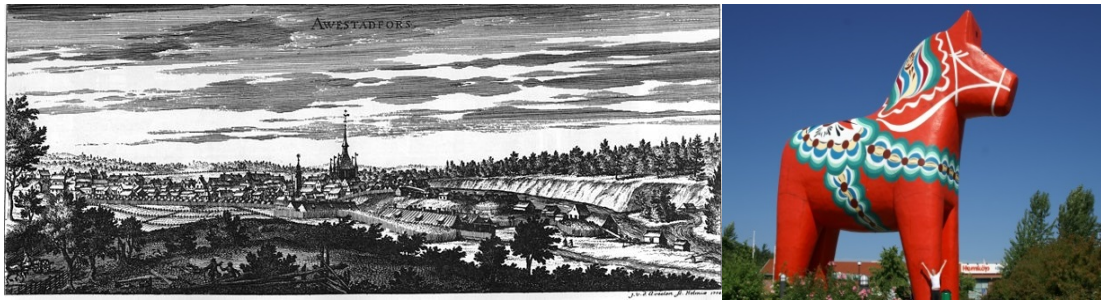


Figure 12. Avesta and the Copper Valley (*Koppardalen*) during the 17th century (to the left) and the biggest 'Dalecarlia Horse' in the World (to the right). The 'Dalecarlia Horse' is a tourist symbol of the county of Dalarna (Dalecarlia) and placed in the southern entry to Avesta

Additional information in form of figures and tables for each case can be found study in the Appendix.

4. POLICY ANALYSIS

The analysis of development policies is based on interviews with stakeholders from the private sectors of commerce and industry as well as official secretaries and representatives. Eleven interviews were conducted and the most important findings summarized for each case study, respectively.

4.1 Policy aspects of case study 1: Kiruna

Three persons could be interviewed for the case study Kiruna, a production director within the trade and industry sector, a municipal strategist and the secretary of trade and industry.

4.1.1 Strengths and weaknesses

The most important industry in Kiruna is based on ore. The occurrence of ore made Kiruna what it is today, but since there are no infinite ore reserves, the development will at some point shift towards another direction. This is considered both a chance and a threat to Kiruna's economy and future development. Due to Kiruna's closeness to unspoilt Swedish nature, the development of tourism could be one alternative for the future. Furthermore, the continuous development of the European Space and Sounding Rocket Range (ESRANGE) could play a major factor for Kiruna's position in research and technology development. The remote location of Kiruna is also considered a disadvantage in terms of communications and infrastructure. Ore transportation and commuting could be improved and new and faster railroad and air traffic connections and further road network development would be beneficent for the region. A high amount of education, low crime rates and closeness to nature are factors that make Kiruna a city with a high living quality. Changing political coalitions and differing opinions seem to make decisions about the future direction of Kiruna's development tedious.

4.1.2 Business development and economic crisis

Kiruna and LKAB, the largest company in the region have increased their competitive edge due to an international market. The recent economic crisis has not affected Kiruna. If LKAB performs well, the city and region prosper simultaneously. This is positive as long as the economic situation is well; the question is what would happen if LKAB's economy would decrease substantially – alternatives could be a further development and strengthening of the tourism sector of the aerospace industry. Local businesses are advised to improve on customer research especially outside Kiruna, the region and beyond. A diversification of the business climate is needed by not only focussing on LKAB as single customer, but by expanding the customer market.

4.1.3 Policy work, programmes and projects

The biggest challenge Kiruna has to face today is that parts of the old town have to be relocated as a result of intensive mining in the area that left the ground unstable. While doing so, the expansion of the touristic sector and the aerospace industry is planned, thus breaking down LKAB's whole economic responsibility into shares. The moving of the city raises also questions of house pricing. Since a lot of people need to find new

accommodation, one difficulty lies in keeping housing prices reasonable. A skewed gender distribution (too little women working and living in Kiruna) is another issue that needs to be resolved.

The joint visionary project Kiruna 2.0 is since February 2012 trying to find solutions for the abovementioned challenges related to the relocation process and for the difficulties in the future development of Kiruna. Kiruna 2.0 can be described as a project aiming at developing a proper vision that will serve as a basis for a strategic management model. Through the relocation of Kiruna, several policy partners are involved simultaneously, both on local, regional and national level. Funding in terms of budget and manpower happens at a national level (through taxes). EU-grants and funding are at a low level. In the Kiruna local government, it is preferred that Kiruna does not apply for EU-grants and funding vehicles as much as Kiruna could. Apart from Kiruna 2.0 there is a "Democracy project" run by the local inhabitants together with the local business community. Other projects are neglected or on hold at the moment until the relocation issue is resolved.

4.1.4 Kiruna's functional role

The strongest function that Kiruna has in a nationwide context is its economic power through the mining industry. Low unemployment rates and a lot of in-commuters are an indicator of Kiruna as economic engine in the region. Tourism in Kiruna that makes up 50% of all tourism in the region and the aerospace industry are named as secondary functions. Furthermore, Kiruna fulfils a trading function with Norway (Narvik). Health care, emergency services and transport and communications are functions that are considered to be in need of improvement. In order to maintain Kiruna's functional role, new construction (that is progressing too slowly and started too late) should transform Kiruna into the most attractive city in the northern region. Apart from buildings, better communications and a hospitality industry are advised. Communications and tourism are considered underdeveloped in comparison to the Finnish neighbours. Further development in the mountain regions is advised although this is problematic since a conflict of resources hinders undisturbed development there (i.e. through mining and reindeer industries, railways, Natura 2000 protected areas and different military and national areas of interest).

4.1.5 Partnership arrangements

A plethora of business partnerships exists nowadays in Kiruna that can be retraced to the strong coupling between mining and industry. Historically, industry and government had often been working with no partnership at all for years. Examples for partnerships nowadays are a Communications board, a Space Assembly, Progressum, Företagarna in Kiruna, Kiruna/Lapland as local contractor that operates the tourist office and a steering council together with LKAB.

4.1.6 The role of regional/sub-regional and national coordination

The coordination role is huge since the relocation and urban transformation require the interaction of both local, regional and national stakeholders and authorities. The County Council is the main partner for Kiruna´s development. There is a regional development strategy and an inter-municipal training centre, combined with the corporate education for business. One local planning network is the "*Malmfältsgruppen*", where politicians and

officials meet to discuss the future of mining. What is at the moment direly needed in the relocation process is a regional planning level that is proactive.

4.2 Policy aspects of case study 2: Östersund

Three persons were interviewed regarding their views on the development and policies of Östersund – the chief executive officer, the communications manager and the business manager.

4.2.1 Strengths and weaknesses

Östersund's strengths lie in its geographical location with a lot of snowy winter days. This gives Östersund a competitive advantage in terms of outdoor recreational activities, major sports events and the World Cup premiere in biathlon as example. Research at Mitt University is conducted to enhance winter sports performances. Another advantage is that Östersund is a so-called main town for a large surrounding area with a large infrastructure to serve the surrounding VSTs and settlements. The closeness to Norway is an advantage since (rich) Norwegian tourists visit Östersund on a regular basis. Another advantage is the municipal support Östersund receives. There are close connections to people in the government at a local level. Östersund has a clean environment, clean fresh water and clean air through the absence of large industries, resulting in a healthy environment with a high living quality.

Unfortunately, Östersund's location has the disadvantage of being at the back of large-scale infrastructure corridors. Infrastructural cross connections are hard to find in the region. Furthermore, Östersund is a distinctly small business city with no economic backbone for investments in the city although the city has a stable economy. Another weakness is that Östersund has a very small local market. This might work for smaller businesses, but there is a lack of larger companies that extend their influence over the municipal borders. A further disadvantage that could be identified is the fact that infrastructure projects take a long time, encouraging people to still use their cars and that in turn has negative effects on the environment.

4.2.2 Policy work, programmes and projects

Policy is generally driven by a vision of Östersund being a sustainable city in economic, ecological and political terms. These aspects influence all political discussions and decisions. A new growth programme is currently developed based on these three pillars. However, not everyone shares this vision as e.g. the tourism industry, which bought 51% of the Östersund tourist agency from the municipality; follows another approach with its own vision. "It all starts from home".

The main objective is to generate growth in Östersund. One specific strategic goal is to increase Östersund's population to 65,000 in 2020. In order to achieve that goal, a growth program has been developed which is the main directorial document in Östersund but also for the whole municipality (*Tillväxtprogrammet*). In addition, there is an action programme that describes how everything should be performed in the organization. Another programme is being forged at the moment that aims at connecting the ideology behind the growth programme to the action plan. Furthermore, a new orientation plan is being

developed that contains three main areas: business development, housing and infrastructure.

Funding for Östersund's vision comes predominately from various infrastructural EU applications. Östersund applies for a lot of EU-funded vehicles, e.g. "Peak Innovation", "Wind Power Center", Tourism Projects and "SÖT (Sundsvall, Östersund, Trondheim)" and a lot of effort is put into understanding EU-systems to acquire further funding. Additionally, Östersund is also receiving regional funding. Apart from those two sources, competence and expertise are considered as the important resources for future development.

4.2.3 Business development and economic crisis

Overall, Östersund has increased its competitiveness. Various agencies are creating more contacts than before and the municipality has created a business office to shorten distances between businesses and the local government. Östersund has not been affected substantially by the economic crisis.

4.2.4 Östersund's functional role

The functional role that Östersund plays is huge in all aspects since there are no larger cities in the vicinity due to Östersund's remote location in the hinterland of Norrland. All services and trading, university, hospital, airport, high school etc. are located in Östersund. Half of Jämtland's population is living in Östersund municipality and the city is big enough to be self-sufficient. The municipality is willing to invest and attract new businesses to ensure the maintenance of Östersund's functional role.

4.2.5 Principal policy instruments

The main policy instrument is the growth program with associated priorities and action plans. This growth program came to be via a situational analysis, dialogues with local government and industry, identifying the success factors and action points, democratic decisions and documents that resulted in a plan of action with different projects for each priority area.

4.2.6 Businesses and local policy networks

Thanks to off position in Sweden and the relatively small size, there are close connections within the city between organizations, business and government. Essentially, the Regional Council and the County Board have a strong position and are interacting partners. Another network can be seen in the Mid Sweden University that is the link between research and business, especially with the winter sports centre. These interactions constitute the Östersund spirit that is a strong cooperative relationship.

4.2.7 Partnership arrangements

Due to the remote location, a strong cooperation within Östersund is needed to solve all issues and to be competitive. One particular partnership is between the Mid Sweden Science Park in form of a "Quatro Helix" association involving the business community, regional councils, university and sports. Furthermore, Östersund is a hub between eight different communities that have common areas of interest. One such example is wind power, where seven of the eight municipalities are regionally involved. Another partnership exists in the

tourist industry with a company called "*Destination Östersund*". Still, it is believed that the acquisition of further partners is important.

4.2.8 The role of regional/sub-regional and national coordination

Infrastructural issues are resolved and coordinated on a national level, i.e. the renovation of the road and railroad networks. Apart from a national level, regional planning for infrastructure is needed as well. The coordination at different levels plays a very big role for Östersund. In general, it is very rare for a municipality to act on its own way. Regional coordination plays a major role bearing the geographical location in mind. Apparently, there is a lot of networking with many interested participants.

4.3 Policy aspects of case study 3: Timrå

Three persons were interviewed for the Timrå case study, the senior vice president of global support for business, trade and industry, a business sector manager at municipal level and a municipal governor.

4.3.1 Strengths and weaknesses

According to one interviewee, Timrå has a good location in terms of infrastructure, i.e. an airport, port, rail and highway, so it could be called a four cross of communication and infrastructure. According to another participant in the interviews, the infrastructure has been described as "lousy", resulting in difficulties to fully exploit the region and hampering of travel and recruitment. The geographical location of Timrå can be considered an advantage in terms of logistics according to the third interviewee. All transportation modes are represented as mentioned above. Another advantage is considered the close distance to Birsta city. Furthermore, Timrå has stable tax revenues in the region and increasing housing prices. Despite all the advantages identified above, Timrå is considered in comparison to other cities in the region to lack behind, both in economy and development.

4.3.2 Policy work, programmes and projects

Timrå has a well-defined growth vision with the development of Timrå as Norrland's best business region until 2015 as the ultimate goal. The main objective is to achieve a population increase up to 18,500 residents until 2015. Currently, the Swedish business ranking rates Timrå on the 2nd place and the population is stable. Short term goals are described as a development to more profitable businesses, to boost population growth and the development of more living space. The most important resource in realization of programmes and policy measures are accomplished entrepreneurs. Their ideas and willingness to progress grow alongside with capital as most important factors. People in Timrå are described as positive and see the opportunities and companies line up for the local government and industry. Work is conducted transparently and cooperation is preferred over competition. The most important resources are considered cooperation and commitment. Basic financial funding comes always form the municipality so Timrå is independent on external funding, although there are EU funds and some investment from the county level. Essentially, the local efforts from the people in the municipality are considered most important

4.3.3 Business development and economic crisis

The business climate has probably become slightly better. The financial crisis could not be felt so much since Timrå has an industry independent of economic cycles. The municipality is aware of changes and is willing to help in the resolution of issues.

4.3.4 Timrå's functional role

Initially, Timrå was a manufacturing town with a background in early industrialism and one of Sweden's oldest industrial towns. Modern Timrå has switched to modern manufacturing, which demands good communications and logistics. Compared to Sundsvall, it could be said that both cities complement each other as Sundsvall has a large public sector as opposed to the industrial character of Timrå. Timrå can be described as economic and infrastructural hub in the region according to one interviewee. A strong business environment is accompanied by a growing amount of private companies. Another opinion is that Timrå plays sadly enough a negligible role in the region since everything is located in Sundsvall, located about ten kilometres away. The only advantage would be the airport. To maintain the little functional role of Timrå is a difficult task since Timrå is not believed to withstand the competition in the region.

4.3.5 Principal policy instruments

Timrå's best instrument is a combination of long-term work with patience and persistence. A long-term perspective is the key to success. It is essential to determine towards which goals the development should be directed and the same goals were pursued within the municipality since 2003. Combined with short communication lines, quick response and dialogue with community groups, businesses and ambitious persistence were successful. In the light of developing the region into Sweden's most attractive business region, investments are made to ensure a high level of service to entrepreneurs, combined with availability, dialogue and openness.

4.3.6 The role of local businesses

The direction of local business should focus on expanding their market outside Timrå. The small businesses need to come out of the shadow that Sundsvall casts over the region.

4.3.7 Businesses and local policy networks

At the local level, there are different cross-sector partnerships. There are close communication links with the business world. Decisions are taken quickly to meet the requirements from a rapid business world (time is money). One key regional partner is the department of economic growth, the *Tillväxtverket*. Timrå municipality puts in a lot of work to improve the business environment. The goal is to develop to best business climate in Sweden. The main network that business, trade and industry have towards the municipality is called *Näringslivsforum*. No principal requirements for strategic partnerships are set. Instead, focus is set on the operational cooperation. This means, that the economic situation is constantly analysed to promote effective collaboration between the municipality and the region.

4.3.8 Partnership arrangements

Historically, Timrå had to take care of itself and work for the community has always been considered important – the local partnership strategy became the key for the survival of Timrå. The main idea is to erase unemployment and together set the focus on one direction of development. Timrå has an intimate, open and close cooperation with business and industry based on constructive dialogues.

4.3.9 The role of regional/sub-regional and national coordination

According to one interviewee, all levels of coordination are considered important for the city, in particular when synergetic effects are desired. The local coordination is considered to always be slightly more important than regional and national influence. Another interviewed stakeholder at municipal level however considers the coordination between regional, sub-regional and national level of playing only a minor role.

4.4 Policy aspects of case study 4: Avesta

For the policy analysis of Avesta, one development officer at municipal level and the secretary of trade and industry at municipal level were interviewed.

4.4.1 Strengths and weaknesses

The uniqueness of Avesta is the strong geographical infrastructural advantages in terms of connectivity through roads and railroads. There is a freight line through Bergslagen stretching from north to south in combination with the *Dalabanan* from east to west. Avesta is a typical industrial community with two major industries, thus providing plenty of job opportunities. The employment within the industries is highly in contrast to employment in the public sector, which is lower.

One weakness of Avesta can be seen in its poorly developed public transportation system and in an inability to keep trains on times. It is a goal within the Avesta community to develop train commuting into a regional strength.

4.4.2 Policy work, programmes and projects

The overall goal of Avesta is population growth. The vision of Avesta is to become a more attractive living place and all programs, projects and measures should be aimed at that goal. The goal is in everyone's best interest in the municipality. Currently, the population is slightly decreasing at 21,465 inhabitants. The goal is to reach 25,000 residents by 2020. Avesta 2020 is the overall vision and the overall goal. From January 1st, 2013 this project has become the main development objective. The project is supported by 28 sub-projects with different focus areas such as housing, commuting and land use, thus affecting a lot of people. All in all, there are about 200 government officials involved in Avesta 2020. Some example projects are:

- The *Koppardalen* development area
- The development of good new business services
- Promoting women's entrepreneurship
- More and stronger marketing efforts

- Enhancement of student commuting
- Stronger moving services for new residents

Another goal is to develop the brand "Avesta". There is already a strong profile with *Koppardalen*, an outdoor area for both business and entertainment.

Most of the funding for Avesta comes from EU projects and national funding. For example, both the region of Dalarna and the EU fund Avesta 2020. But the most important resource is considered the common understanding of the common goal and how to get there. Once an agreement has been found, funding issues are often resolved easily. Agreement is more important than economic questions, both for local and regional funding.

4.4.3 Avesta's functional role

Avesta is more or less an interregional centre. The hubs in the region are Falun and Borlänge at a 70 kilometre distance each, about the same as to Västerås. Avesta should however not compare itself to the abovementioned cities because Avesta already has some good business and a good city centre. The infrastructure is considered Avesta's greatest strength, giving Avesta a little more trade and commercial possibilities than other cities of comparable size. Another role that Avesta fulfils is being a good accommodation municipality, with the right public transport development.

4.4.4 Principal policy instruments

Avesta 2020 is the vision, goal and instrument in itself. There is an active part of the vision where the infrastructural issues play a major role. The political plan is shared and distributed at each board committee that contains goals and budgets for the Avesta 2020 project.

4.4.5 Businesses and local policy networks

Avesta 2020 affects all levels of government and policy making. There is a network called Arena Avesta, which consists of a business community, the local government and banks. Swedish Trade (*Svensk Handel*) is another important network. Another network in Avesta is the so-called Triple Steelix, a steel company initiative to support the supply of labour in Avesta. There is also a railway interest group (*Dalabanans interesseförening*) who works for a stronger infrastructural network and both of these groups are cross-sectorial partnerships. Furthermore, there are many local networks and various project organizations. At the same time, regional cooperation is important and achieved through the *Länsstyrelsen* network. The Regional Committee consists of Hedemora, Norberg Fagersta and Skinnskatteberg municipalities that Avesta cooperates with on a business level. All these organizations act both on a local and on a regional level. Financial support is acquired from the region of Dalarna on a regional and national level.

4.4.6 Partnership arrangements

Partnerships between local government and industry are today regarded as something unthinkable 15 years ago. Partnerships are nowadays both an important and at the same time intimate part of how municipal collaboration is done in Avesta. The goal is to reach consensus on common goals for the municipality, residents and businesses. Triple Steelix is considered a perfect example of agreement between the three parts of university, business

and the municipality. Apart from Triple Steelix, there is also an industrial partnership group in Avesta with the goal to strengthen trade and industry. Above all, it is the population issue that unites local government industry especially in the Arena Avesta network. Collaboration is a vital part of Avesta's development strategy, both internally and externally, meaning that working in regional partnerships rather than getting stuck in local issues. While Avesta is a small city, the communication channels between industry and municipalities are short in comparison to other cities. The response to reports is quickly present and questions and issues are raised locally in Avesta.

4.4.7 The role of regional/sub-regional and national coordination

In the long term and currently, regional cooperation plays a major role in Avesta and since Avesta always plans on a long-term basis and since regional investments always occur on a 5 to 10 year basis, much coordination between different parties is needed and considered vital for the survival of Avesta.

5. CONCLUDING REMARKS AND POLICY RECOMMENDATIONS

The essential development goals and policy measures for the four case studies with respect to European Union funding can be summarized in the following four paragraphs. The policy measures, decisions and regional development strategies in the case studies can be viewed in the light of the treaty of Lisbon by the European Union. There, the goal is formulated that Europe should become the world's largest competitive knowledge economy with sustainable growth, a good environment and social unity. Funds were allocated to eight different regions in Sweden in order to develop the regional competitive power and employment. The case studies lie in three of the eight regions defined in the structural fund programme in the EU. Kiruna lies in *Övre Norrland*, Avesta in *Norra Mellansverige* and Timrå and Östersund in *Mellersta Norrland*. The regions are also part of additional transnational and international structural funding programmes. Furthermore all municipalities in Sweden are participating in the "Baltic Sea" programme with the vision of transforming the Baltic Sea region into an attractive region for people to live, work and invest. 209 million Euros are distributed among the eleven participating countries. Through the interregional collaborative programme "Sweden-Norway" Östersund and Avesta additionally benefit from the 37.2 million Euro funding to boost regional competitiveness and a higher employment through economic growth.

The main development goal of the region *Övre Norrland* is to contribute to a long-term sustainable growth in terms of innovation and renewal and communications through a sustainable transport system and accessibility to IT. The specific goals are to create 8,000 new jobs and 3,000 new companies (*Tillväxtverket* 2012b). Kiruna is also part of the collaborative program *Nord* between the northern parts of Sweden, Norway and Finland. The program funds the regions with 33 million Euro for the development of the region's businesses, functionality and identity as well as research, development and education. As it is now, Kiruna has one clear objective: spatial planning as the city has to move as a consequence of the expanding mining activities. A strong and well-defined vision developed from a grassroots level, recognized politically in the city is what is needed. This moving project takes up almost all of the time at local level and affects the whole community. The focus is on what the municipality should do. There is too much that can go wrong, e.g. resource allocation or commuting possibilities. Currently, this affects housing prices in the neighbouring built-up areas while at the same time the future is uncertain and undecided. As mentioned earlier, Kiruna is basically dependent on iron ore and the largest company in the municipality LKAB. That might be beneficent in times of good economy but bears risks during recession periods. The largest issue at the moment is the moving of parts of the city and residents. If that process goes well focus could be placed on several other issues. Due to Kiruna's isolated location and dependence on air communications, the renewal and enhancement of communications is very important and should be pursued. Kiruna faces problems of a declining population, skewed gender structures and the dependency on a single company and on ore. For the improvement of these issues, both industry and business need to be diversified. Industries should shift away from the ore and new innovative businesses should be developed that attract young and particularly female employees and

residents. A higher diversity in companies and an expansion in the service sector would broaden Kiruna's competitiveness and attractiveness to counteract the constantly declining population figures. The location-independent IT-branch should be further developed and the creation of a university or other forms of tertiary education could be considered. Furthermore, Kiruna should make use of its natural capital and promote ecotourism to attract visitors.

The main goal of the regional development initiative of *Mellersta Norrland* is to increase the economic competitiveness through renewals in the business sector and in energy production and environmentally driven development. Furthermore the accessibility and attractiveness of the region in terms of communications, logistics and IT shall be further developed. The concrete goals are to create 5,000 new jobs and 10% more jobs in the private sector with more than 50 employees (*Tillväxtverket* 2012a). The amount of employed living within 45 minutes commuting time to the regions larger labour markets should increase with 5%. Furthermore, the proportion of the inhabitants within 20 and 39 years of age should increase to 25 percent of the total population. Östersund has a vision called: "A Sustainable Östersund" that applies to economic, ecological, social and democratic aspects. It permeates all decisions and all operations. However, there is unfortunately nothing to measure this vision against. Politically, the town is in the process of revising a new growth program based on this vision. But this vision does not appeal to everyone in Östersund. Industry and mainly tourism industry have created their own visions called: "it all starts at home."

Furthermore, Östersund is also part of the joint across-border collaborative program between Sweden and Norway. Östersund has had a long tradition in trade dating back to the 17th century. Since then, Östersund has undergone several crises regarding economy and the labour market, e.g. the labour market conflict in 1909, the 1918 flu pandemic, and depression and high unemployment as result of World War I. The industries of Östersund were not so thoroughly shaken though since Östersund could be regarded as one of the least industrialized towns in Sweden at that time. From World War II onwards, Östersund's economy, population and industry have been constantly growing and in the middle of the 1980s, the public sector accounted for 65 percent of the GDP, as everywhere else in Sweden resulting in more workplaces. The most important business is the 'Winter City' that has been promoted by the economy and the municipality since 1996-1997. The Winter City is an umbrella term not only describing the character of the city but comprising all aspects of winter sports amongst others tourism, a national winter sports centrum and research and education. There is relatively large share of unemployment in the public sector as a consequence of mismatch between demand and supply concerning differing competences. Many highly educated and new examined students from the university have problems to get a foothold on the local labour market. Apart from the further creation of new jobs, the public sector could be broadened. This and more businesses are advised to create a more dynamic labour market in the region. Due to Östersund's trade-based history with a large public sector and the creation of the unique "Winter city" that does not only give the region a specific identity but also targets many aspects and players in the region, the city seems to have met the development goals of the EU and is on a good way into the future.

Timrå is apart from the *Mellersta Norrland* programme also part of the "Botnia-Atlantica" transnational collaborative program, funded with 30.5 million Euros for structural development and growth through collaboration. The main objective of Timrå is to increase the population to 18,500 residents until 2015. And to do this Timrå has – with their own words – created *Norrland's* best business climate in Timrå" – a goal to be reached by 2015. Today, Timrå is in second place according to *Svenskt Näringsliv's* ranking, the Swedish business ranking. Even if the business climate seems good, more diversification on the labour market is advised to a) attract people that are out-commuting towards Sundsvall to stay in Timrå, to b) to increase job opportunities for the high share of unemployed in Timrå, to c) to attract new preferably female residents to balance Timrå's gender structure and to d) make the economy more resilient to negative effects as results of the fluctuations on the labour market. The population development is in a plus-minus zero situation, thus a non-growing population. And while an overall need to increase the population exists, a biased population is to be avoided and therefore, this is perhaps the greatest challenge.

Timrå can be functionally speaking regarded as a suburb to Sundsvall and is thus dependent on the city. The development of the economy was also based on Timrå's vicinity to the Baltic Sea coast. However, the Vifvsta wharf has over the years been transformed into a paper factory that closed down in 2007. Until today, the factory buildings remain unused and empty. Several more industries developed that are nowadays shut down, e.g. a sawing mill that has been transformed into a sulphite factory. Overall, the forest industry is dominating in the area. Timrå needs more profitable businesses to stimulate the population growth as well as an increase in better quality accommodations. Kiruna, Östersund and Timrå are all furthermore part of the "Northern Periphery" transnational program with the goals of promoting innovation and competitiveness in remote and peripheral regions as well as a sustainable development of natural resources. The program distributes funds of 35 million Euro to the participating municipalities.

The structural funding program *Norra Mellansverige* focusses on the development of innovative environments, strengthens a dynamic economy and increase accessibility to communications for the region's population and businesses. In short, the goals are to create 6,000 new jobs, 3,000 new companies and to increase the employment rate (*Tillväxtverket* 1012b). Avesta has been known since the middle ages mainly for its iron and steel industries, but also copper industries and a mint exist. The historical development of Avesta based on iron, ore and copper industries are not the best prerequisites for a transition towards a future where more and more focus is placed on sustainable development and the public and service sector. The copper mine closed down already in 1869 and the coin mint even earlier in 1831. Instead, the iron industry took over that was continuously growing until the 1970s and attracting more industries to Avesta over the years. Until the end of the 19th century, the industries have become fused together with foreign ownership and go now under the name of Outokumpu Stainless. As the population is currently declining, Avesta needs to find new ways to attract now residents. Avesta 2020, the main project of today, consists of 28 different sub-projects with one primary goal: to increase population. Some of these sub-projects are aimed to enhance commuting within the Avesta region, moving services, development of local entrepreneurship with a strong focus on female entrepreneurship. This is an important attempt to increase the problematic gender ratio. Furthermore, developing

the brand Avesta is of high priority. The functional role of Avesta would be a good accommodation municipality. With close proximity to several major cities (within just about one hour to commute) Avesta could become a fantastic accommodation municipality with the right public transport development as another future project. Avesta faces similar challenges as Kiruna with the difference that the economy is mainly based on the steel company and not on mining anymore. New innovative businesses should be supported and stimulated, which is essential to the attraction of young educated employees and residents. Furthermore, the copper industry could turn out to play an important role in Avesta's future upon its revival since copper prices increased as a result of and increased demand through extensive use in mobile devices, computers and cables.

As in all case studies, population growth seems one of the most desired goals, new ways of attracting a young generation need to be found. As more balanced gender structures are sought after, the development of new business especially in traditional mining cities with a higher proportion of male workers should be pursued and the future could lie in the sustainable use of the natural resources through research and business in renewable energy, innovative IT companies and ecotourism.

What can be suggested for all case studies is the creation of new, innovative businesses that are traditionally gender-neutral in the tertiary sector. These would attract gender-balanced groups of educated young people that are the key to an economically competitive and sustainable future. As heavy and ore/steel industries play a major role in Avesta and Kiruna and one company acts as the main employer in both cases, a diversification of the labour market is needed. Focus should be shifted to the IT and education sector and the neglected tourism sector could further improve the cities' competitiveness.

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APPENDIX

Table A1. Central LA-figures for the four Swedish towns (from south to north)

	Pop, size 2010	Pop change (%) 1970-2010	Pop density (km^2)	Area	No. of built-up areas	LA, no. of municipalities	LA, position	Out-commuting 2010 (%)
Avesta	21,583	-24	35.0	613.25	5	2	Centre	18
Timrå	17,990	+2	22.9	783.3	6	4	Linked	56
Öster-sund	59,416	+20	26.9	2208.31	10	6	Centre	11
Kiruna	22,944	-25	1.2	19,140.33	7	1	Centre	5

Table A2. Centres and build –up areas in the four case study towns

	Towns/municipalities (LAU2) 2010		
		2010	**2010**
Avesta		Numbers	%
UC	Avesta	14,506	67.2
B-u	Fors	827	3.8
B-u	Horndal	1,114	5.2
B-u	Nordanö	435	2..0
B-u	Näs bruk	207	1.0
Sparsely	All others	4,494	20.8
Total		21,583	100
		2010	**2010**
Timrå		Numbers	%
UC	Timrå	10,443	58.0
B-u	Bergeforsen	1,563	8.7
B-u	Stavreviken	216	1.2
B-u	Söråker	2,312	12.9
Sparsely	All others	3,456	19.2
Total		17,990	100.0
		2010	**2010**
Östersund		Numbers	%
UC	Östersund	44,327	74.6
B-u	Brunflo	3,890	6.5
B-u	Häggenås	320	0.5
B-u	Lit	1,040	1.8
B-u	Marieby	236	0.4
B-u	Ope	453	0.8
B-u	Optand	257	0.4
B-u	Orrviken	262	0.4
B-u	Tandsbyn	374	0.6
Sparsely	All others	51,159	86.1
Total		59,416	100.0
		2010	**2010**
Kiruna		Numbers	%
UC	Kiruna	18,148	79.1

B-u	Jukkasjärvi	548	2.4
B-u	Karesuando	303	1.3
B-u	Kuttainen	333	1.5
B-u	Svappavaara	417	1.8
B-u	Vittangi	784	3.4
B-u	Övre Soppero	201	0.9
Sparsely	All others	2,210	9.6
Total		22,944	100.0

Table A3**.** Functional labour markets and their integrated municipalities in the four case study towns.

Functional labour markets (LAU1) 2010		**LC: Bold**					
Avesta LMA	Code	Towns	Types	Linked to	P1	P2	Inhabitants
Avesta	**2084**	**Avesta**	**11**	**2083**	**0.18**	**0.04**	**15,164**
Avesta	2083	Hedemora	20	2084	0.27	0.06	21,583
Sundsvall LMA	Code	Towns	Types	Linked to	P1	P2	Inhabitants
Sundsvall	**2281**	**Sundsvall**	**11**	**2262**	**0.11**	**0.03**	**95,732**
Sundsvall	2260	Ånge	20	2281	0.15	0.08	10,053
Sundsvall	2262	**Timrå**	**20**	2281	0.56	0.48	17,990
Sundsvall	2280	Härnösand	20	2281	0.20	0.10	24,611
Östersund LMA	Code	Towns	Types	Linked to	P1	P2	Inhabitants
Östersund	**2380**	**Östersund**	**11**	**2309**	**0.11**	**0.03**	**59,416**
Östersund	2303	Ragunda	20	2380	0.22	0.11	5,590
Östersund	2305	Bräcke	20	2380	0.37	0.19	6,885
Östersund	2309	Krokom	20	2380	0.48	0.40	14,535
Östersund	2321	Åre	20	2380	0.22	0.09	10,274
Östersund	2326	Berg	20	2380	0.29	0.21	7,352
Kiruna LMA	Code	Towns	Types	Linked to	P1	P2	Inhabitants
Kiruna	**2584**	**Kiruna**	**11**	**2523**	**0.05**	**0.01**	**22,944**
P1: General condition. total out-commuting less than 20 %							
P2: Specific condition. out-commuting to a special town less than 7.5 %							

Table A4. Microregions and municipalities in SE3 2010. Source. Statistics Sweden.

Microregion		**Municpality**		**Type of**	**Linked to**	**%C1**	**%C2**	
Code	**Name**	**Code**	**Name**	**municipality**	**municipality**			
31	Torsby	1737	Torsby	11	1766	15	4	networked-d
31	Torsby	1766	Sunne	20	1737	25	8	networked-s
32	Årjäng	1765	Årjäng	11	1780	11	3	autonomous

33	Karlstad	1780	Karlstad	11	1761	18	3	LC
33	Karlstad	1781	Kristinehamn	20	1780	29	10	agglomerated
33	Karlstad	1785	Säffle	20	1780	23	7	agglomerated
33	Karlstad	1715	Kil	20	1780	56	41	agglomerated
33	Karlstad	1761	Hammarö	20	1780	67	57	agglomerated
33	Karlstad	1762	Munkfors	20	1780	27	7	
33	Karlstad	1763	Forshaga	20	1780	61	45	agglomerated
33	Karlstad	1764	Grums	20	1780	40	26	agglomerated
33	Karlstad	1492	Åmål*	30	1785	26	9	
34	Filipstad	1782	Filipstad	11	1780	20	4	agglomerated
35	Hagfors	1783	Hagfors	11	1762	18	4	
36	Arvika	1784	Arvika	11	1730	18	7	networked-s
36	Arvika	1730	Eda	20	1784	26	16	networked-s
39	Karlskoga*	1760	Storfors	20	1883	49	19	
42	Vansbro	2021	Vansbro	11	2023	18	3	autonomous
43	Malung-Sälen	2023	Malung-Sälen	11	2021	12	2	autonomous
44	Mora	2062	Mora	11	2034	17	4	autonomous
44	Mora	2034	Orsa	20	2062	45	30	
44	Mora	2039	Älvdalen	20	2062	22	11	
45	Falun-Borlänge	2082	Säter	20	2081	54	25	agglomerated
45	Falun-Borlänge	2026	Gagnef	20	2081	51	28	agglomerated
45	Falun-Borlänge	2029	Leksand	20	2081	30	7	agglomerated
45	Falun-Borlänge	2031	Rättvik	30	2029	34	8	agglomerated
45	Falun-Borlänge	2080	Falun	11	2081	22	12	LC
45	Falun-Borlänge	2081	Borlänge	11	2080	22	12	LC
46	Avesta	2084	Avesta	11	2083	18	4	autonomous
46	Avesta	2083	Hedemora	20	2084	27	6	agglomerated
47	Ludvika	2061	Smedjebacken	20	2085	46	26	agglomerated
47	Ludvika	1864	Ljusnarsberg*	20	2085	33	11	
47	Ludvika	2085	Ludvika	11	2061	15	4	autonomous

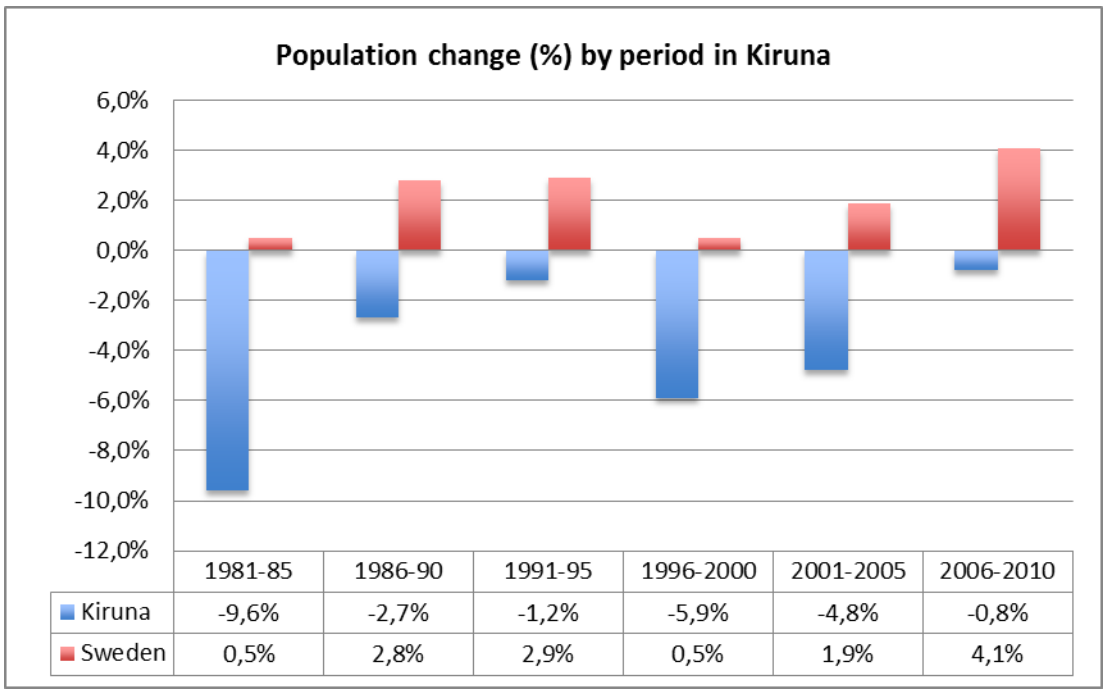
48	Ljusdal	2161	Ljusdal	11	2184	16	4	autonomous
49	Gävle	2180	Gävle	11	2181	17	7	LC
49	Gävle	0319	Älvkarleby*	20	2180	58	40	
49	Gävle	2101	Ockelbo	20	2180	39	18	
49	Gävle	2181	Sandviken	20	2180	24	16	networked-s
49	Gävle	2104	Hofors	30	2181	24	12	agglomerated
50	Söderhamn	2182	Söderhamn	11	2183	19	6	networked-s
51	Bollnäs-Ovanåker	2183	Bollnäs	11	2121	22	6	networked-s
51	Bollnäs-Ovanåker	2121	Ovanåker	11	2183	22	13	networked-s
52	Hudiksvall	2184	Hudiksvall	11	2161	13	2	autonomous
52	Hudiksvall	2132	Nordanstig	20	2184	39	23	agglomerated
53	Sundsvall	2260	Ånge	20	2281	15	8	agglomerated
53	Sundsvall	2262	Timrå	20	2281	56	48	agglomerated
53	Sundsvall	2280	Härnösand	20	2281	20	10	agglomerated
53	Sundsvall	2281	Sundsvall	11	2262	11	3	LC
54	Kramfors	2282	Kramfors	11	2280	17	5	autonomous
55	Sollefteå	2283	Sollefteå	11	2282	14	4	autonomous
56	Örnsköldsvik	2284	Örnsköldsvik	11	2480	07	1	
57	Strömsund	2313	Strömsund	11	2380	16	7	agglomerated
58	Härjedalen	2361	Härjedalen	11	2380	11	2	autonomous
59	Östersund	2380	Östersund	11	2309	11	3	LC
59	Östersund	2303	Ragunda	20	2380	22	11	
59	Östersund	2305	Bräcke	20	2380	37	19	
59	Östersund	2309	Krokom	20	2380	48	40	agglomerated
59	Östersund	2321	Åre	20	2380	22	9	agglomerated
59	Östersund	2326	Berg	20	2380	29	21	
60	Storuman	2421	Storuman	11	2481	14	4	autonomous
61	Dorotea	2425	Dorotea	11	2313	19	4	autonomous
62	Vilhelmina	2462	Vilhelmina	11	2481	17	3	autonomous
63	Åsele	2463	Åsele	11	2481	17	3	autonomous

64	Umeå	2480	Umeå	11	0180	09	1	LC
64	Umeå	2401	Nordmaling	20	2480	38	27	
64	Umeå	2403	Bjurholm	20	2480	41	19	
64	Umeå	2404	Vindeln	20	2480	27	17	
64	Umeå	2409	Robertsfors	20	2480	38	27	
64	Umeå	2460	Vännäs	20	2480	49	42	agglomerated
65	Lycksele	2418	Malå	20	2481	22	9	
65	Lycksele	2481	Lycksele	11	2480	12	3	autonomous
66	Skellefteå	2482	Skellefteå	11	2480	06	2	LC
66	Skellefteå	2417	Norsjö	20	2482	20	10	
67	Arvidsjaur	2505	Arvidsjaur	11	2506	15	3	autonomous
68	Arjeplog	2506	Arjeplog	11	2505	15	3	autonomous
68	Arjeplog	2422	Sorsele	20	2506	20	6	
69	Jokkmokk	2510	Jokkmokk	11	2523	14	4	autonomous
70	Överkalix	2513	Överkalix	11	2580	15	4	autonomous
71	Övertorneå	2518	Övertorneå	11	2580	19	5	autonomous
72	Pajala	2521	Pajala	11	2584	19	7	agglomerated
73	Gällivare	2523	Gällivare	11	2584	06	2	autonomous
74	Luleå	2580	Luleå	11	2582	11	3	LC
74	Luleå	2514	Kalix	20	2580	16	8	agglomerated
74	Luleå	2560	Älvsbyn	20	2580	26	8	agglomerated
74	Luleå	2581	Piteå	20	2580	19	12	agglomerated
74	Luleå	2582	Boden	20	2580	31	25	agglomerated
75	Haparanda	2583	Haparanda	11	2514	15	5	agglomerated
76	Kiruna	2584	Kiruna	11	2523	05	1	autonomous

* Not localized in SE3

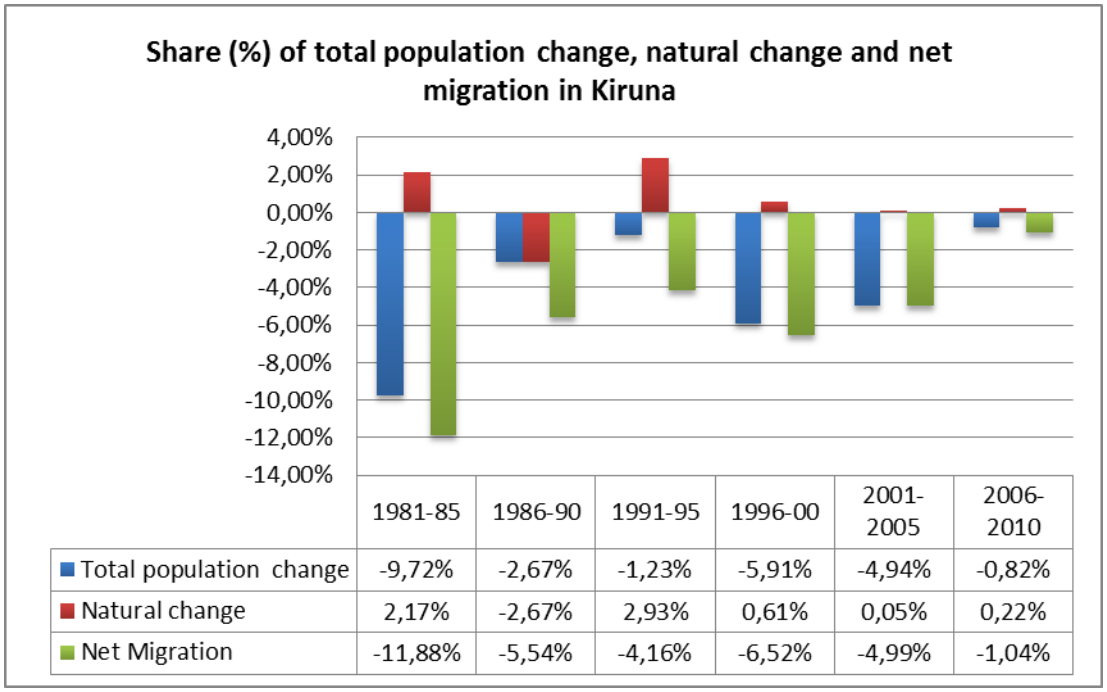
LC - large independent city.
autonomous - without any significant flows.
agglomerated - with significant flows only for themselves (share on EA population of source centre).
networked S - with significant outgoing flows also for destination centre (with significant share on its no. of jobs) – and linked to this destination SMST – they are networked with SMST as source (NETW-SMST-S).
networked D - with significant incoming flow(s) from other SMST – they are networked with SMST as destination.

Kiruna 1. Population change 1981-2010



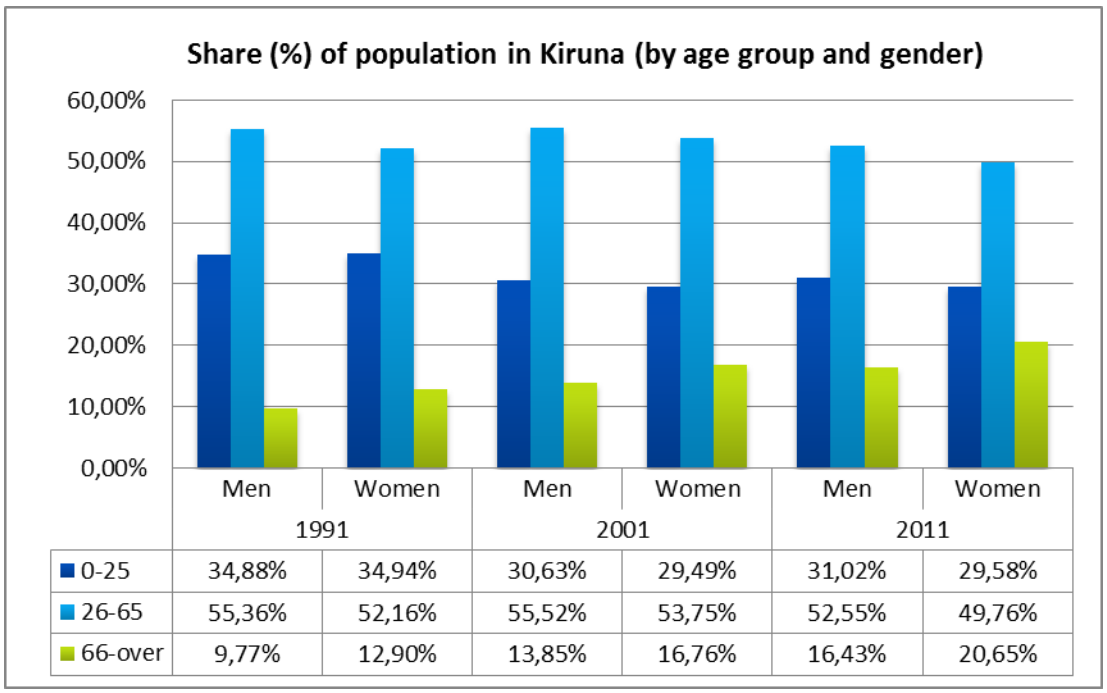
	1981-85	1986-90	1991-95	1996-2000	2001-2005	2006-2010
Kiruna	-9,6%	-2,7%	-1,2%	-5,9%	-4,8%	-0,8%
Sweden	0,5%	2,8%	2,9%	0,5%	1,9%	4,1%

Kiruna 2. Population change 1981-2010 and its components



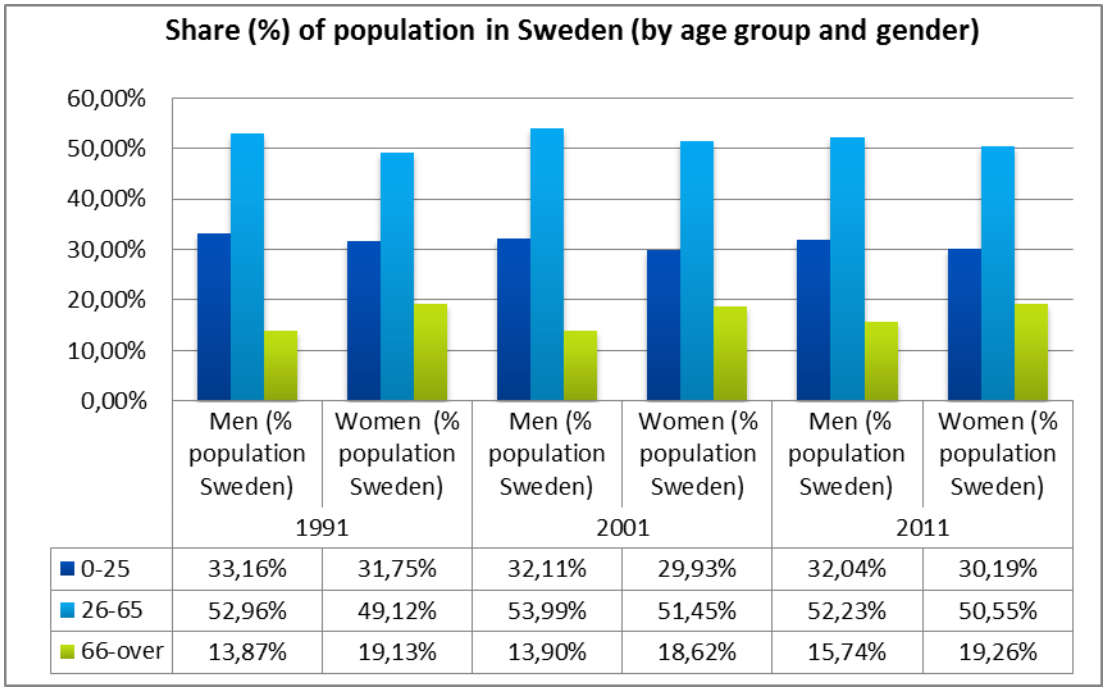
	1981-85	1986-90	1991-95	1996-00	2001-2005	2006-2010
Total population change	-9,72%	-2,67%	-1,23%	-5,91%	-4,94%	-0,82%
Natural change	2,17%	-2,67%	2,93%	0,61%	0,05%	0,22%
Net Migration	-11,88%	-5,54%	-4,16%	-6,52%	-4,99%	-1,04%

Kiruna 3. Age structure 1991-2011



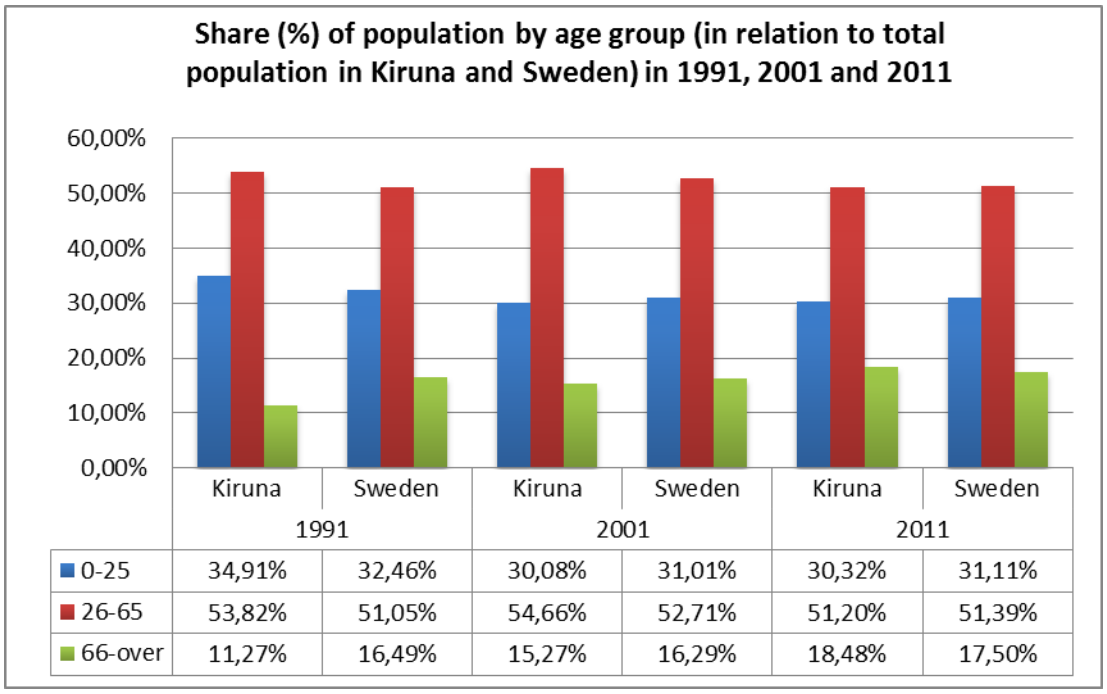
	Men	Women	Men	Women	Men	Women
	1991		2001		2011	
0-25	34,88%	34,94%	30,63%	29,49%	31,02%	29,58%
26-65	55,36%	52,16%	55,52%	53,75%	52,55%	49,76%
66-over	9,77%	12,90%	13,85%	16,76%	16,43%	20,65%

Kiruna 4. Age structure in Sweden 1991-2011



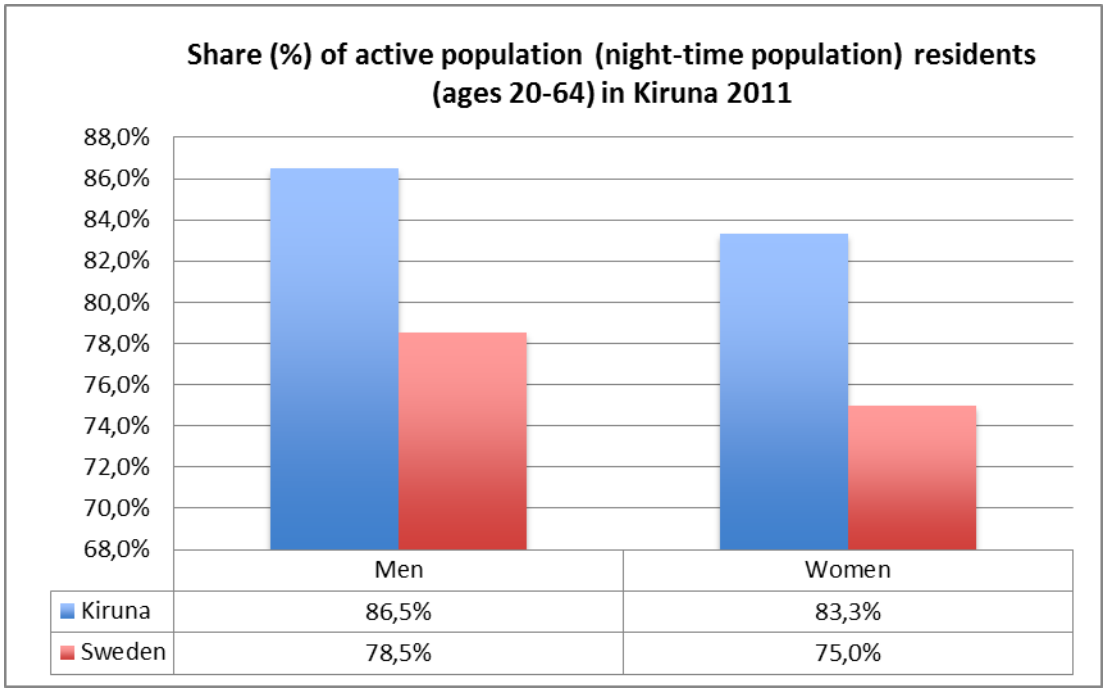
	Men (% population Sweden)	Women (% population Sweden)	Men (% population Sweden)	Women (% population Sweden)	Men (% population Sweden)	Women (% population Sweden)
	1991		2001		2011	
0-25	33,16%	31,75%	32,11%	29,93%	32,04%	30,19%
26-65	52,96%	49,12%	53,99%	51,45%	52,23%	50,55%
66-over	13,87%	19,13%	13,90%	18,62%	15,74%	19,26%

Kiruna 5. Age structure comparison between Kiruna and Sweden 1991-2011



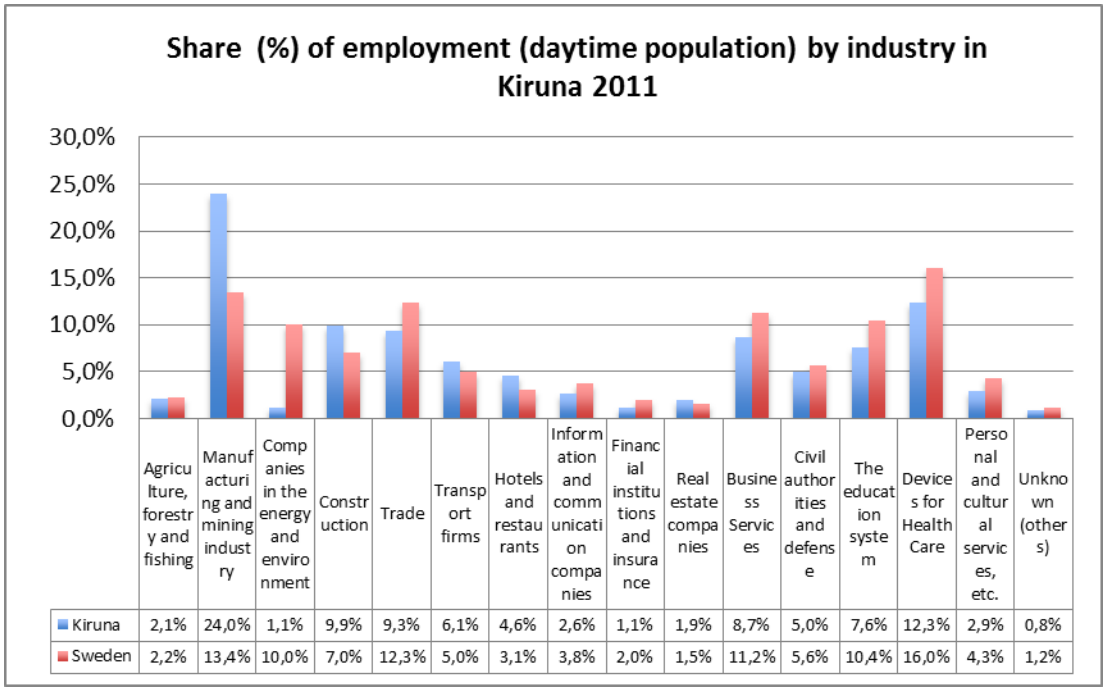
	Kiruna 1991	Sweden 1991	Kiruna 2001	Sweden 2001	Kiruna 2011	Sweden 2011
0-25	34,91%	32,46%	30,08%	31,01%	30,32%	31,11%
26-65	53,82%	51,05%	54,66%	52,71%	51,20%	51,39%
66-over	11,27%	16,49%	15,27%	16,29%	18,48%	17,50%

Kiruna 6. Night population in Kiruna 2011

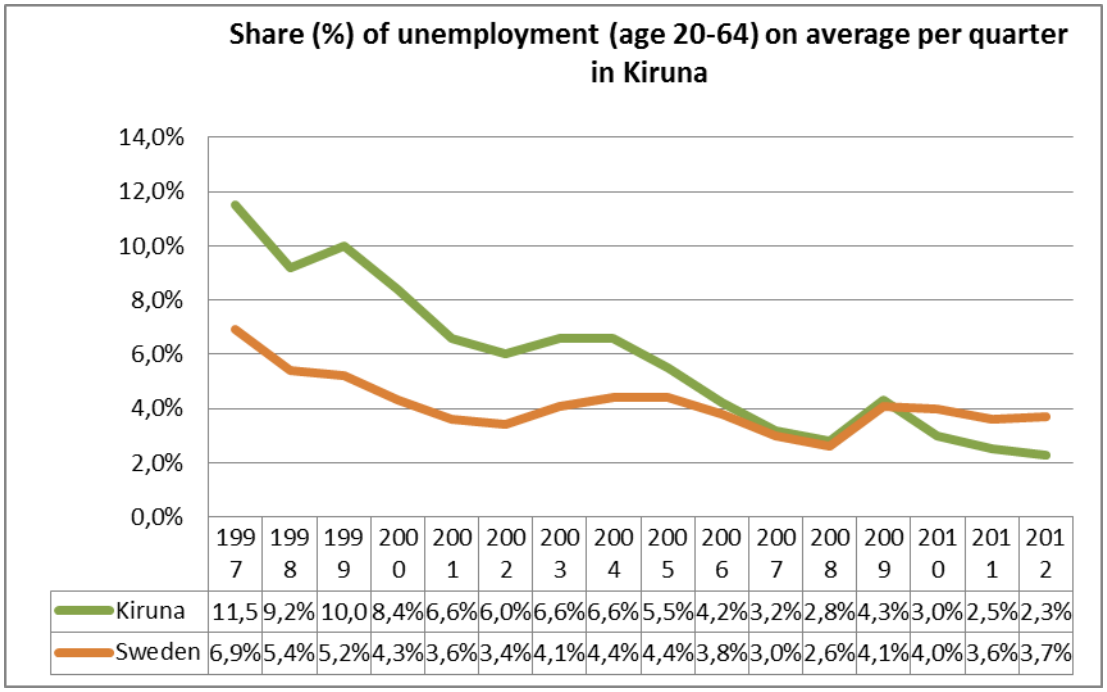


	Men	Women
Kiruna	86,5%	83,3%
Sweden	78,5%	75,0%

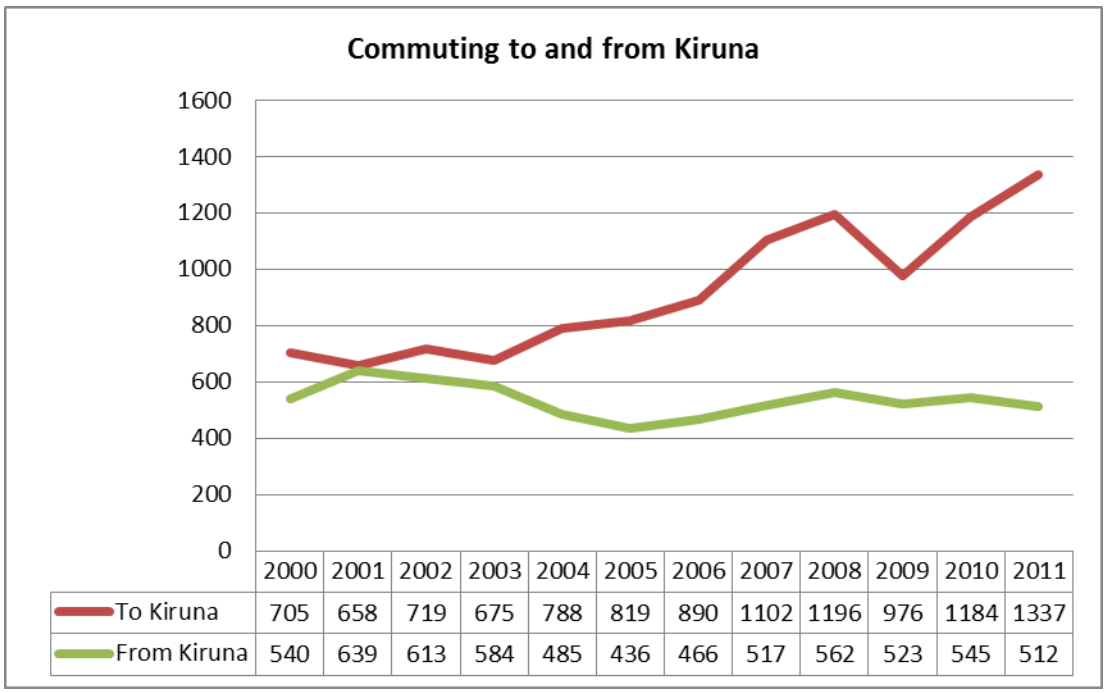
Kiruna 7. Employment structure 2011



Kiruna 8. Unemployment rates 1997-2012 (%. ages 20-64)

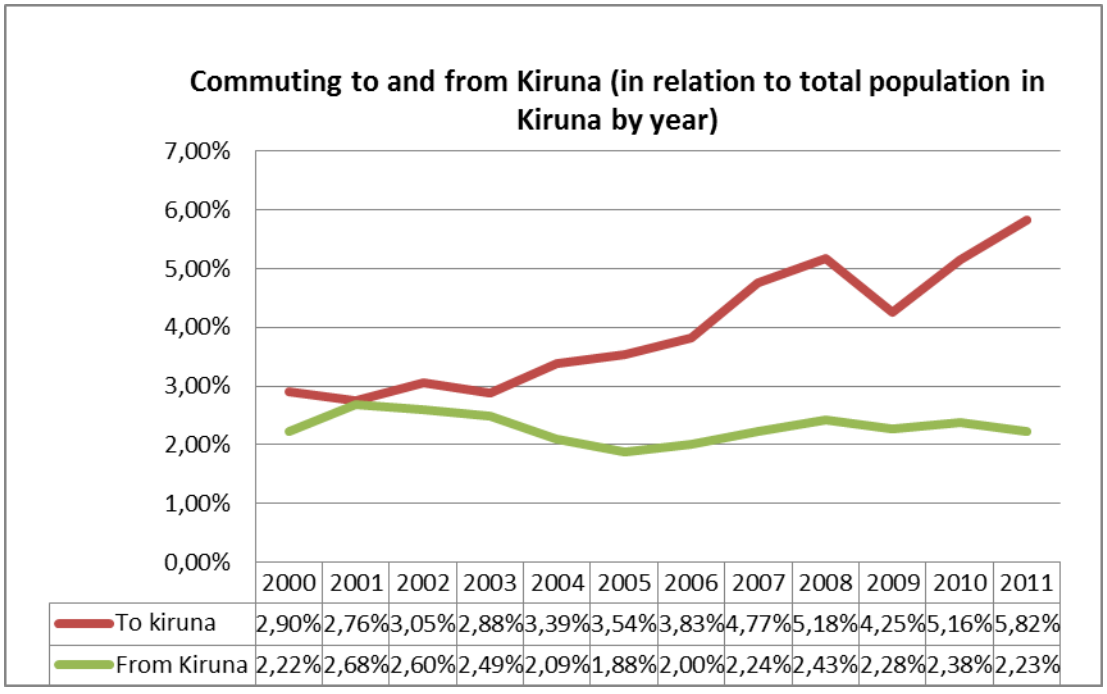


Kiruna 9. In- and out-commuting 2000-2011



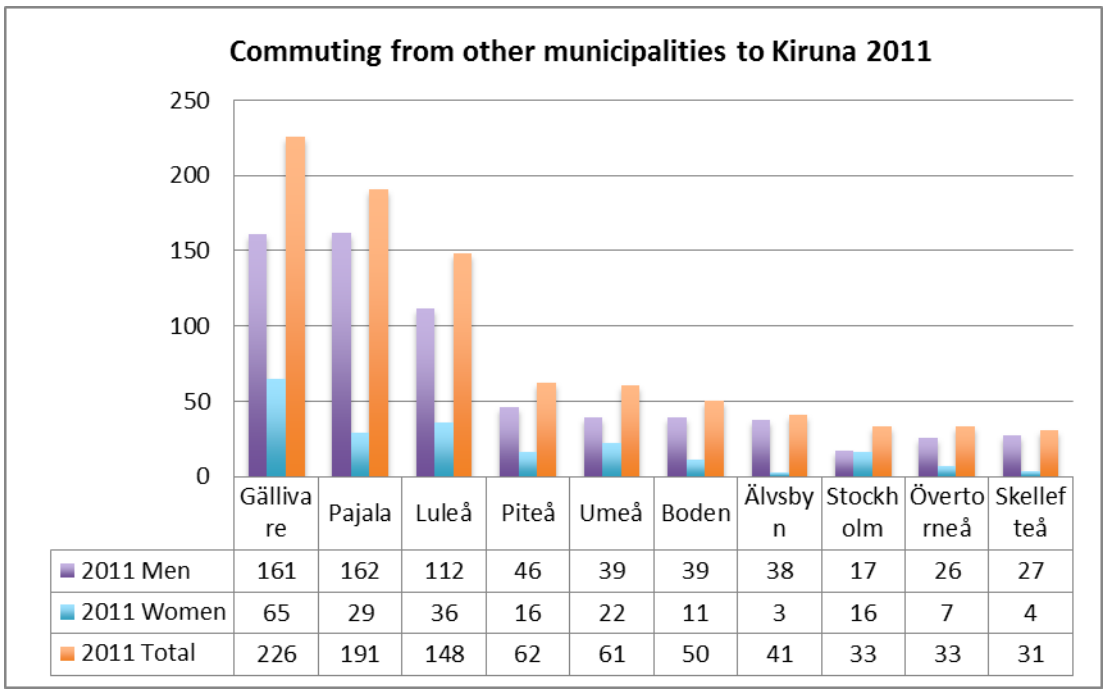
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
To Kiruna	705	658	719	675	788	819	890	1102	1196	976	1184	1337
From Kiruna	540	639	613	584	485	436	466	517	562	523	545	512

Kiruna 10. In- and out-commuting 2000-2011 in relation to total population



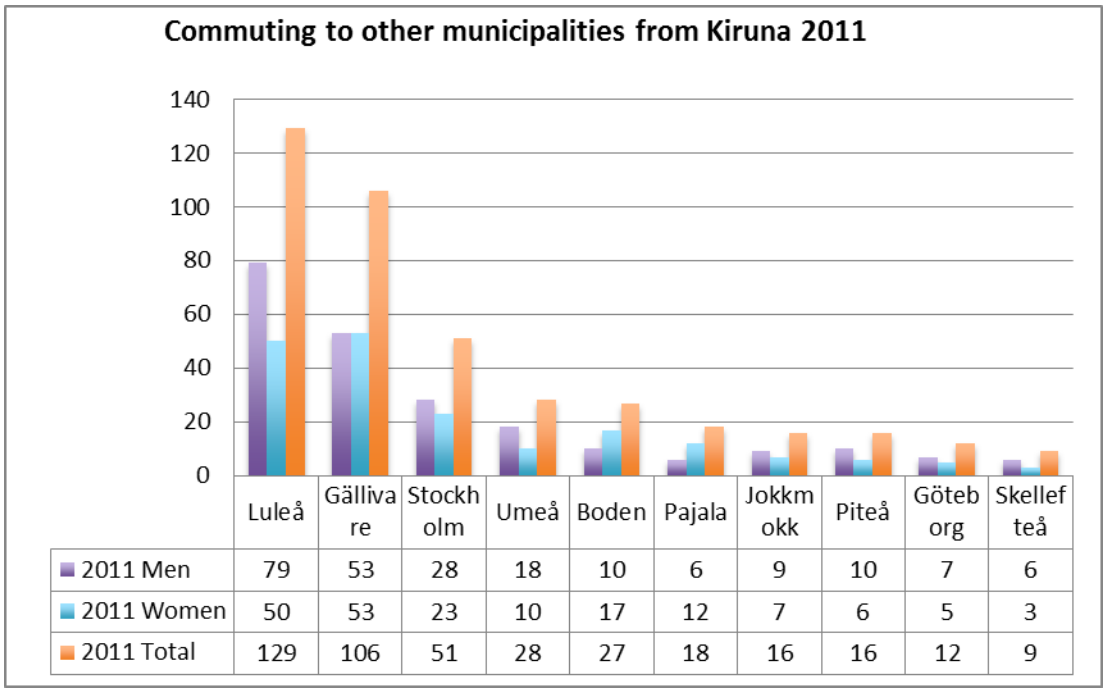
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
To kiruna	2,90%	2,76%	3,05%	2,88%	3,39%	3,54%	3,83%	4,77%	5,18%	4,25%	5,16%	5,82%
From Kiruna	2,22%	2,68%	2,60%	2,49%	2,09%	1,88%	2,00%	2,24%	2,43%	2,28%	2,38%	2,23%

Kiruna 11. In-commuting to Kiruna 2011



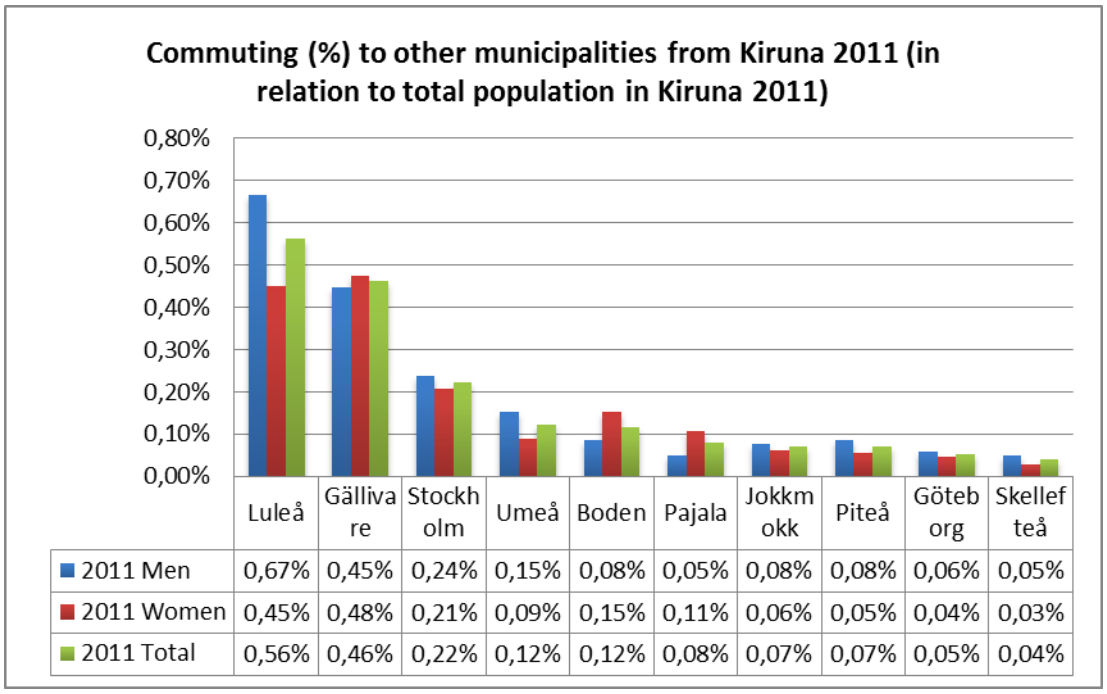
	Gällivare	Pajala	Luleå	Piteå	Umeå	Boden	Älvsbyn	Stockholm	Övertorneå	Skellefteå
2011 Men	161	162	112	46	39	39	38	17	26	27
2011 Women	65	29	36	16	22	11	3	16	7	4
2011 Total	226	191	148	62	61	50	41	33	33	31

Kiruna 12. Out-commuting from Kiruna 2011



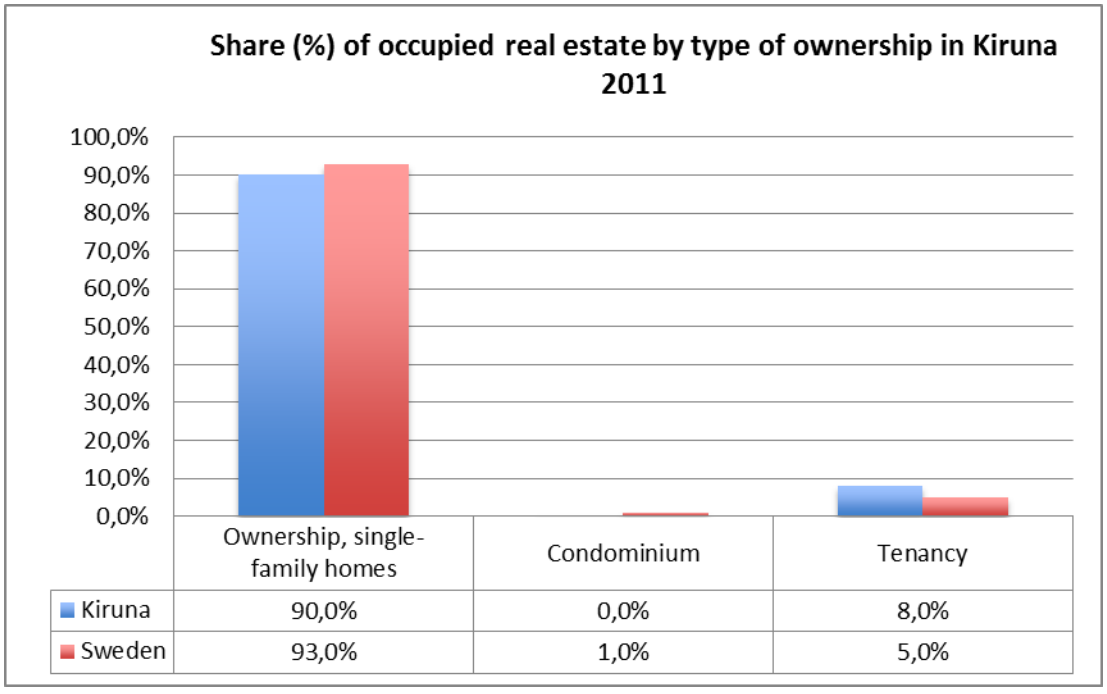
	Luleå	Gällivare	Stockholm	Umeå	Boden	Pajala	Jokkmokk	Piteå	Göteborg	Skellefteå
2011 Men	79	53	28	18	10	6	9	10	7	6
2011 Women	50	53	23	10	17	12	7	6	5	3
2011 Total	129	106	51	28	27	18	16	16	12	9

Kiruna 13. Out-commuting from Kiruna 2011 in relation to population



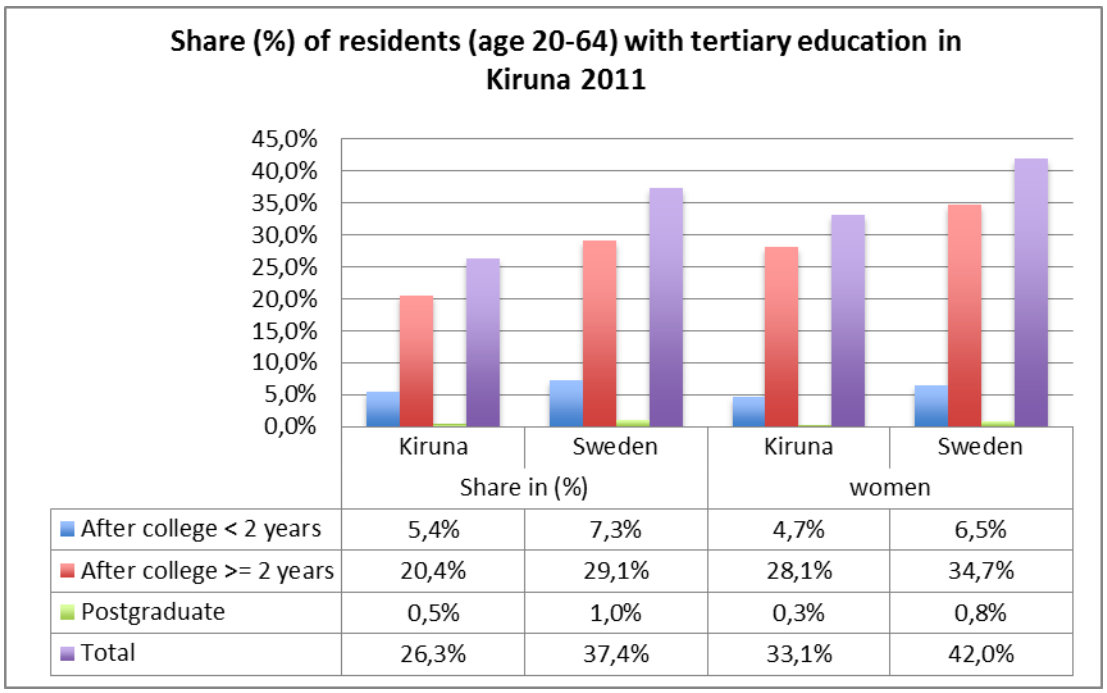
	Luleå	Gällivare	Stockholm	Umeå	Boden	Pajala	Jokkmokk	Piteå	Göteborg	Skellefteå
2011 Men	0,67%	0,45%	0,24%	0,15%	0,08%	0,05%	0,08%	0,08%	0,06%	0,05%
2011 Women	0,45%	0,48%	0,21%	0,09%	0,15%	0,11%	0,06%	0,05%	0,04%	0,03%
2011 Total	0,56%	0,46%	0,22%	0,12%	0,12%	0,08%	0,07%	0,07%	0,05%	0,04%

Kiruna 14. Housing structure 2011



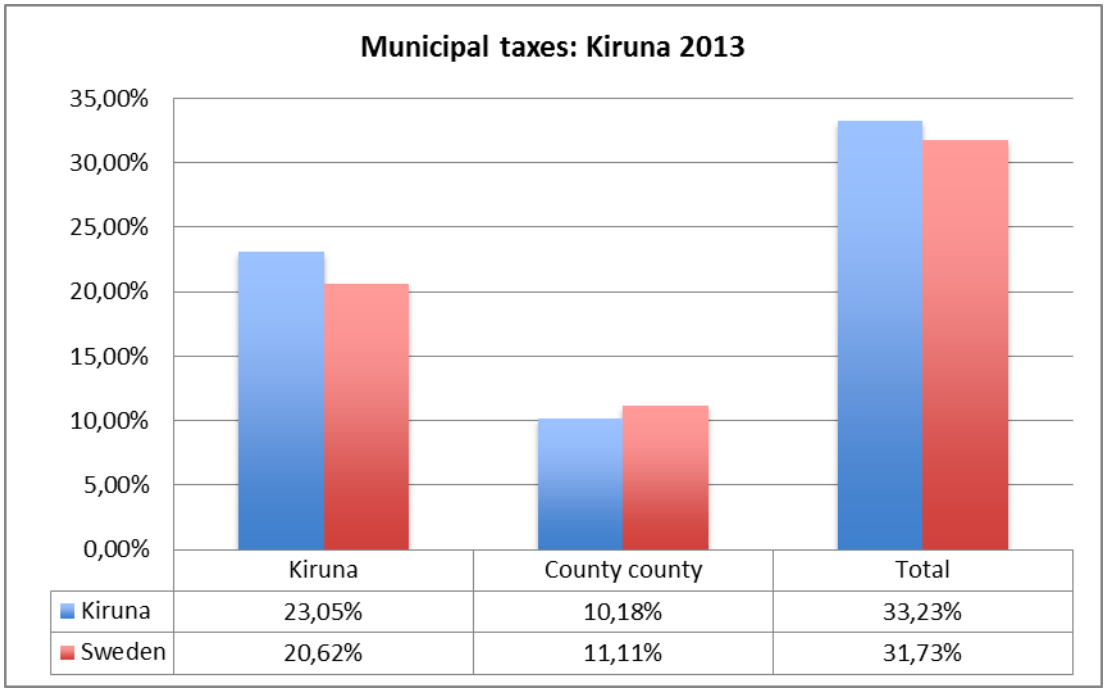
	Ownership, single-family homes	Condominium	Tenancy
Kiruna	90,0%	0,0%	8,0%
Sweden	93,0%	1,0%	5,0%

Kiruna 15. Educational structure 2011



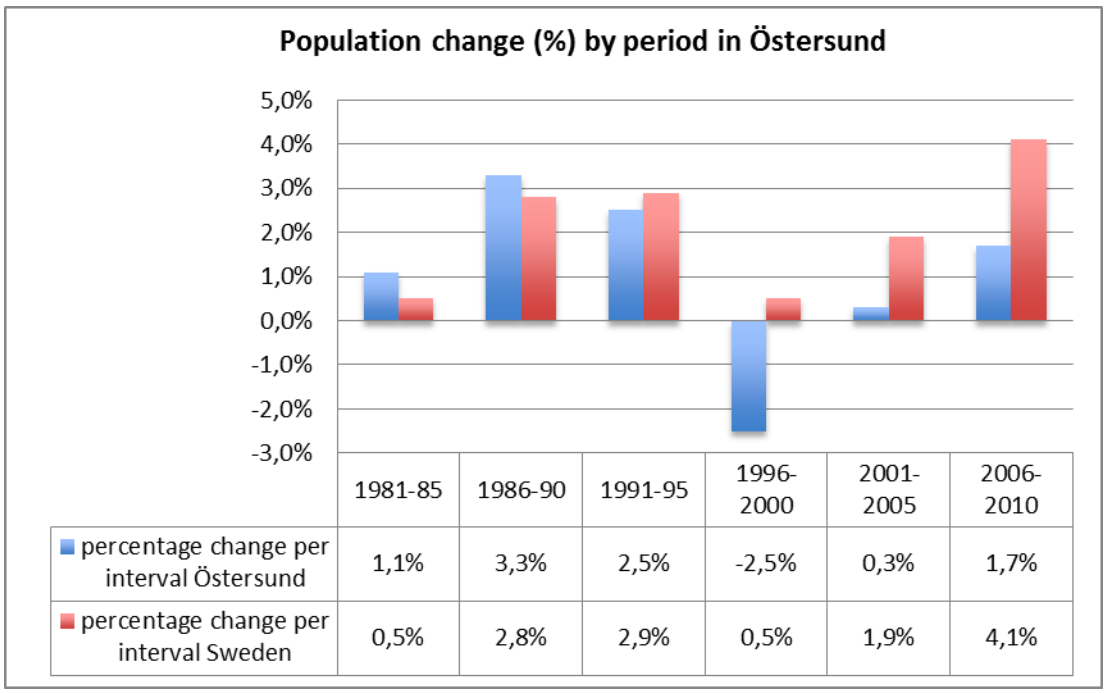
	Kiruna	Sweden	Kiruna	Sweden
	Share in (%)		women	
After college < 2 years	5,4%	7,3%	4,7%	6,5%
After college >= 2 years	20,4%	29,1%	28,1%	34,7%
Postgraduate	0,5%	1,0%	0,3%	0,8%
Total	26,3%	37,4%	33,1%	42,0%

Kiruna 16. Local taxes 2013



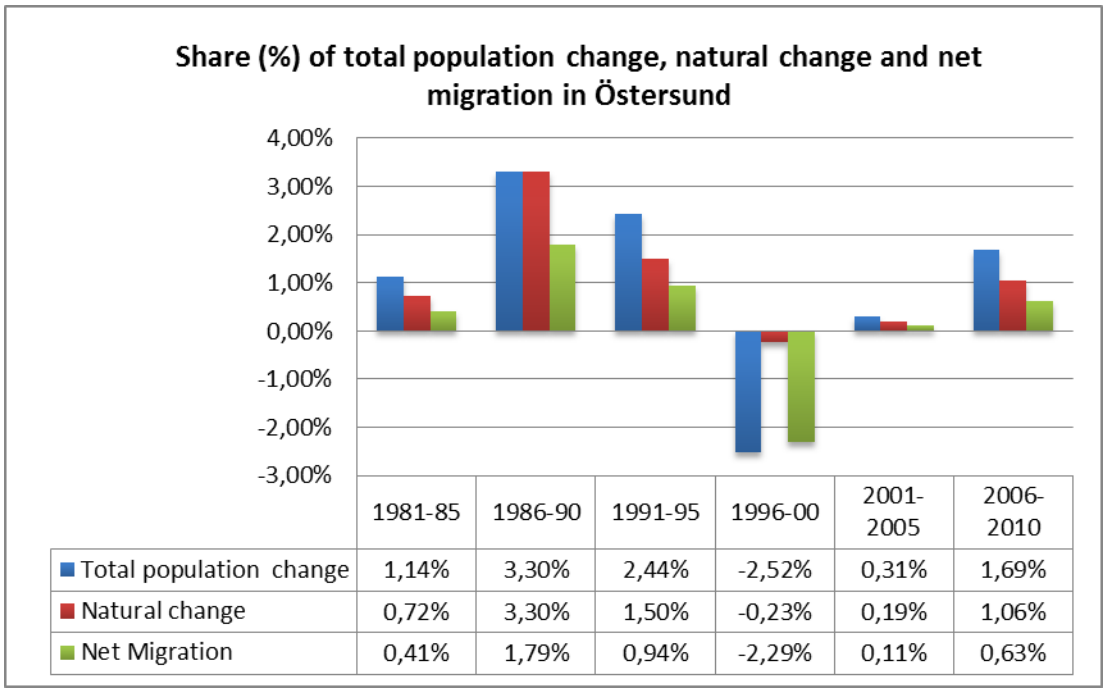
	Kiruna	County county	Total
Kiruna	23,05%	10,18%	33,23%
Sweden	20,62%	11,11%	31,73%

Östersund 1. Population change 1981-2010 per period (%)



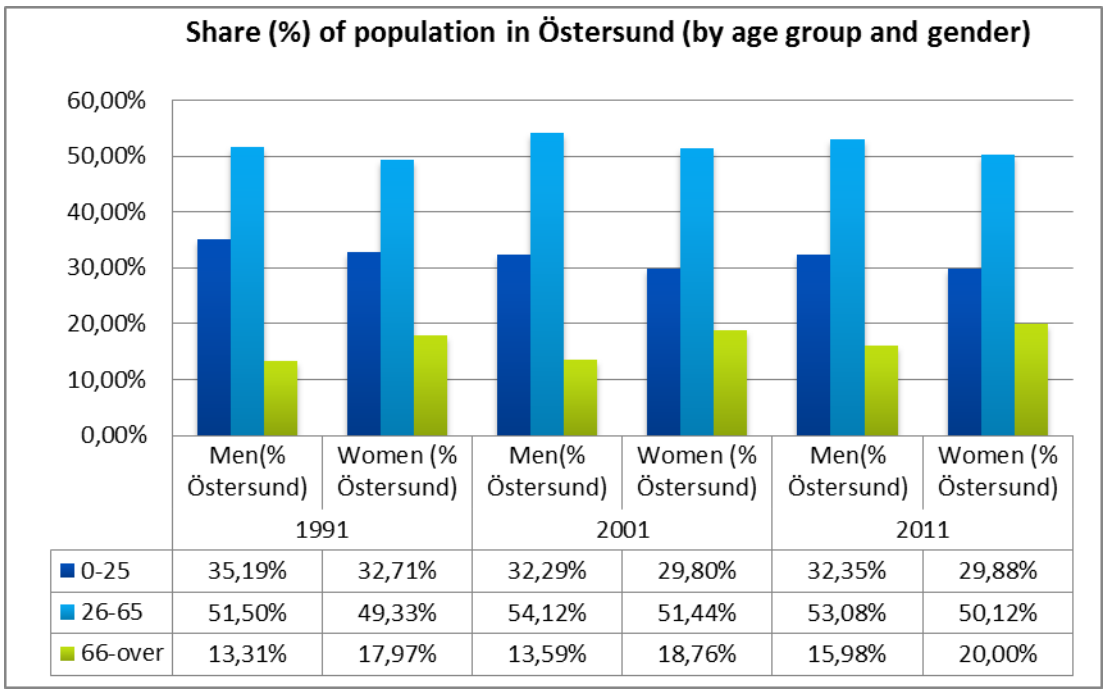
	1981-85	1986-90	1991-95	1996-2000	2001-2005	2006-2010
percentage change per interval Östersund	1,1%	3,3%	2,5%	-2,5%	0,3%	1,7%
percentage change per interval Sweden	0,5%	2,8%	2,9%	0,5%	1,9%	4,1%

Östersund 2. Population change 1981-2010 and its components



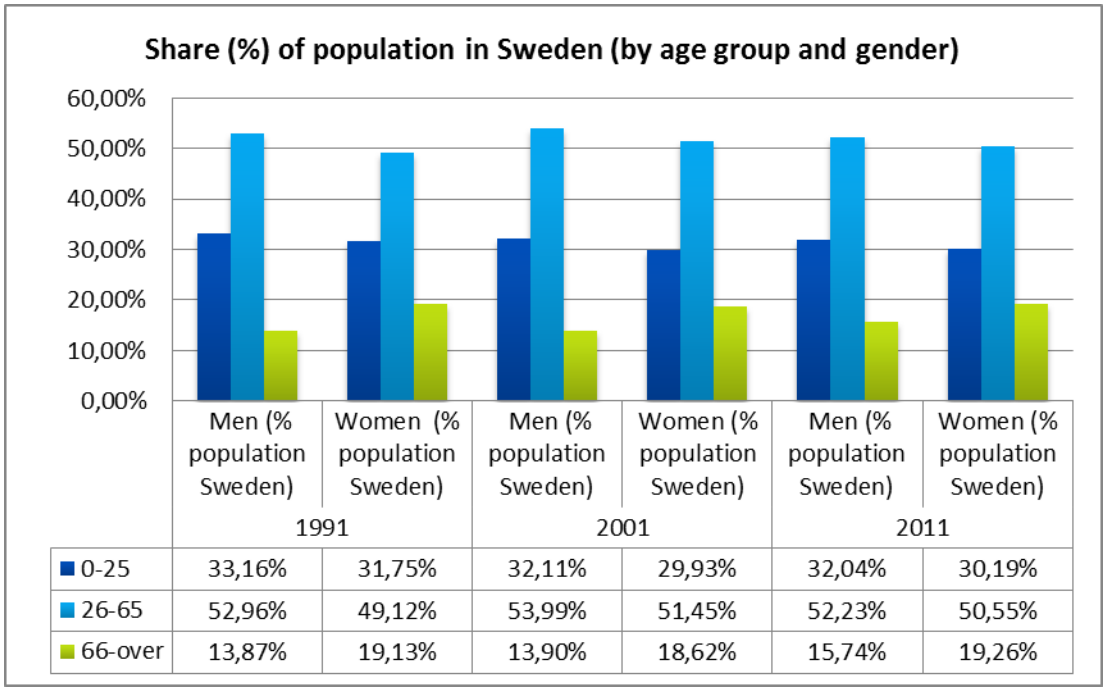
	1981-85	1986-90	1991-95	1996-00	2001-2005	2006-2010
Total population change	1,14%	3,30%	2,44%	-2,52%	0,31%	1,69%
Natural change	0,72%	3,30%	1,50%	-0,23%	0,19%	1,06%
Net Migration	0,41%	1,79%	0,94%	-2,29%	0,11%	0,63%

Östersund 3. Age structure 1991-2011



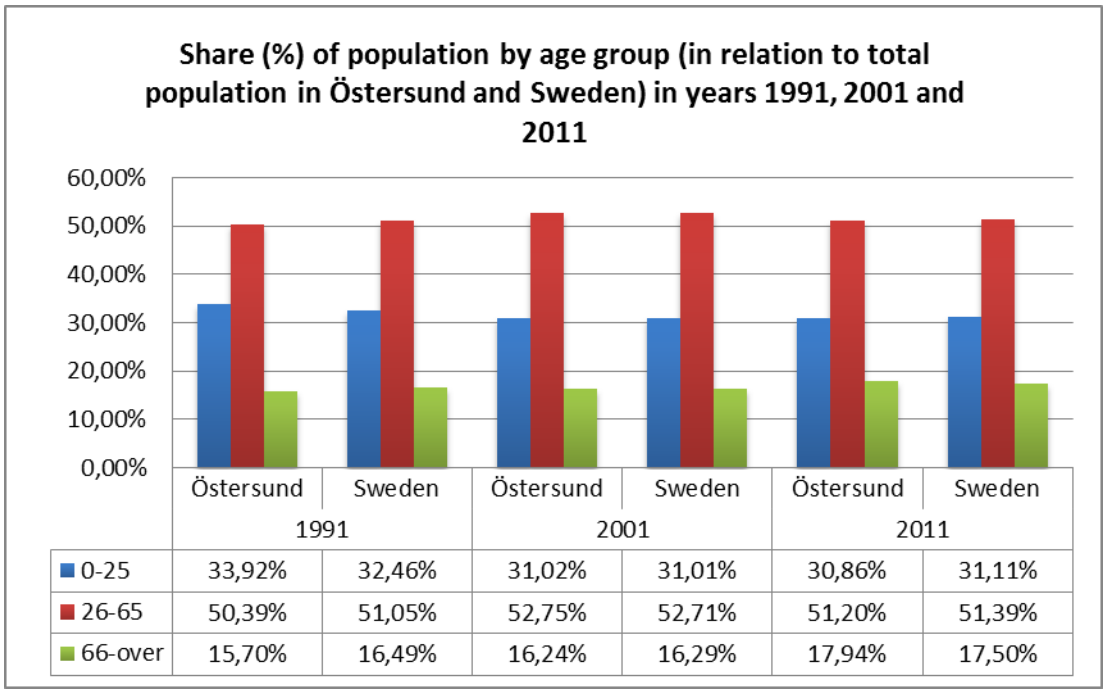
	Men(% Östersund) 1991	Women (% Östersund) 1991	Men(% Östersund) 2001	Women (% Östersund) 2001	Men(% Östersund) 2011	Women (% Östersund) 2011
0-25	35,19%	32,71%	32,29%	29,80%	32,35%	29,88%
26-65	51,50%	49,33%	54,12%	51,44%	53,08%	50,12%
66-over	13,31%	17,97%	13,59%	18,76%	15,98%	20,00%

Östersund 4. Age structure 1991-2011 by age group and gender



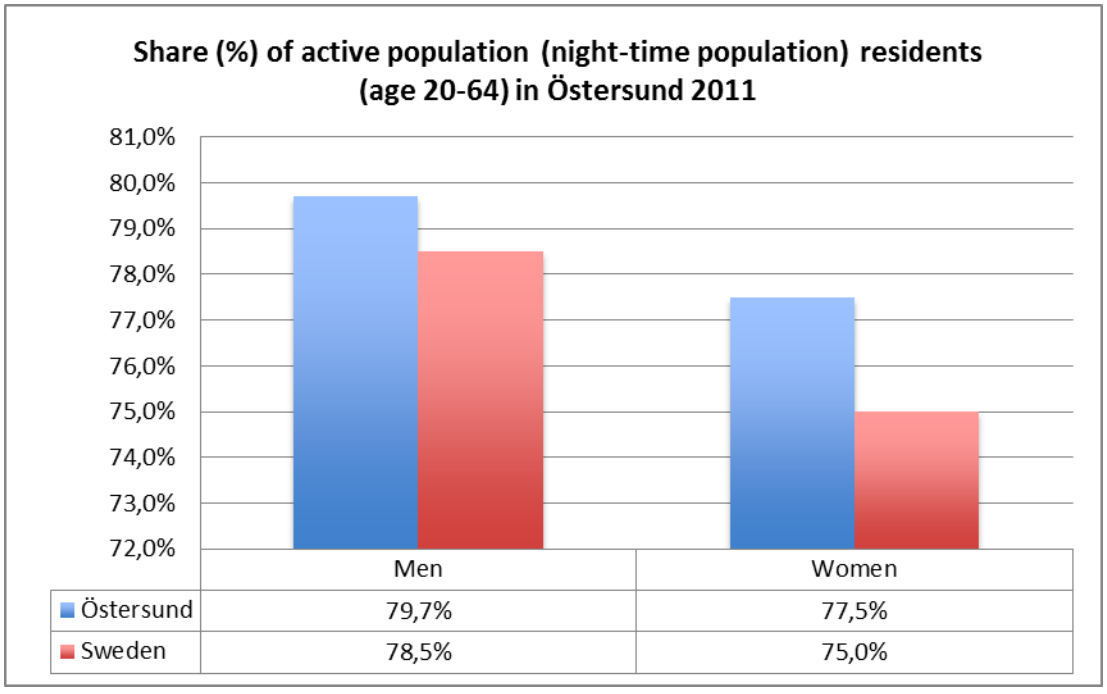
	Men (% population Sweden) 1991	Women (% population Sweden) 1991	Men (% population Sweden) 2001	Women (% population Sweden) 2001	Men (% population Sweden) 2011	Women (% population Sweden) 2011
0-25	33,16%	31,75%	32,11%	29,93%	32,04%	30,19%
26-65	52,96%	49,12%	53,99%	51,45%	52,23%	50,55%
66-over	13,87%	19,13%	13,90%	18,62%	15,74%	19,26%

Östersund 5. Share of population by age group



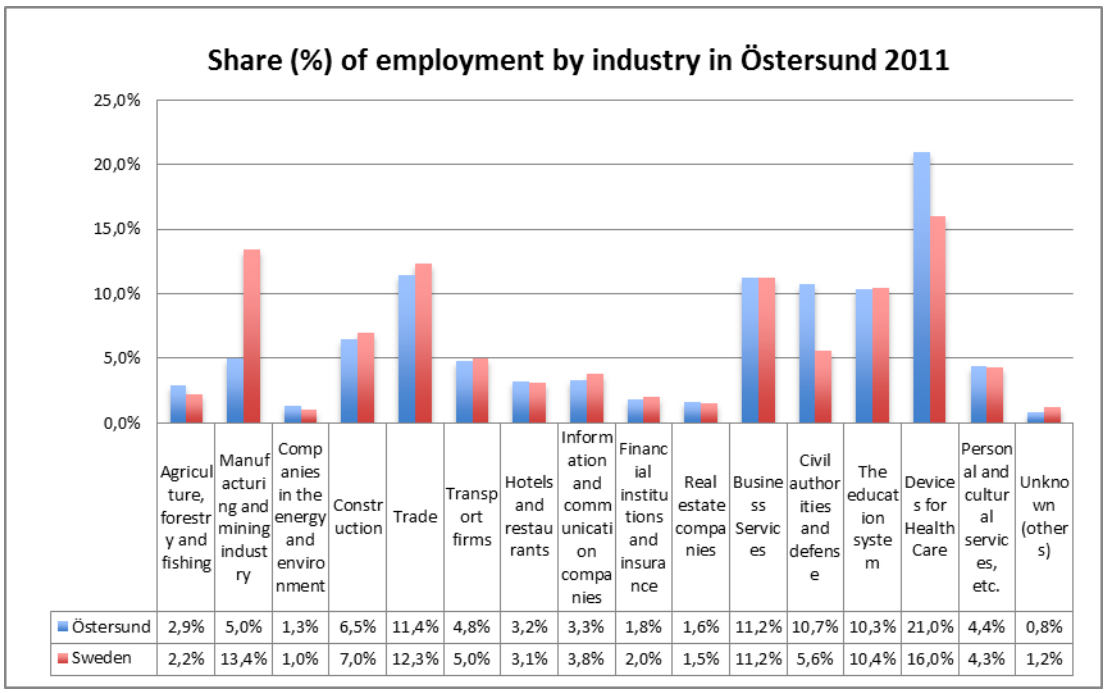
	Östersund 1991	Sweden 1991	Östersund 2001	Sweden 2001	Östersund 2011	Sweden 2011
0-25	33,92%	32,46%	31,02%	31,01%	30,86%	31,11%
26-65	50,39%	51,05%	52,75%	52,71%	51,20%	51,39%
66-over	15,70%	16,49%	16,24%	16,29%	17,94%	17,50%

Östersund 6. Night population 2011



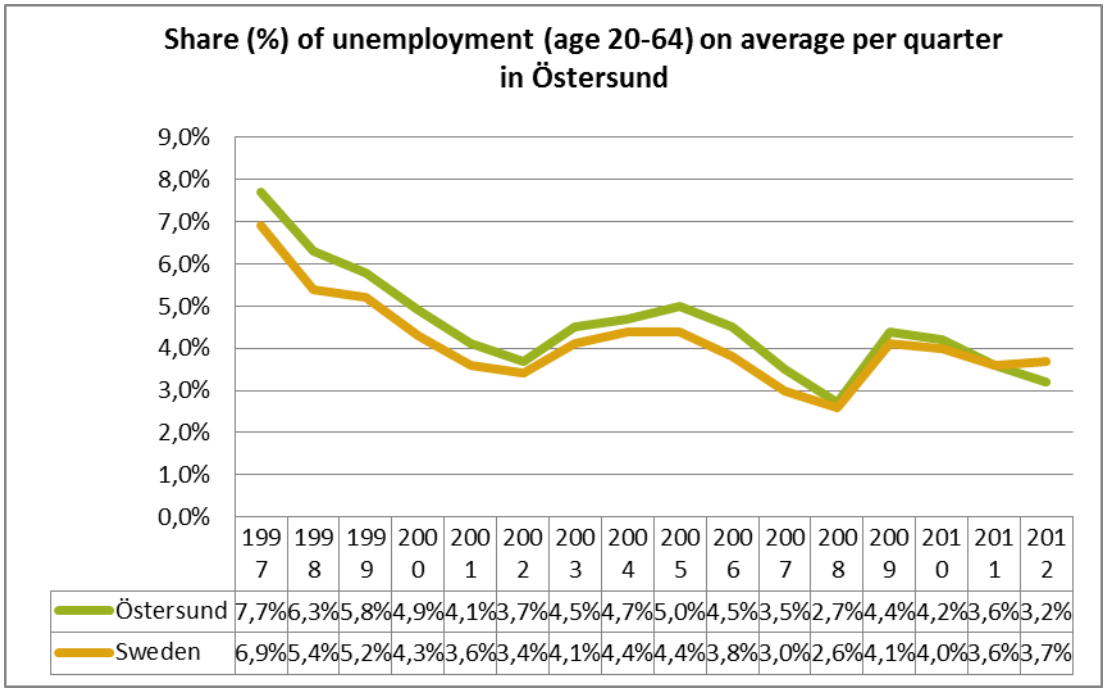
	Men	Women
Östersund	79,7%	77,5%
Sweden	78,5%	75,0%

Östersund 7. Employment structure 2011



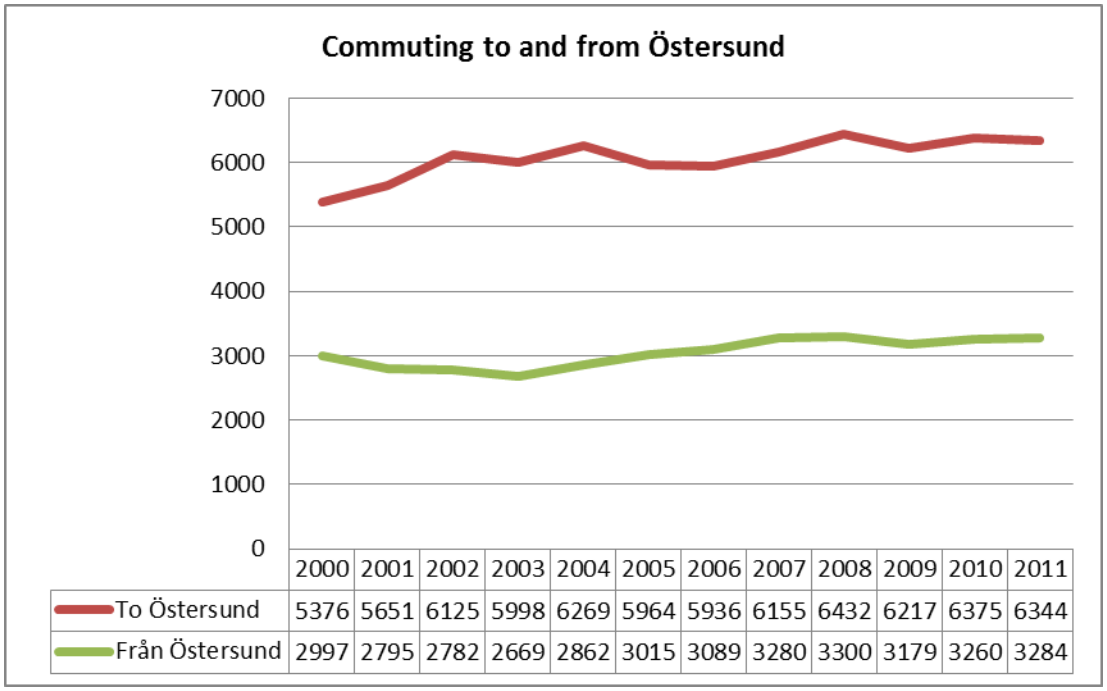
	Agriculture, forestry and fishing	Manufacturing and mining industry	Companies in the energy and environment	Construction	Trade	Transport firms	Hotels and restaurants	Information and communication companies	Financial institutions and insurance	Real estate companies	Business Services	Civil authorities and defense	The education system	Devices for Health Care	Personal and cultural services, etc.	Unknown (others)
Östersund	2,9%	5,0%	1,3%	6,5%	11,4%	4,8%	3,2%	3,3%	1,8%	1,6%	11,2%	10,7%	10,3%	21,0%	4,4%	0,8%
Sweden	2,2%	13,4%	1,0%	7,0%	12,3%	5,0%	3,1%	3,8%	2,0%	1,5%	11,2%	5,6%	10,4%	16,0%	4,3%	1,2%

Östersund 8. Unemployment rates 1997 2012 (% ages 20-64)



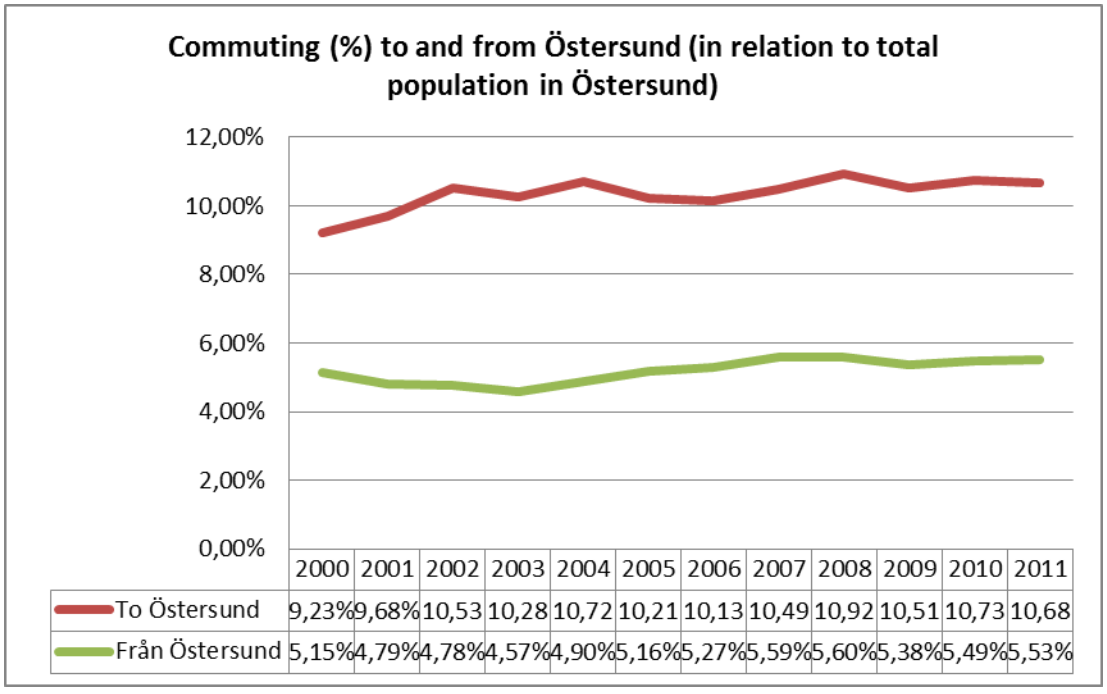
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Östersund	7,7%	6,3%	5,8%	4,9%	4,1%	3,7%	4,5%	4,7%	5,0%	4,5%	3,5%	2,7%	4,4%	4,2%	3,6%	3,2%
Sweden	6,9%	5,4%	5,2%	4,3%	3,6%	3,4%	4,1%	4,4%	4,4%	3,8%	3,0%	2,6%	4,1%	4,0%	3,6%	3,7%

Östersund 9. In- and out-commuting 1985-2011



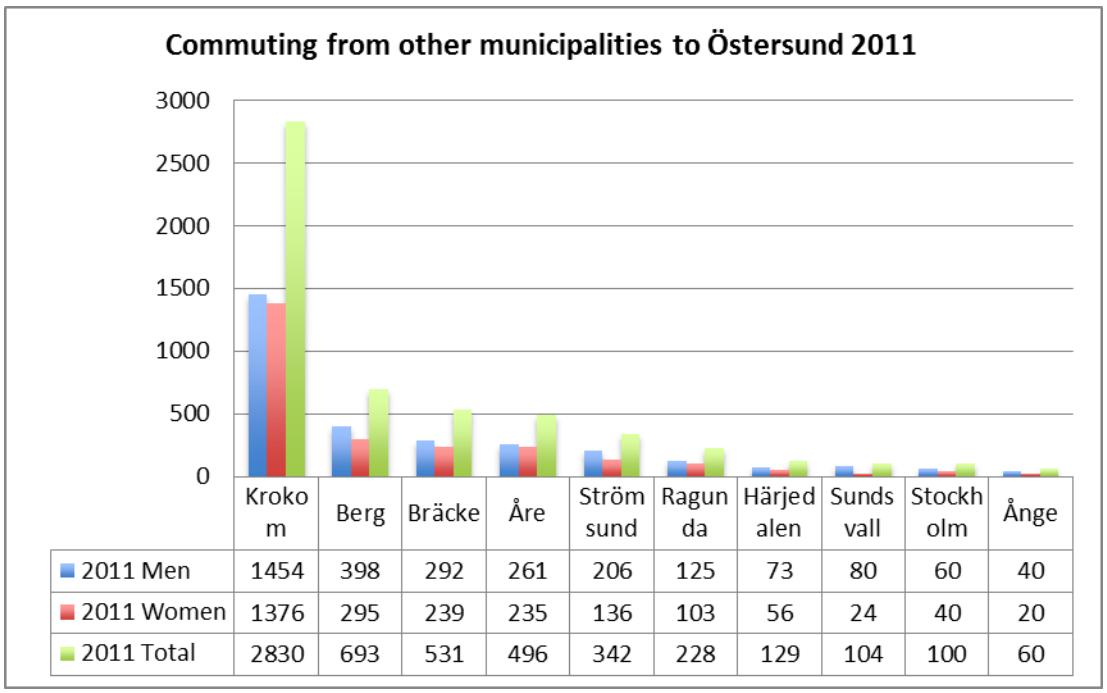
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
To Östersund	5376	5651	6125	5998	6269	5964	5936	6155	6432	6217	6375	6344
Från Östersund	2997	2795	2782	2669	2862	3015	3089	3280	3300	3179	3260	3284

Östersund 10. Commuting to and from Östersund in relation to population



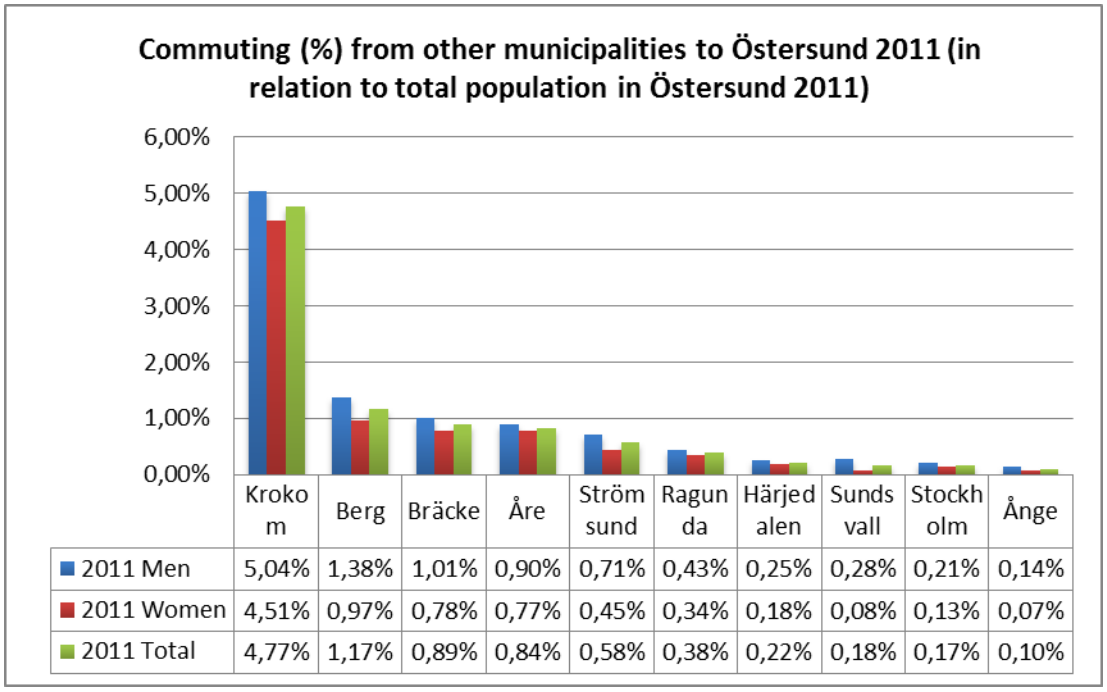
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
To Östersund	9,23%	9,68%	10,53	10,28	10,72	10,21	10,13	10,49	10,92	10,51	10,73	10,68
Från Östersund	5,15%	4,79%	4,78%	4,57%	4,90%	5,16%	5,27%	5,59%	5,60%	5,38%	5,49%	5,53%

Östersund 11. In-commuting to Östersund 2011



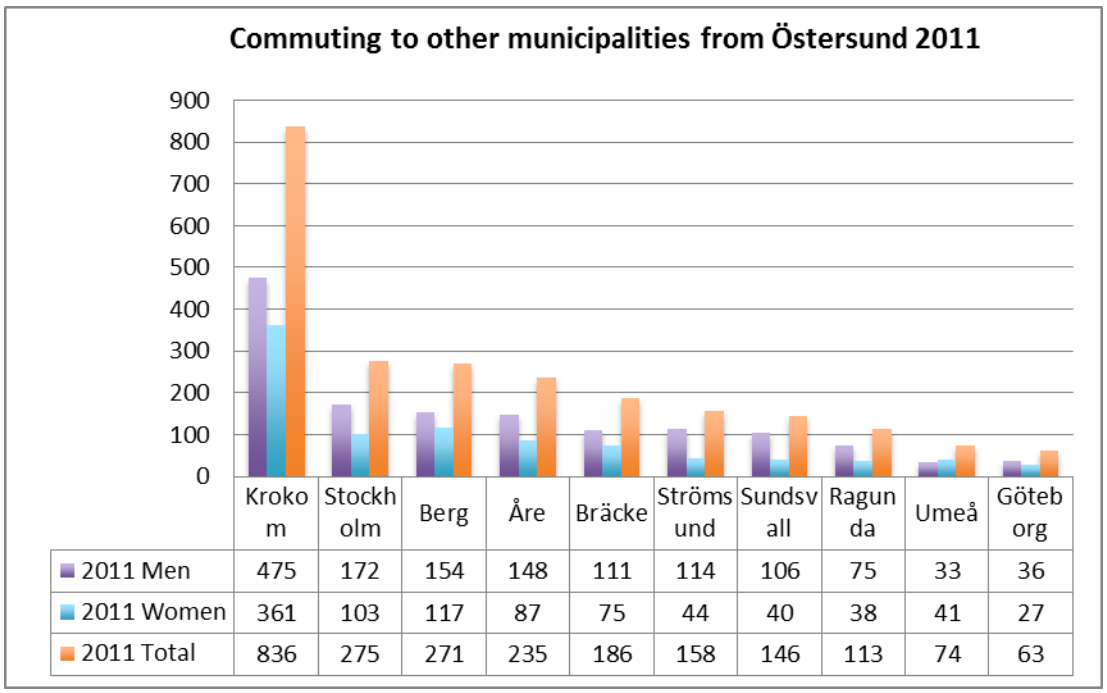
	Kroko m	Berg	Bräcke	Åre	Ström sund	Ragun da	Härjed alen	Sunds vall	Stockh olm	Ånge
2011 Men	1454	398	292	261	206	125	73	80	60	40
2011 Women	1376	295	239	235	136	103	56	24	40	20
2011 Total	2830	693	531	496	342	228	129	104	100	60

Östersund 12. In-commuting in relation to population



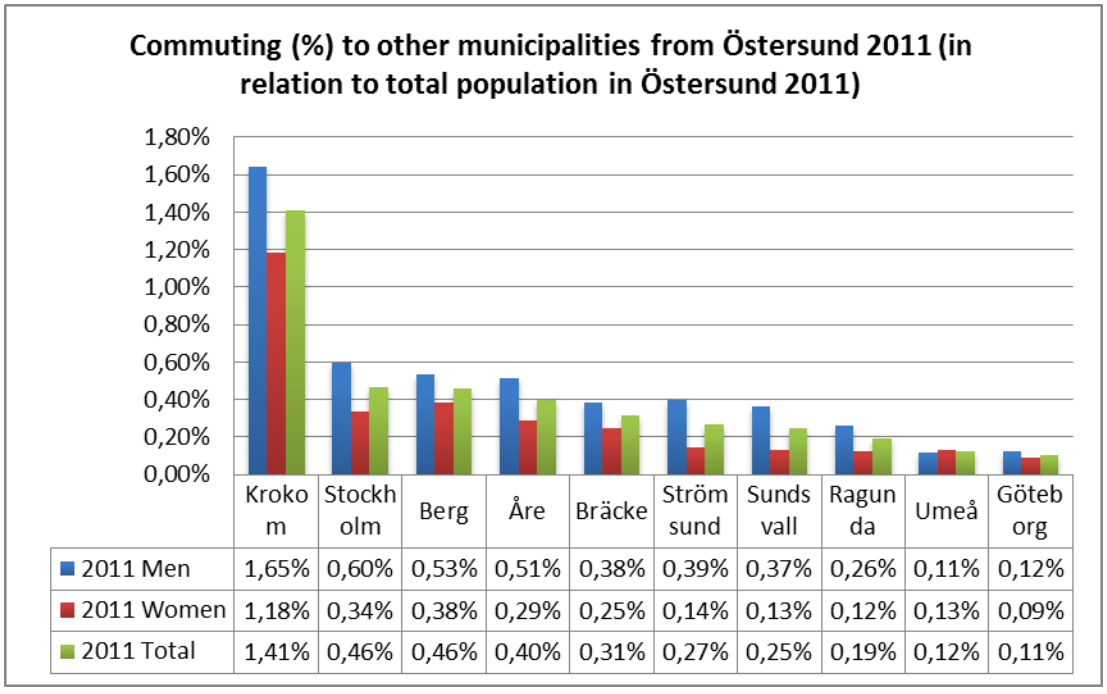
	Kroko m	Berg	Bräcke	Åre	Ström sund	Ragun da	Härjed alen	Sunds vall	Stockh olm	Ånge
2011 Men	5,04%	1,38%	1,01%	0,90%	0,71%	0,43%	0,25%	0,28%	0,21%	0,14%
2011 Women	4,51%	0,97%	0,78%	0,77%	0,45%	0,34%	0,18%	0,08%	0,13%	0,07%
2011 Total	4,77%	1,17%	0,89%	0,84%	0,58%	0,38%	0,22%	0,18%	0,17%	0,10%

Östersund 13. Out-commuting from Östersund 2011



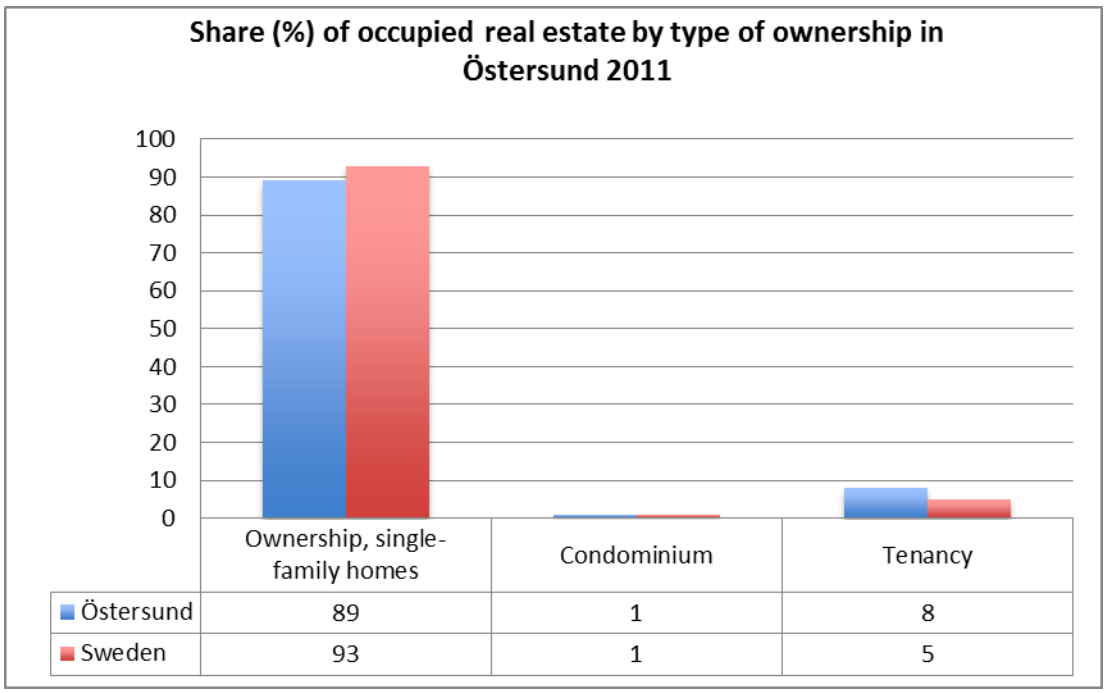
	Krokom	Stockholm	Berg	Åre	Bräcke	Strömsund	Sundsvall	Ragunda	Umeå	Göteborg
2011 Men	475	172	154	148	111	114	106	75	33	36
2011 Women	361	103	117	87	75	44	40	38	41	27
2011 Total	836	275	271	235	186	158	146	113	74	63

Östersund 14. Out-commuting in relation to population



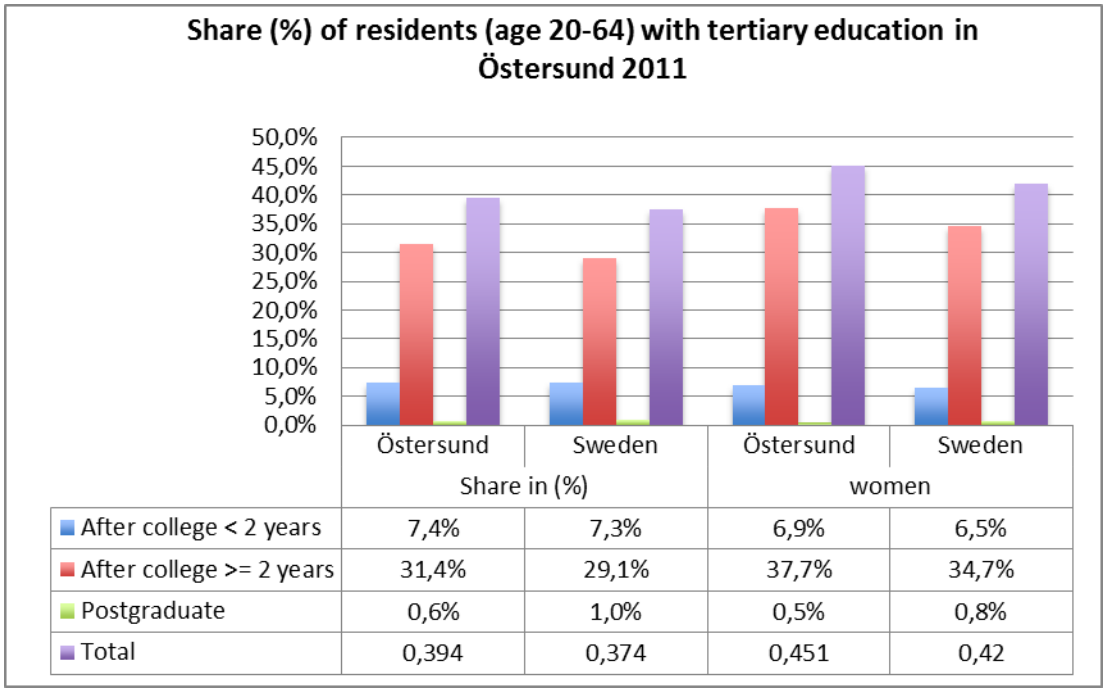
	Krokom	Stockholm	Berg	Åre	Bräcke	Ström sund	Sunds vall	Ragunda	Umeå	Göteborg
2011 Men	1,65%	0,60%	0,53%	0,51%	0,38%	0,39%	0,37%	0,26%	0,11%	0,12%
2011 Women	1,18%	0,34%	0,38%	0,29%	0,25%	0,14%	0,13%	0,12%	0,13%	0,09%
2011 Total	1,41%	0,46%	0,46%	0,40%	0,31%	0,27%	0,25%	0,19%	0,12%	0,11%

Östersund 15. Housing structure 2011



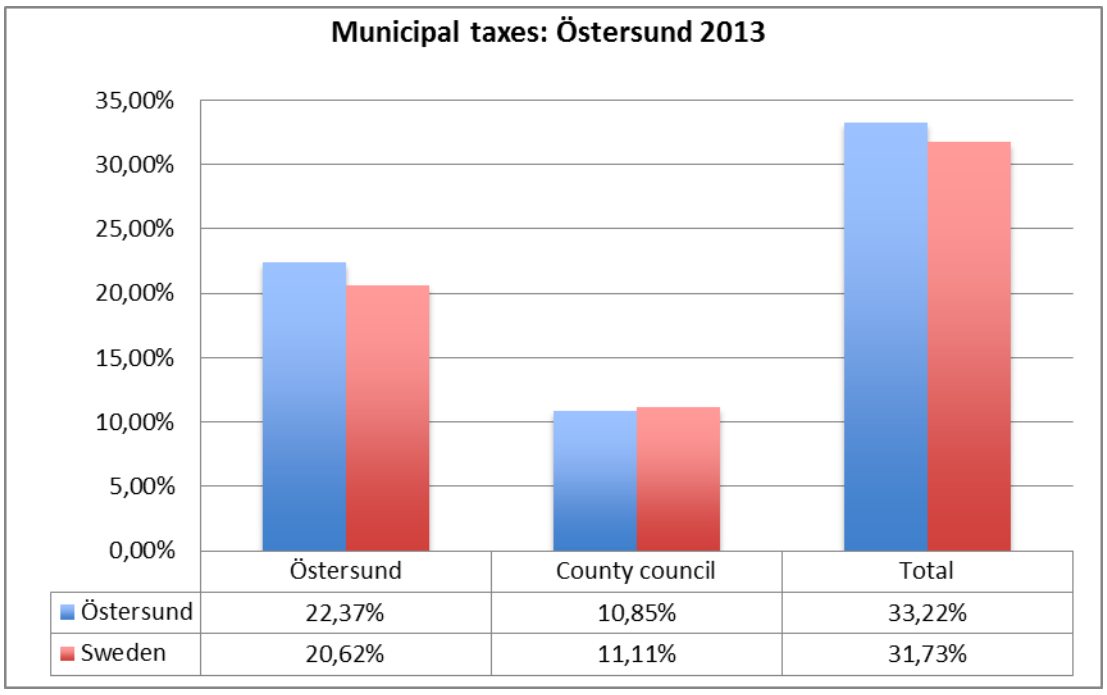
	Ownership, single-family homes	Condominium	Tenancy
Östersund	89	1	8
Sweden	93	1	5

Östersund 16. Educational structure 2011



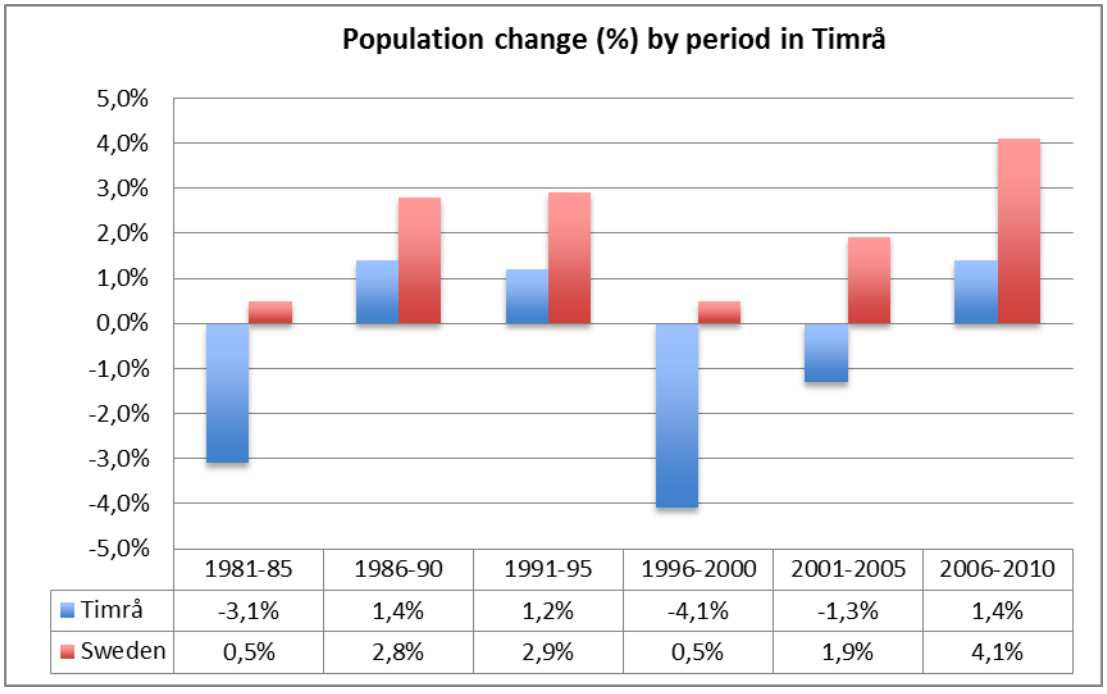
	Share in (%)		women	
	Östersund	Sweden	Östersund	Sweden
After college < 2 years	7,4%	7,3%	6,9%	6,5%
After college >= 2 years	31,4%	29,1%	37,7%	34,7%
Postgraduate	0,6%	1,0%	0,5%	0,8%
Total	0,394	0,374	0,451	0,42

Östersund 17. Local taxes 2013



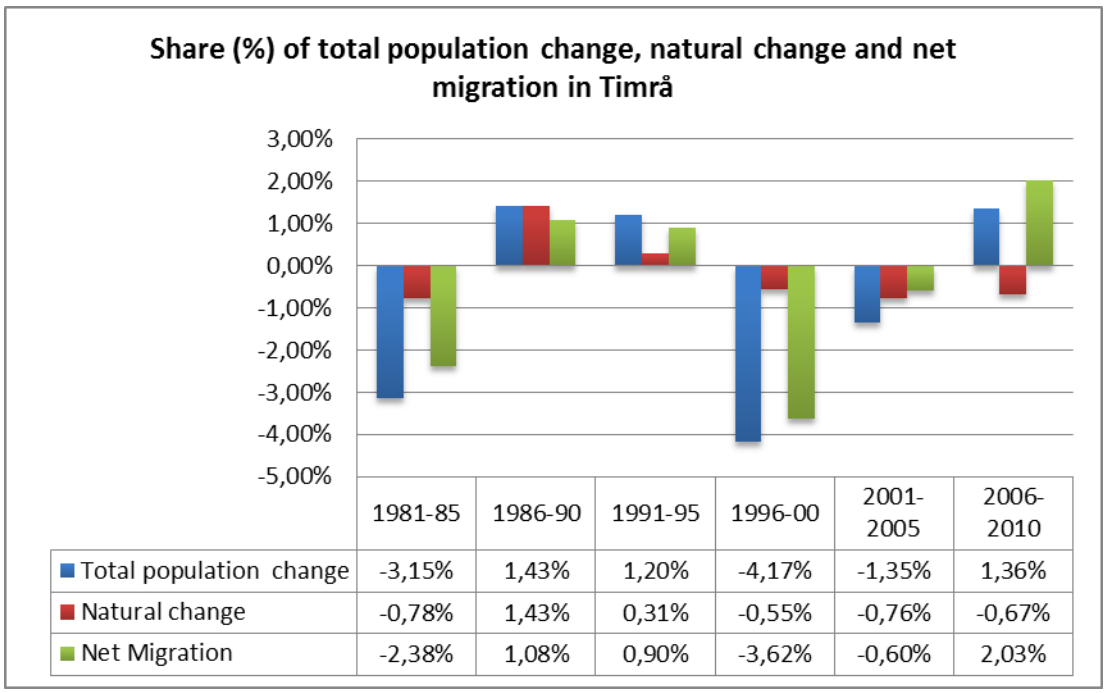
	Östersund	County council	Total
Östersund	22,37%	10,85%	33,22%
Sweden	20,62%	11,11%	31,73%

Timrå 1. Population change 1981-2010 per period (%)



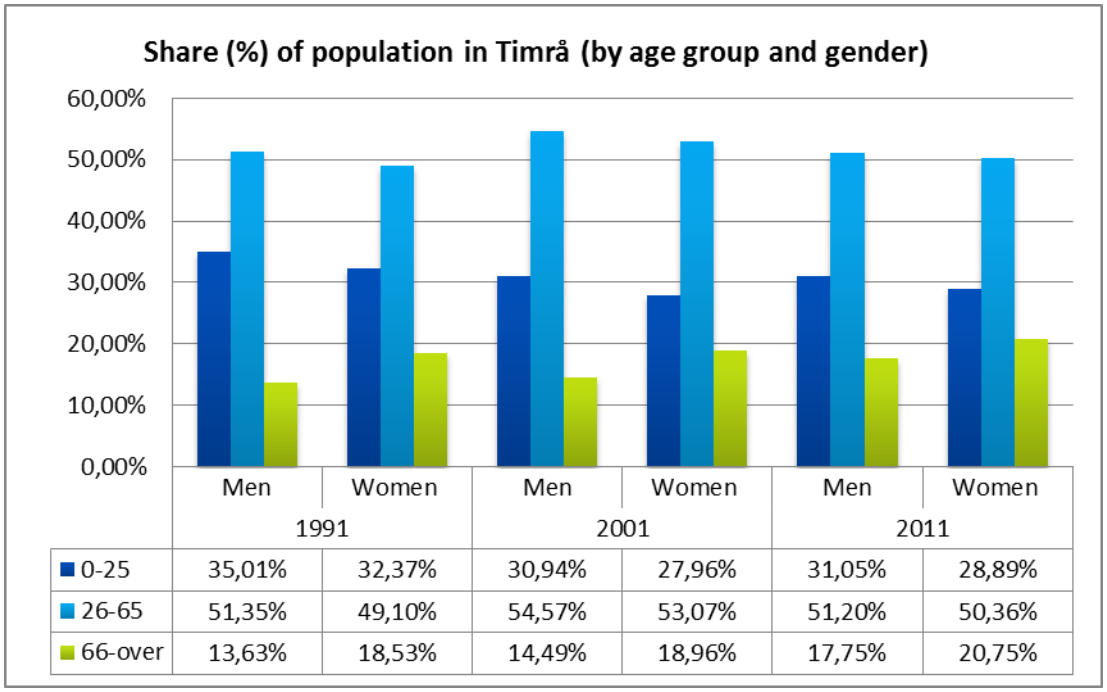
	1981-85	1986-90	1991-95	1996-2000	2001-2005	2006-2010
Timrå	-3,1%	1,4%	1,2%	-4,1%	-1,3%	1,4%
Sweden	0,5%	2,8%	2,9%	0,5%	1,9%	4,1%

Timrå 2. Population change 1981-2010 and its components



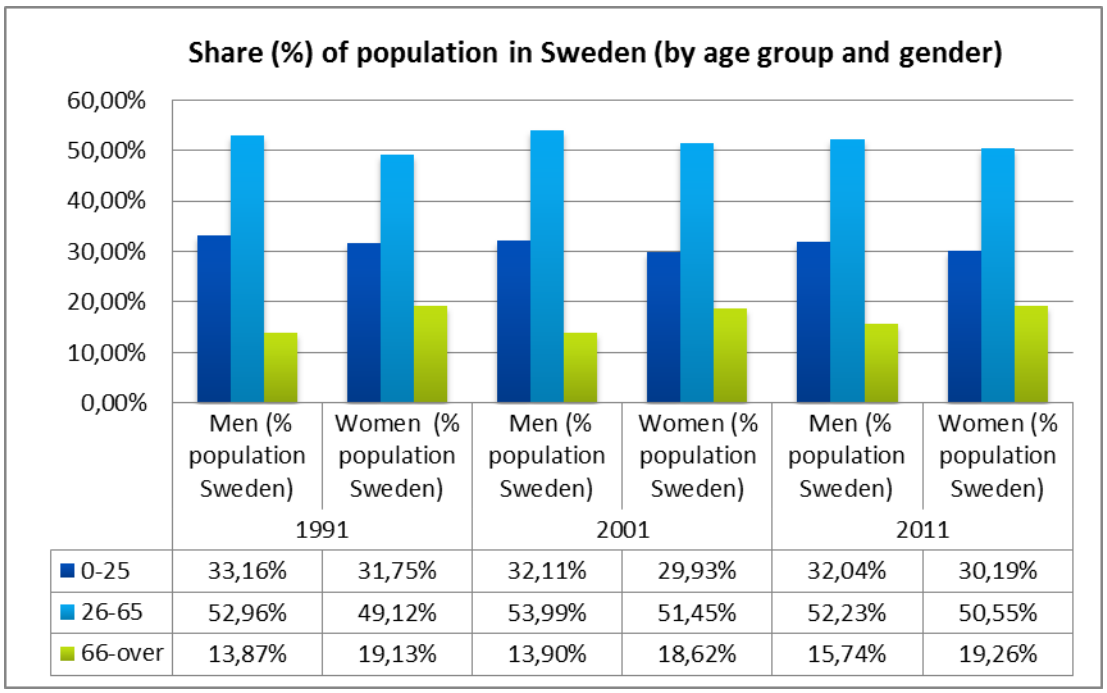
	1981-85	1986-90	1991-95	1996-00	2001-2005	2006-2010
Total population change	-3,15%	1,43%	1,20%	-4,17%	-1,35%	1,36%
Natural change	-0,78%	1,43%	0,31%	-0,55%	-0,76%	-0,67%
Net Migration	-2,38%	1,08%	0,90%	-3,62%	-0,60%	2,03%

Timrå 3. Age structure 1991-2011



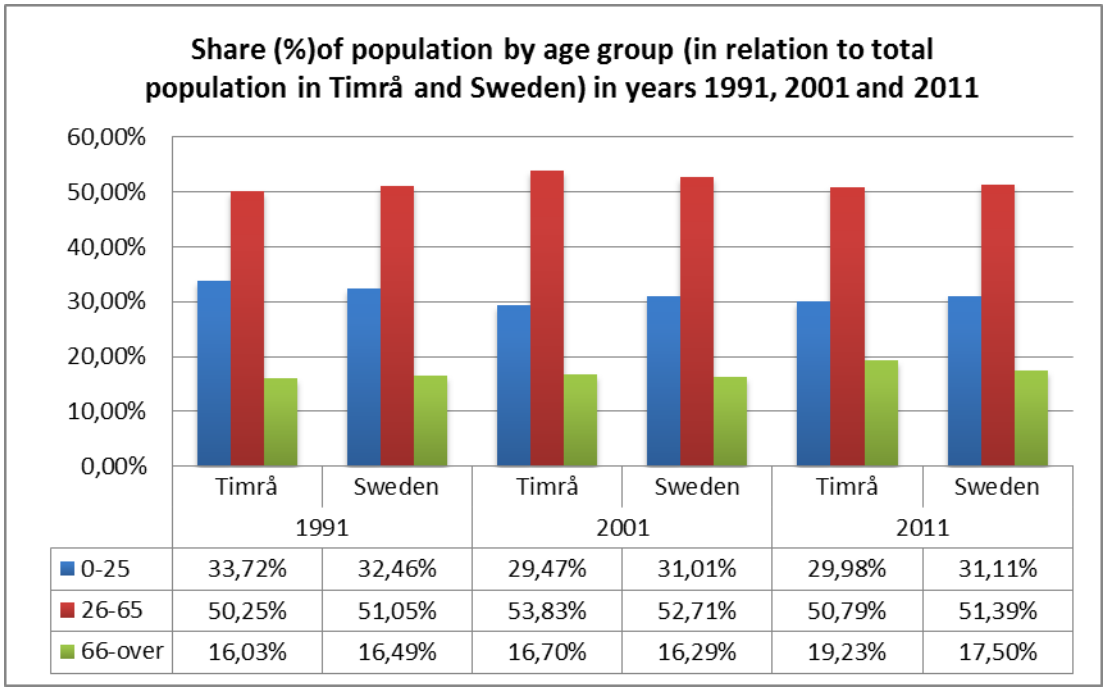
	1991		2001		2011	
	Men	Women	Men	Women	Men	Women
0-25	35,01%	32,37%	30,94%	27,96%	31,05%	28,89%
26-65	51,35%	49,10%	54,57%	53,07%	51,20%	50,36%
66-over	13,63%	18,53%	14,49%	18,96%	17,75%	20,75%

Timrå 4. Age structure 1991-2011 in Sweden



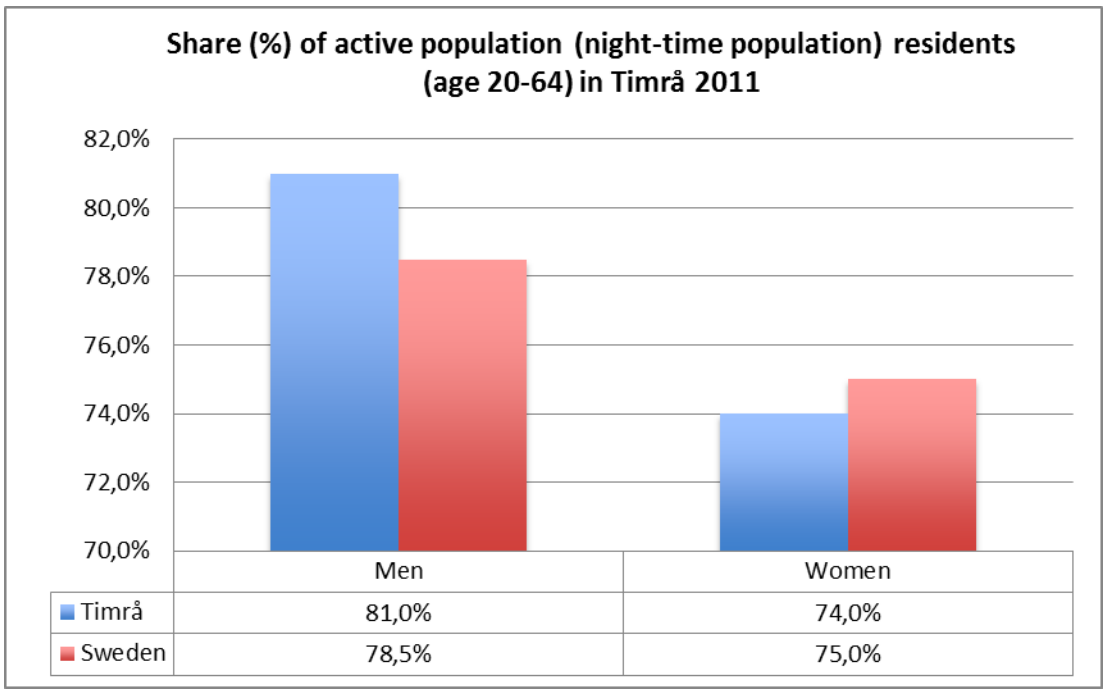
	Men (% population Sweden)	Women (% population Sweden)	Men (% population Sweden)	Women (% population Sweden)	Men (% population Sweden)	Women (% population Sweden)
	1991		2001		2011	
0-25	33,16%	31,75%	32,11%	29,93%	32,04%	30,19%
26-65	52,96%	49,12%	53,99%	51,45%	52,23%	50,55%
66-over	13,87%	19,13%	13,90%	18,62%	15,74%	19,26%

Timrå 5. Share of population by age group in comparison to Sweden



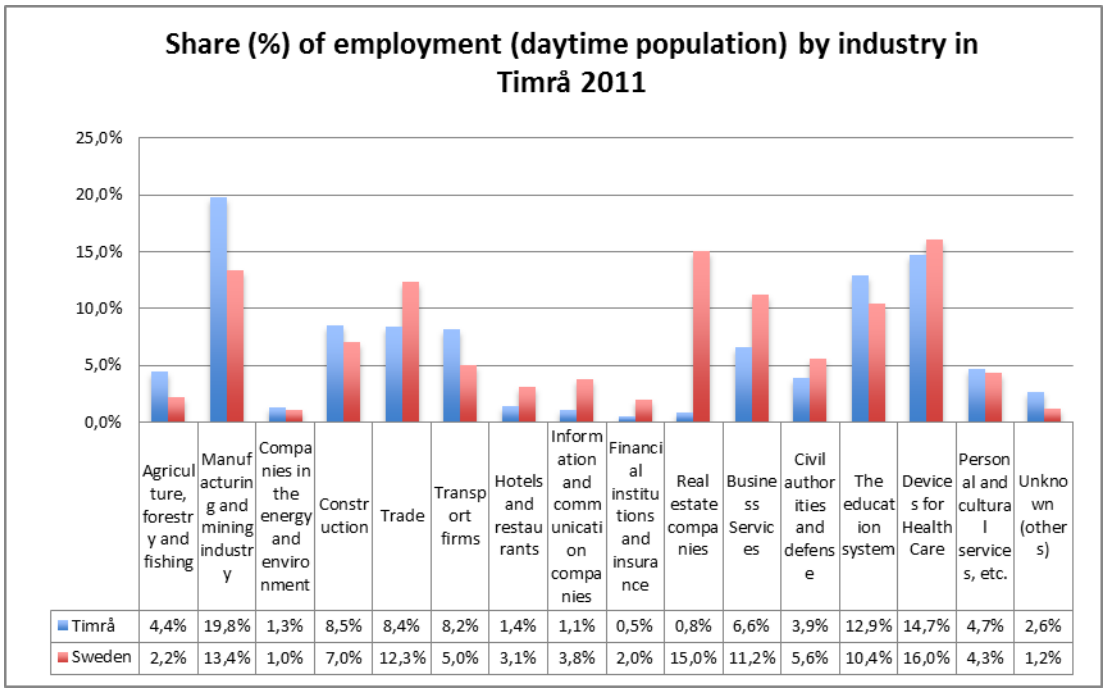
	Timrå	Sweden	Timrå	Sweden	Timrå	Sweden
	1991		2001		2011	
0-25	33,72%	32,46%	29,47%	31,01%	29,98%	31,11%
26-65	50,25%	51,05%	53,83%	52,71%	50,79%	51,39%
66-over	16,03%	16,49%	16,70%	16,29%	19,23%	17,50%

Timrå 6. Night population 2011



	Men	Women
Timrå	81,0%	74,0%
Sweden	78,5%	75,0%

Timrå 7. Employment structure 2011

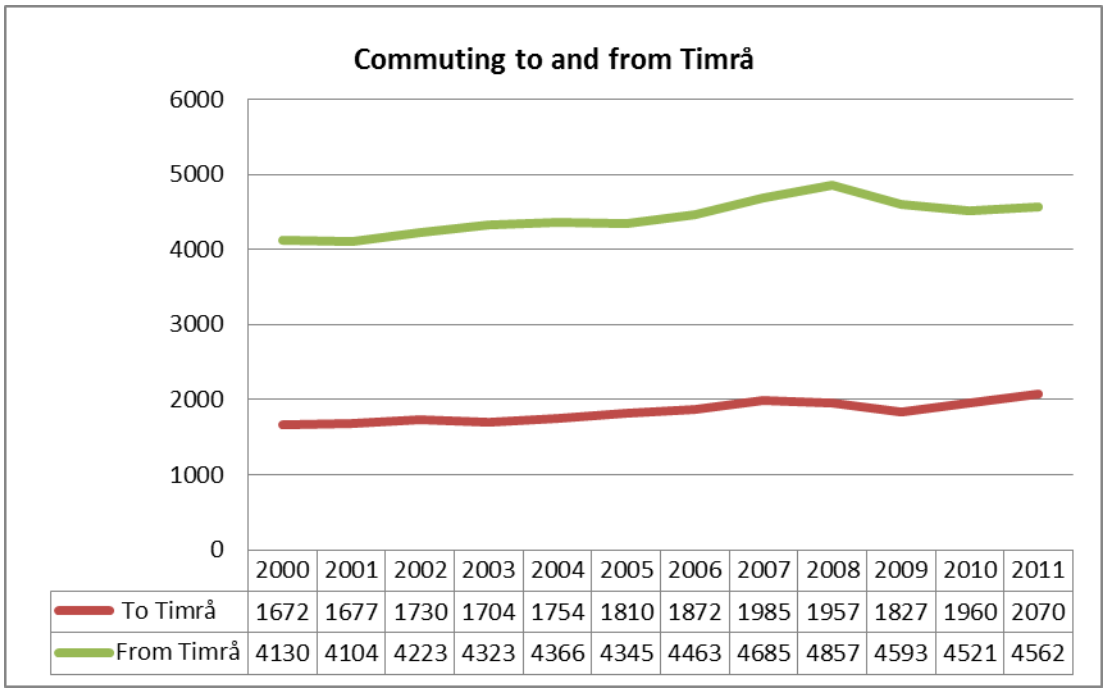


	Agriculture, forestry and fishing	Manufacturing and mining industry	Companies in the energy and environment	Construction	Trade	Transport firms	Hotels and restaurants	Information and communication companies	Financial institutions and insurance	Real estate companies	Business Services	Civil authorities and defense	The education system	Devices for Health Care	Personal and cultural services, etc.	Unknown (others)
Timrå	4,4%	19,8%	1,3%	8,5%	8,4%	8,2%	1,4%	1,1%	0,5%	0,8%	6,6%	3,9%	12,9%	14,7%	4,7%	2,6%
Sweden	2,2%	13,4%	1,0%	7,0%	12,3%	5,0%	3,1%	3,8%	2,0%	15,0%	11,2%	5,6%	10,4%	16,0%	4,3%	1,2%

Timrå 8. Unemployment rate 1997-2012 (% ages 20-64)

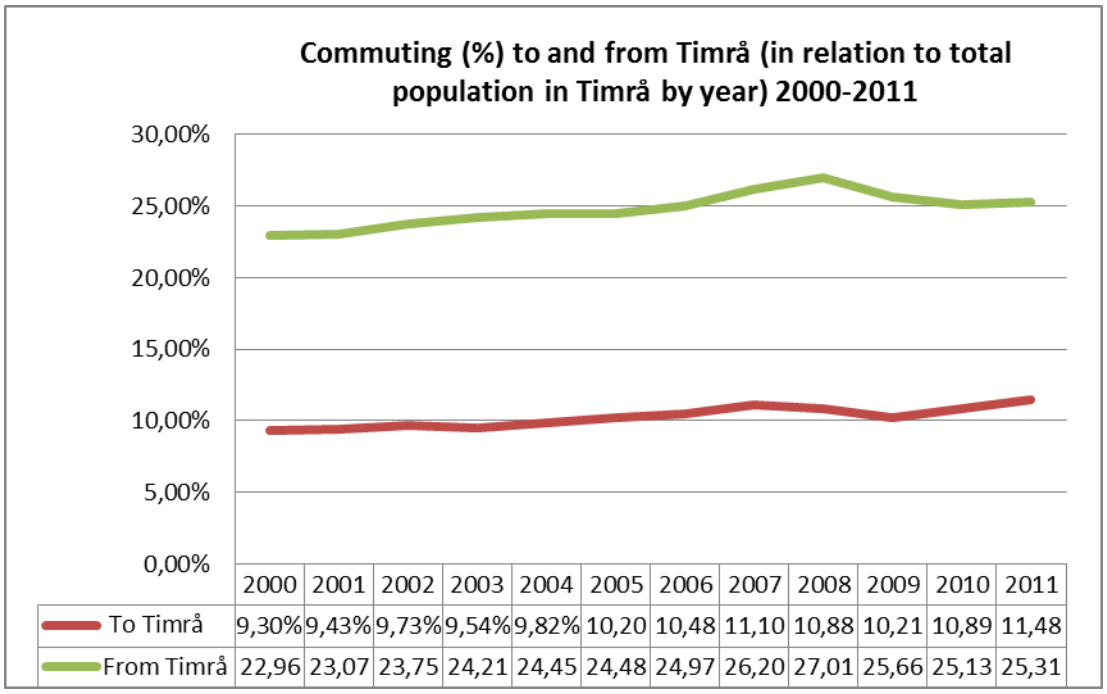
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Timrå	10,3	7,8%	7,7%	6,2%	4,5%	3,8%	4,3%	4,6%	5,2%	4,6%	4,4%	4,0%	5,7%	5,3%	3,9%	4,2%
Sweden	6,9%	5,4%	5,2%	4,3%	3,6%	3,4%	4,1%	4,4%	4,4%	3,8%	3,0%	2,6%	4,1%	4,0%	3,6%	3,7%

Timrå 9. In- and out-commuting 2000-2011



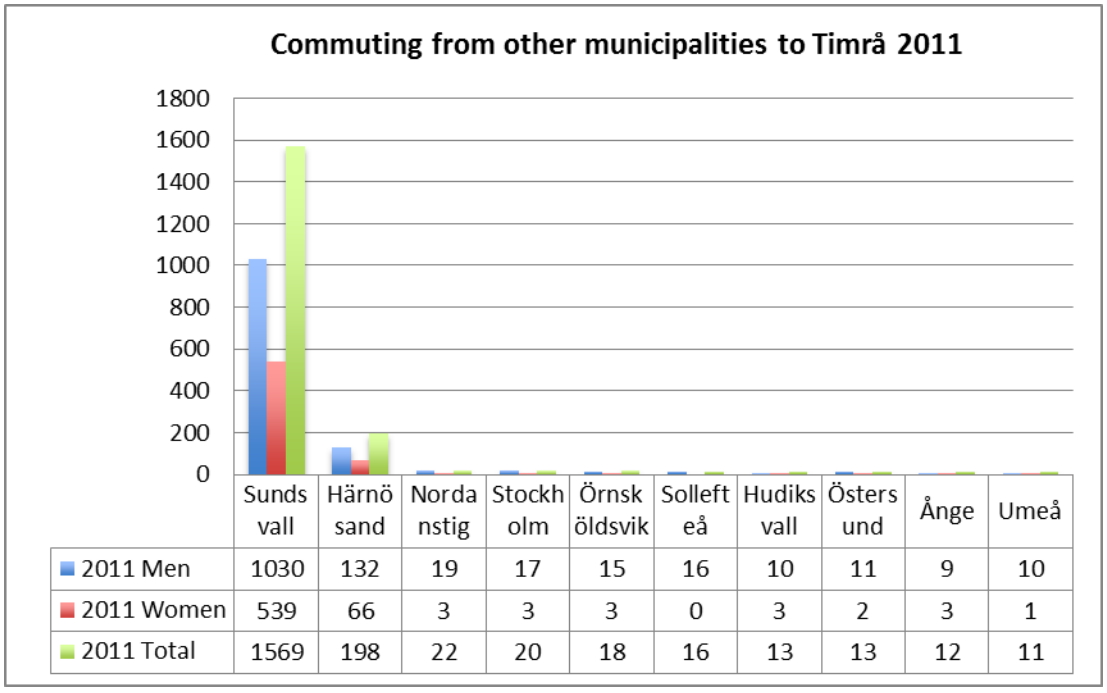
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
To Timrå	1672	1677	1730	1704	1754	1810	1872	1985	1957	1827	1960	2070
From Timrå	4130	4104	4223	4323	4366	4345	4463	4685	4857	4593	4521	4562

Timrå 10. In- and out-commuting 2000-2011 in relation to total population



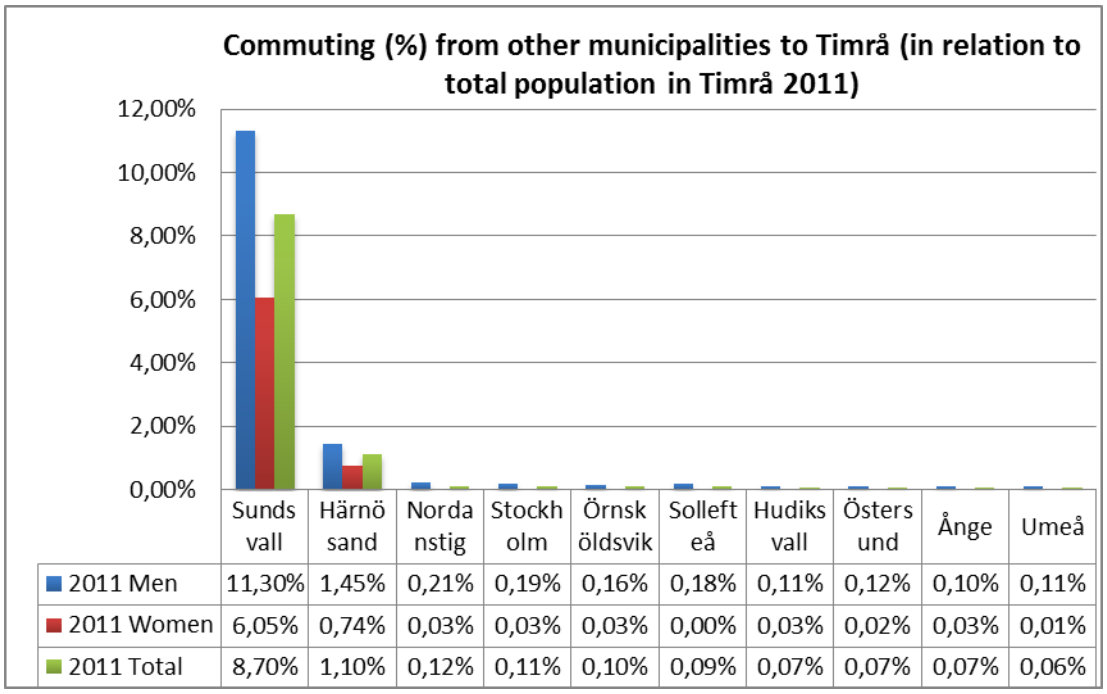
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
To Timrå	9,30%	9,43%	9,73%	9,54%	9,82%	10,20	10,48	11,10	10,88	10,21	10,89	11,48
From Timrå	22,96	23,07	23,75	24,21	24,45	24,48	24,97	26,20	27,01	25,66	25,13	25,31

Timrå 11. In-commuting to Timrå 2011



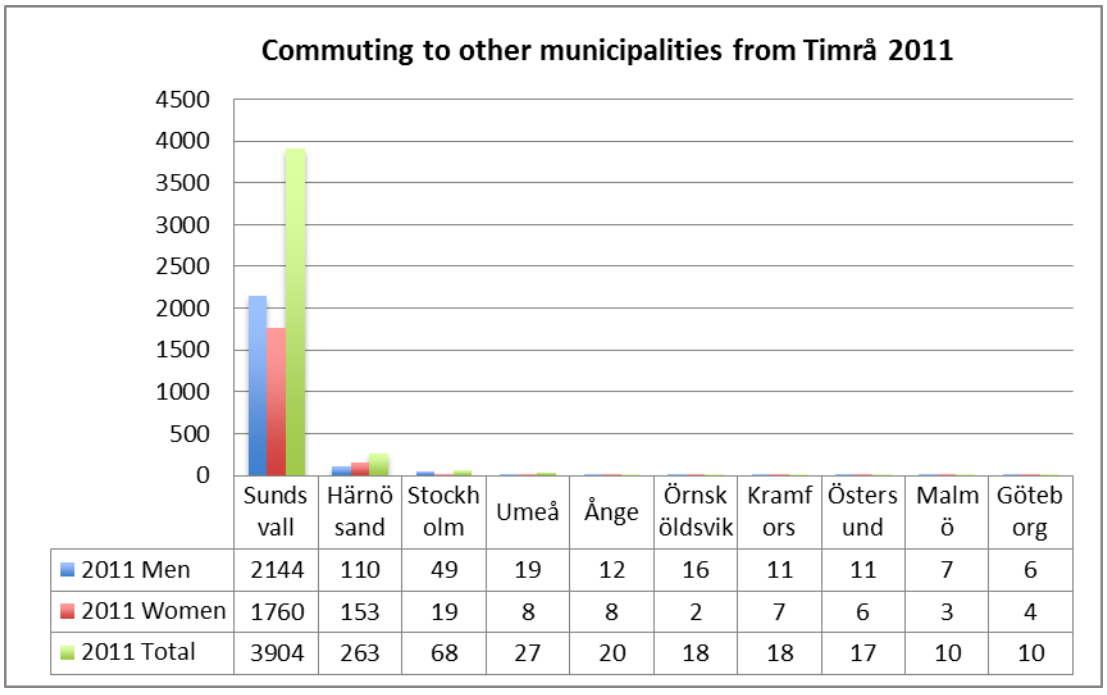
	Sundsvall	Härnösand	Nordanstig	Stockholm	Örnsköldsvik	Sollefteå	Hudiksvall	Östersund	Ånge	Umeå
2011 Men	1030	132	19	17	15	16	10	11	9	10
2011 Women	539	66	3	3	3	0	3	2	3	1
2011 Total	1569	198	22	20	18	16	13	13	12	11

Timrå 12. In-commuting to Timrå in relation to total population



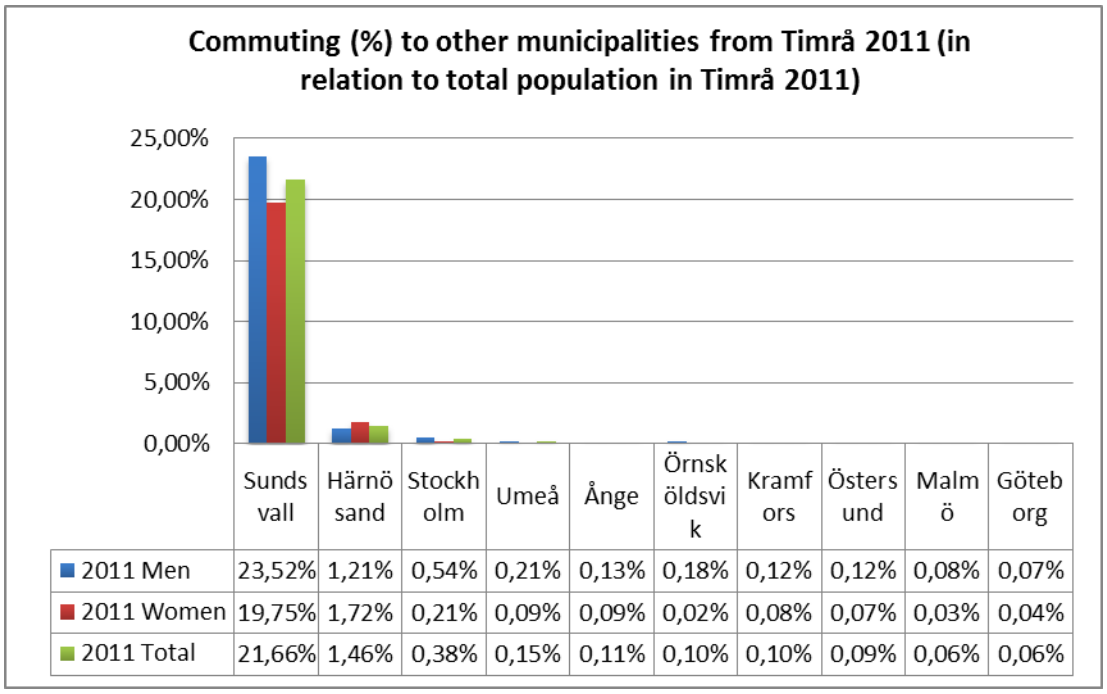
	Sundsvall	Härnösand	Nordanstig	Stockholm	Örnsköldsvik	Sollefteå	Hudiksvall	Östersund	Ånge	Umeå
2011 Men	11,30%	1,45%	0,21%	0,19%	0,16%	0,18%	0,11%	0,12%	0,10%	0,11%
2011 Women	6,05%	0,74%	0,03%	0,03%	0,03%	0,00%	0,03%	0,02%	0,03%	0,01%
2011 Total	8,70%	1,10%	0,12%	0,11%	0,10%	0,09%	0,07%	0,07%	0,07%	0,06%

Timrå 13. Out-commuting from Timrå 2011



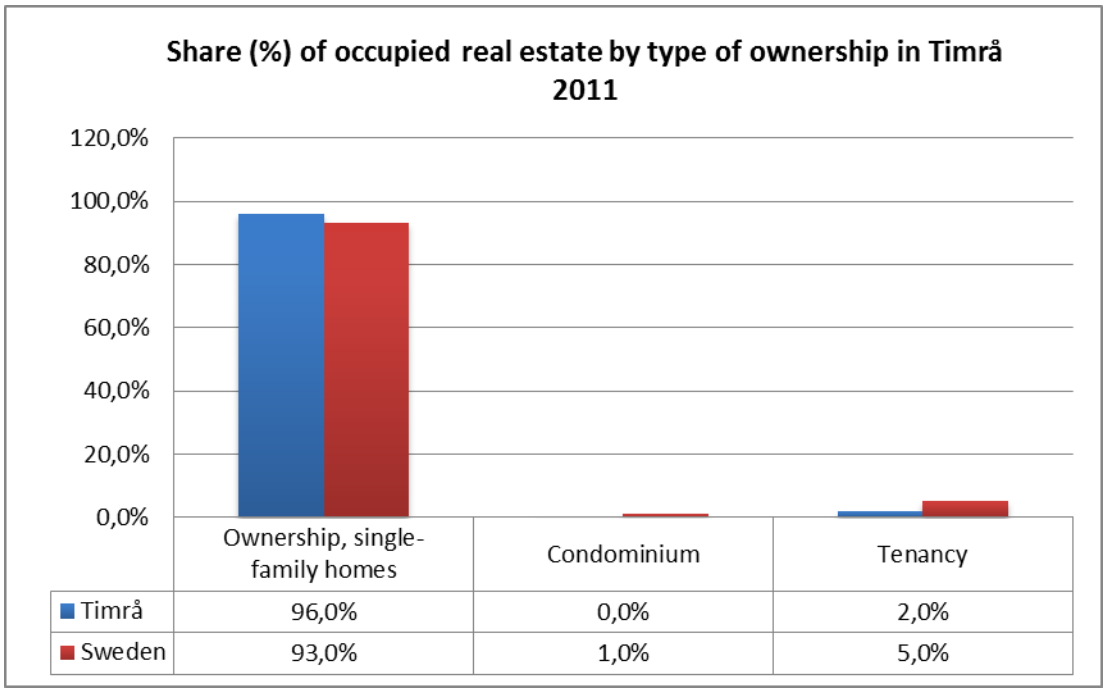
	Sundsvall	Härnösand	Stockholm	Umeå	Ånge	Örnsköldsvik	Kramfors	Östersund	Malmö	Göteborg
2011 Men	2144	110	49	19	12	16	11	11	7	6
2011 Women	1760	153	19	8	8	2	7	6	3	4
2011 Total	3904	263	68	27	20	18	18	17	10	10

Timrå 14. Out-commuting in relation to total population



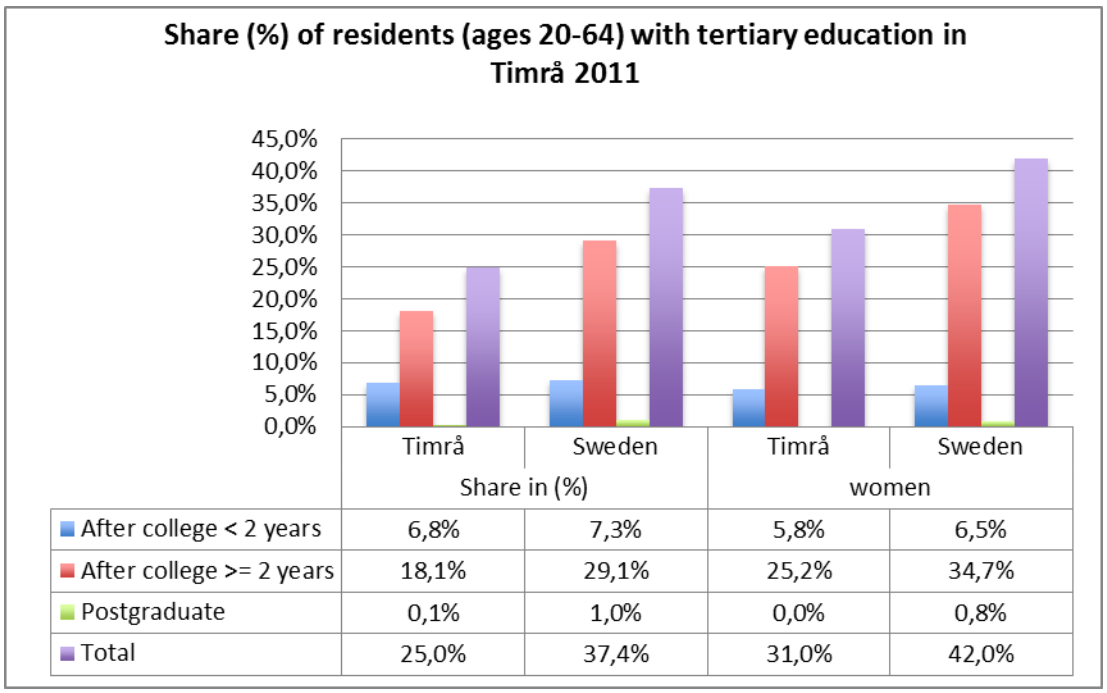
	Sundsvall	Härnösand	Stockholm	Umeå	Ånge	Örnsköldsvik	Kramfors	Östersund	Malmö	Göteborg
2011 Men	23,52%	1,21%	0,54%	0,21%	0,13%	0,18%	0,12%	0,12%	0,08%	0,07%
2011 Women	19,75%	1,72%	0,21%	0,09%	0,09%	0,02%	0,08%	0,07%	0,03%	0,04%
2011 Total	21,66%	1,46%	0,38%	0,15%	0,11%	0,10%	0,10%	0,09%	0,06%	0,06%

Timrå 15. Housing structure 2011



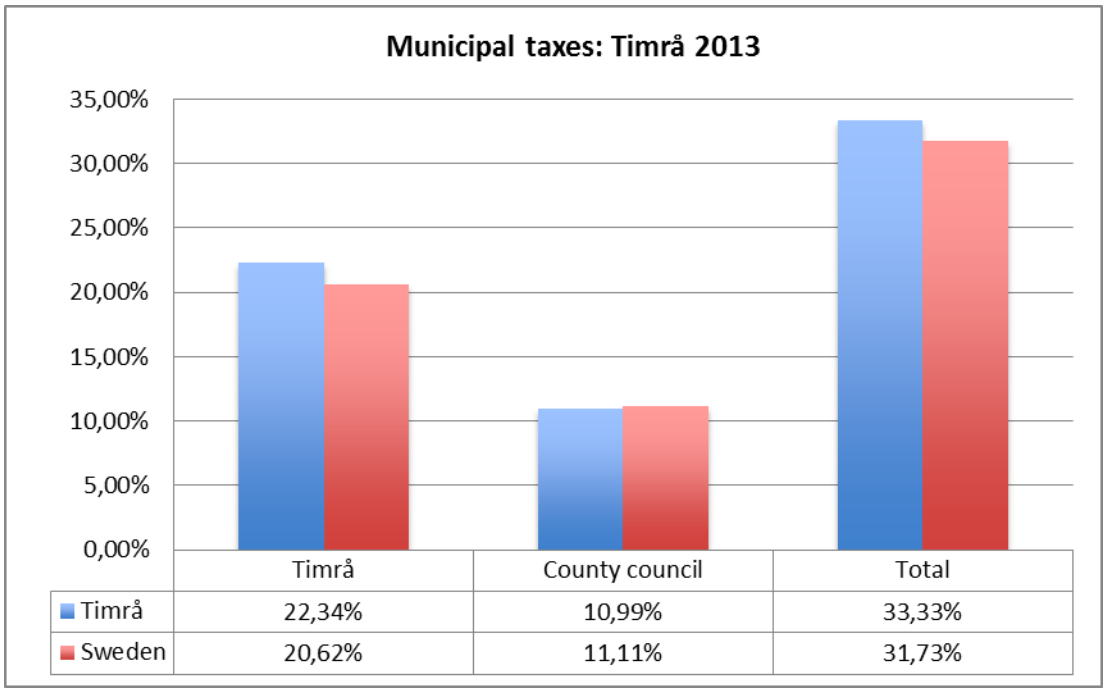
	Ownership, single-family homes	Condominium	Tenancy
Timrå	96,0%	0,0%	2,0%
Sweden	93,0%	1,0%	5,0%

Timrå 16. Educational structure 2011



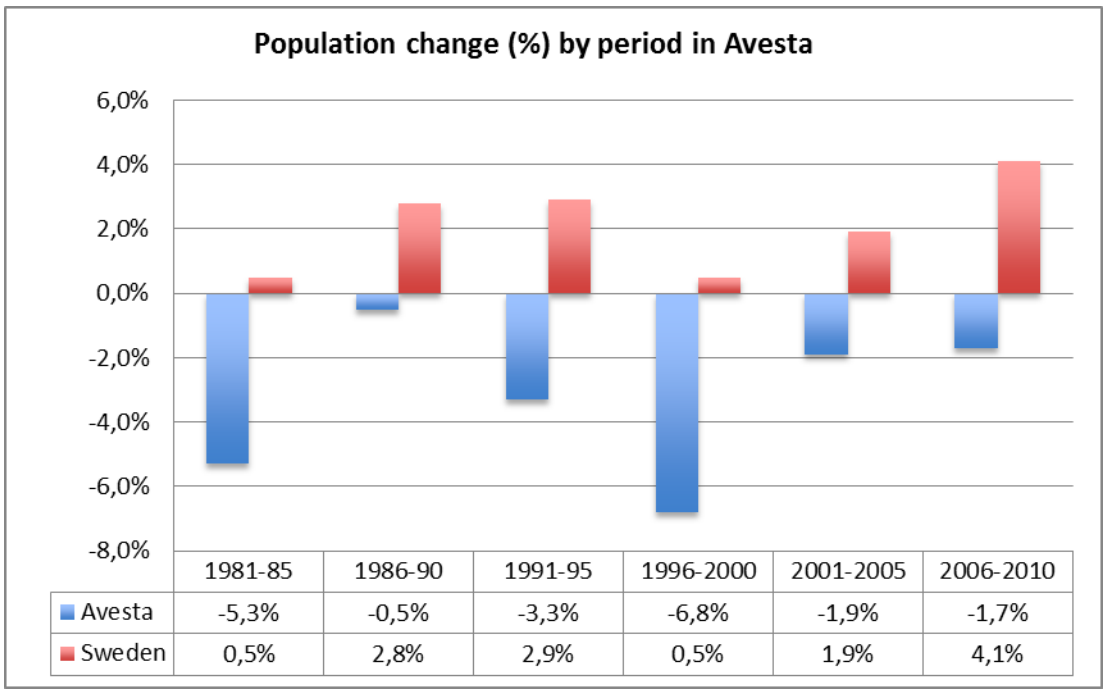
	Share in (%)		women	
	Timrå	Sweden	Timrå	Sweden
After college < 2 years	6,8%	7,3%	5,8%	6,5%
After college >= 2 years	18,1%	29,1%	25,2%	34,7%
Postgraduate	0,1%	1,0%	0,0%	0,8%
Total	25,0%	37,4%	31,0%	42,0%

Timrå 17. Local taxes 2013



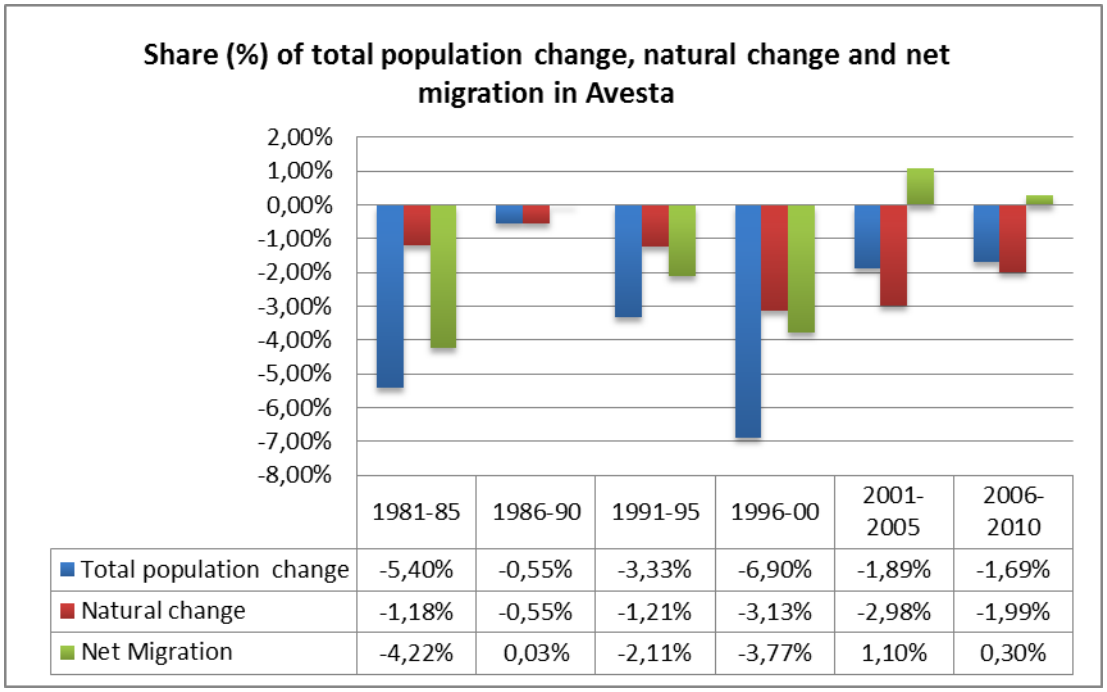
	Timrå	County council	Total
Timrå	22,34%	10,99%	33,33%
Sweden	20,62%	11,11%	31,73%

Avesta 1. Population change 1981-2010 per period (%)



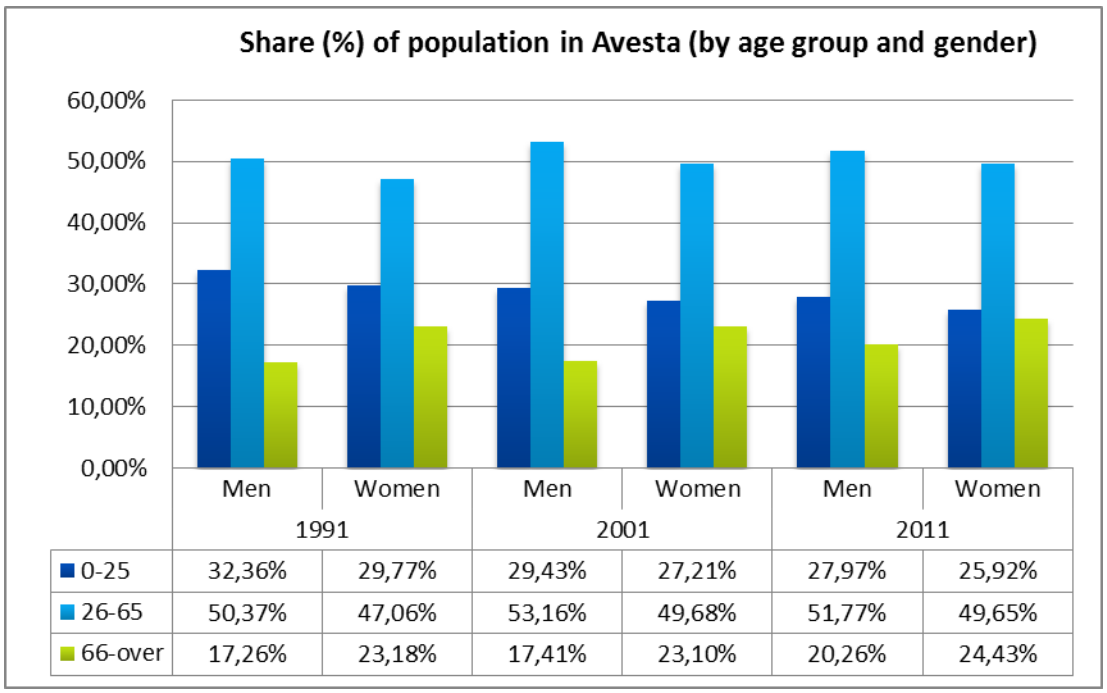
	1981-85	1986-90	1991-95	1996-2000	2001-2005	2006-2010
Avesta	-5,3%	-0,5%	-3,3%	-6,8%	-1,9%	-1,7%
Sweden	0,5%	2,8%	2,9%	0,5%	1,9%	4,1%

Avesta 2. Population change 1981-2010 and its components



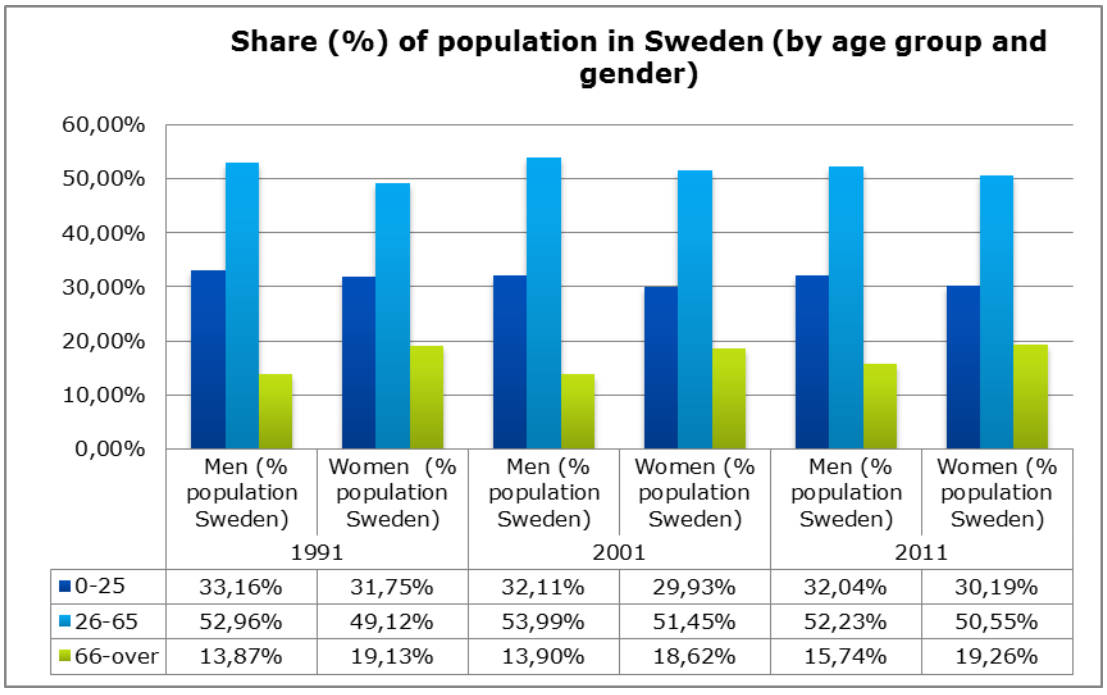
	1981-85	1986-90	1991-95	1996-00	2001-2005	2006-2010
Total population change	-5,40%	-0,55%	-3,33%	-6,90%	-1,89%	-1,69%
Natural change	-1,18%	-0,55%	-1,21%	-3,13%	-2,98%	-1,99%
Net Migration	-4,22%	0,03%	-2,11%	-3,77%	1,10%	0,30%

Avesta 3. Age structure 1991-2011



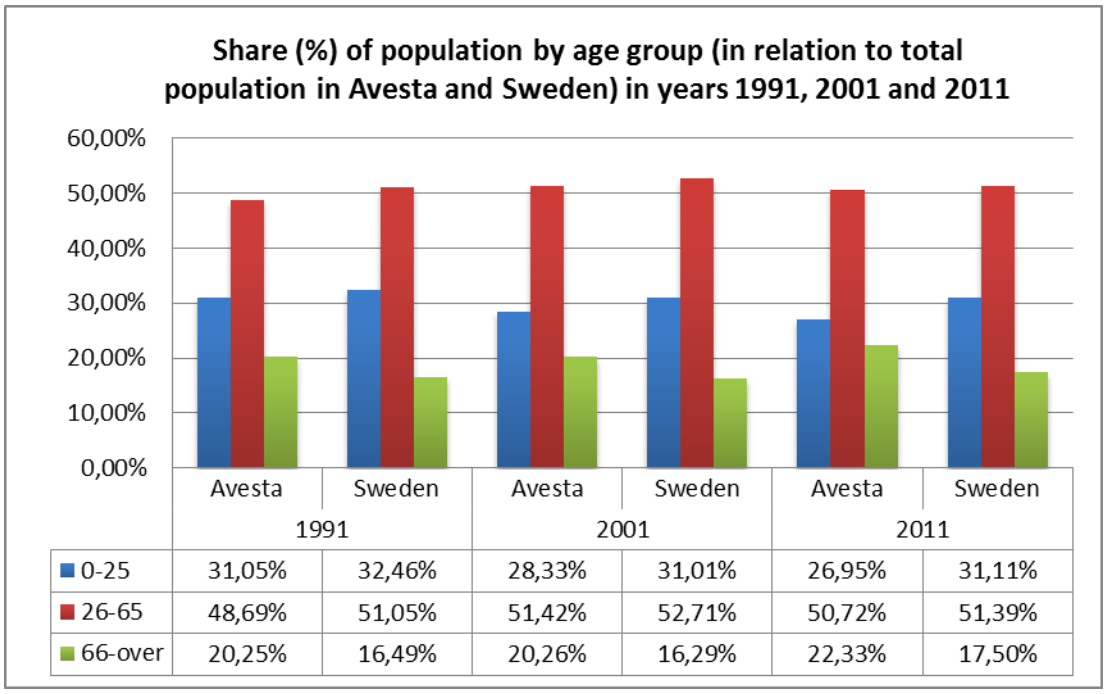
	Men	Women	Men	Women	Men	Women
	1991		2001		2011	
0-25	32,36%	29,77%	29,43%	27,21%	27,97%	25,92%
26-65	50,37%	47,06%	53,16%	49,68%	51,77%	49,65%
66-over	17,26%	23,18%	17,41%	23,10%	20,26%	24,43%

Avesta 4. Age structure in Sweden 1991-2011



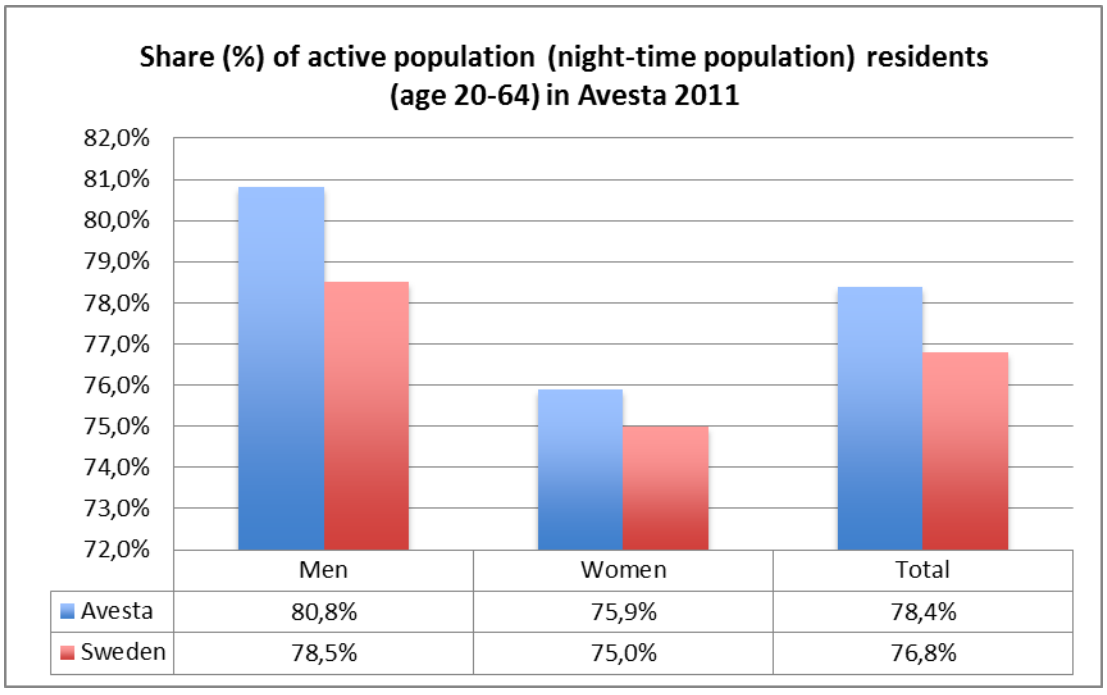
	Men (% population Sweden)	Women (% population Sweden)	Men (% population Sweden)	Women (% population Sweden)	Men (% population Sweden)	Women (% population Sweden)
	1991		2001		2011	
0-25	33,16%	31,75%	32,11%	29,93%	32,04%	30,19%
26-65	52,96%	49,12%	53,99%	51,45%	52,23%	50,55%
66-over	13,87%	19,13%	13,90%	18,62%	15,74%	19,26%

Avesta 5. Share of population by age group in relation to total population



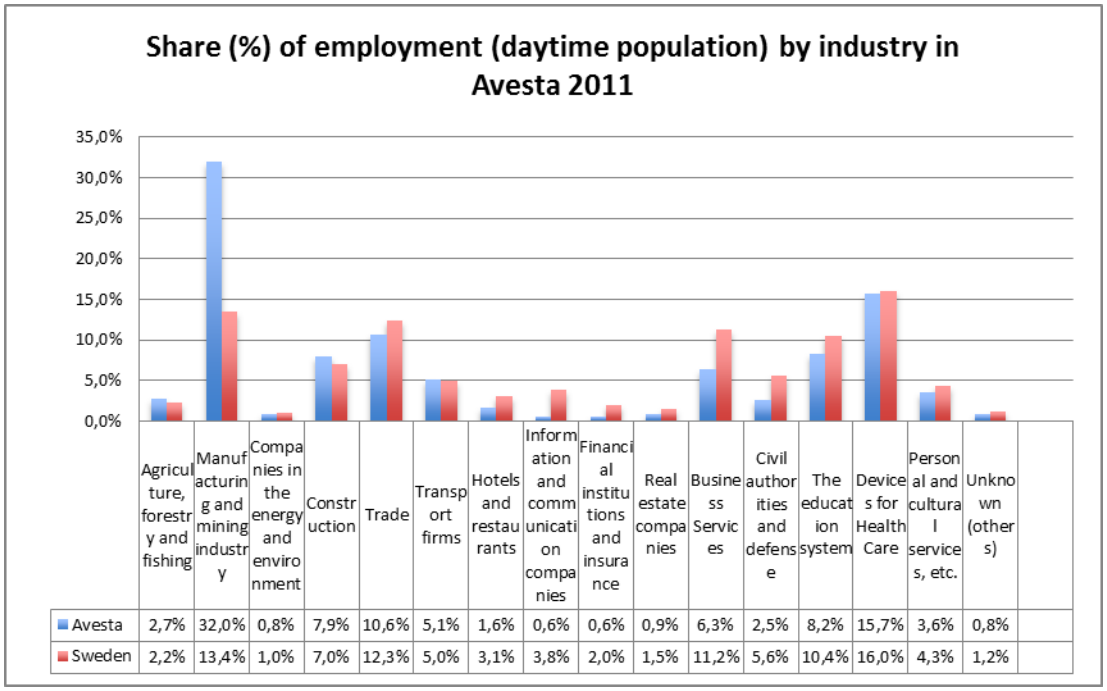
	Avesta 1991	Sweden 1991	Avesta 2001	Sweden 2001	Avesta 2011	Sweden 2011
0-25	31,05%	32,46%	28,33%	31,01%	26,95%	31,11%
26-65	48,69%	51,05%	51,42%	52,71%	50,72%	51,39%
66-over	20,25%	16,49%	20,26%	16,29%	22,33%	17,50%

Avesta 6. Night population 2011



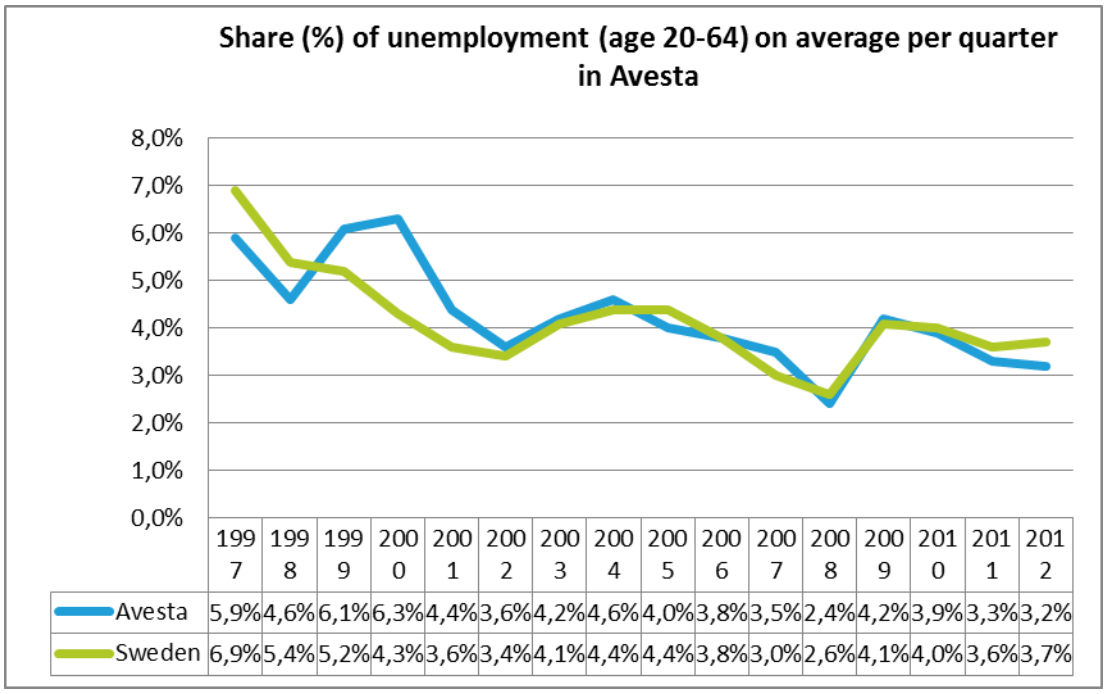
	Men	Women	Total
Avesta	80,8%	75,9%	78,4%
Sweden	78,5%	75,0%	76,8%

Avesta 7. Employment structure 2011



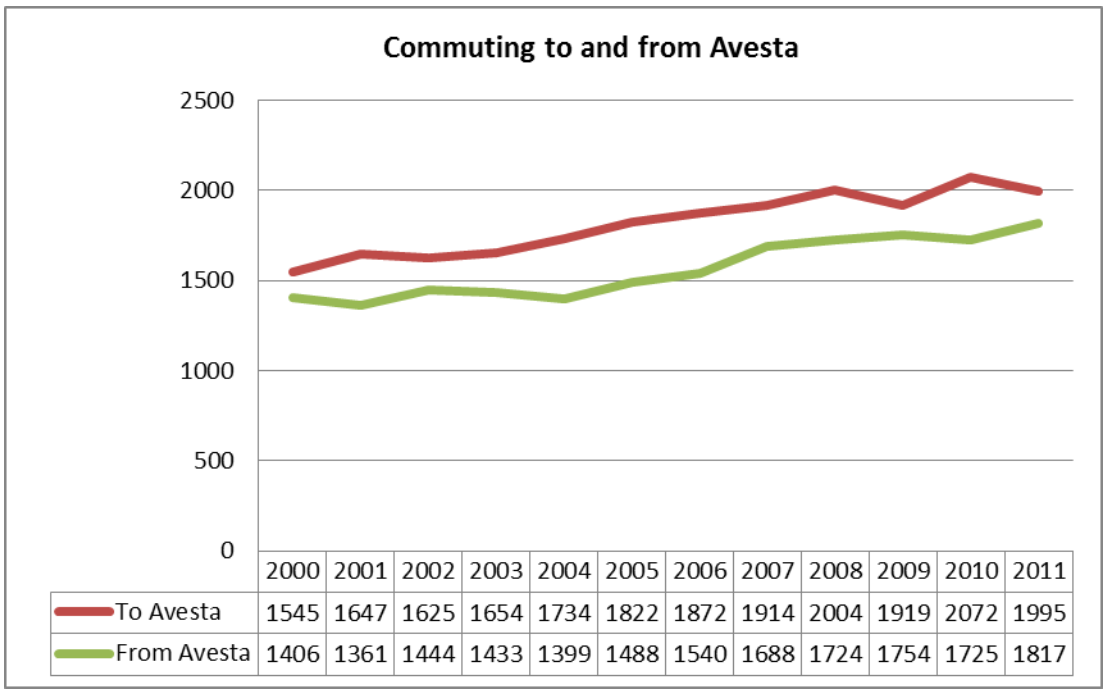
	Agriculture, forestry and fishing	Manufacturing and mining industry	Companies in the energy and environment	Construction	Trade	Transport firms	Hotels and restaurants	Information and communication companies	Financial institutions and insurance	Real estate companies	Business Services	Civil authorities and defense	The education system	Devices for Health Care	Personal and cultural services, etc.	Unknown (others)
Avesta	2,7%	32,0%	0,8%	7,9%	10,6%	5,1%	1,6%	0,6%	0,6%	0,9%	6,3%	2,5%	8,2%	15,7%	3,6%	0,8%
Sweden	2,2%	13,4%	1,0%	7,0%	12,3%	5,0%	3,1%	3,8%	2,0%	1,5%	11,2%	5,6%	10,4%	16,0%	4,3%	1,2%

Avesta 8. Unemployment rates 1997-2012 (% ages 20-64)



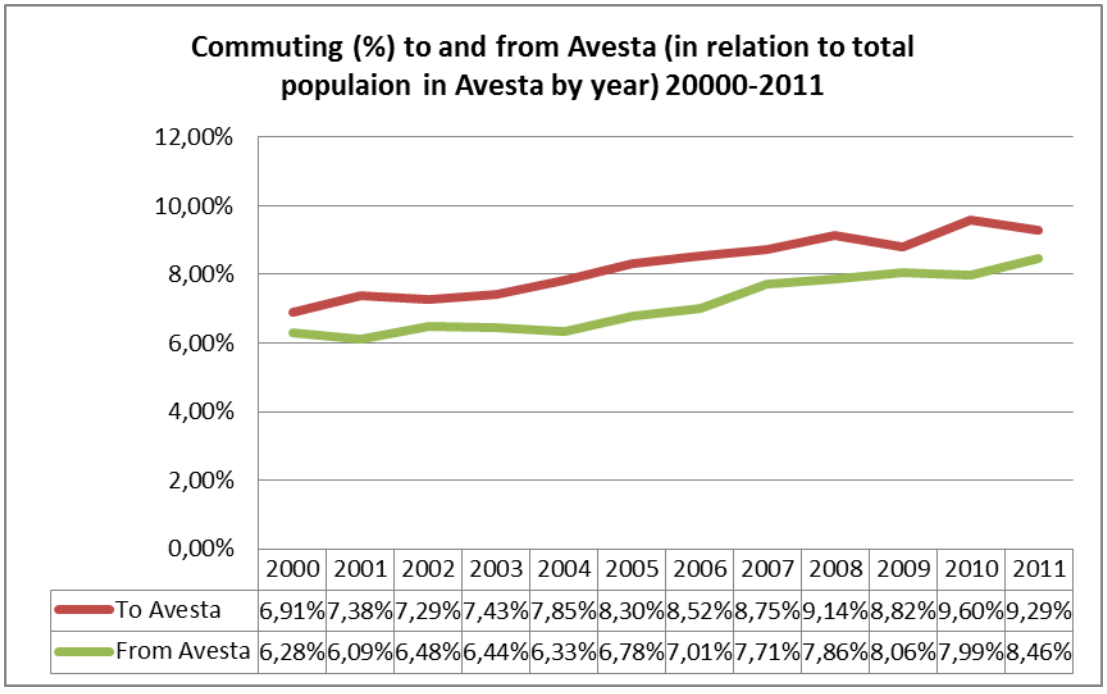
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Avesta	5,9%	4,6%	6,1%	6,3%	4,4%	3,6%	4,2%	4,6%	4,0%	3,8%	3,5%	2,4%	4,2%	3,9%	3,3%	3,2%
Sweden	6,9%	5,4%	5,2%	4,3%	3,6%	3,4%	4,1%	4,4%	4,4%	3,8%	3,0%	2,6%	4,1%	4,0%	3,6%	3,7%

Avesta 9. In- and out-commuting 2000-2011



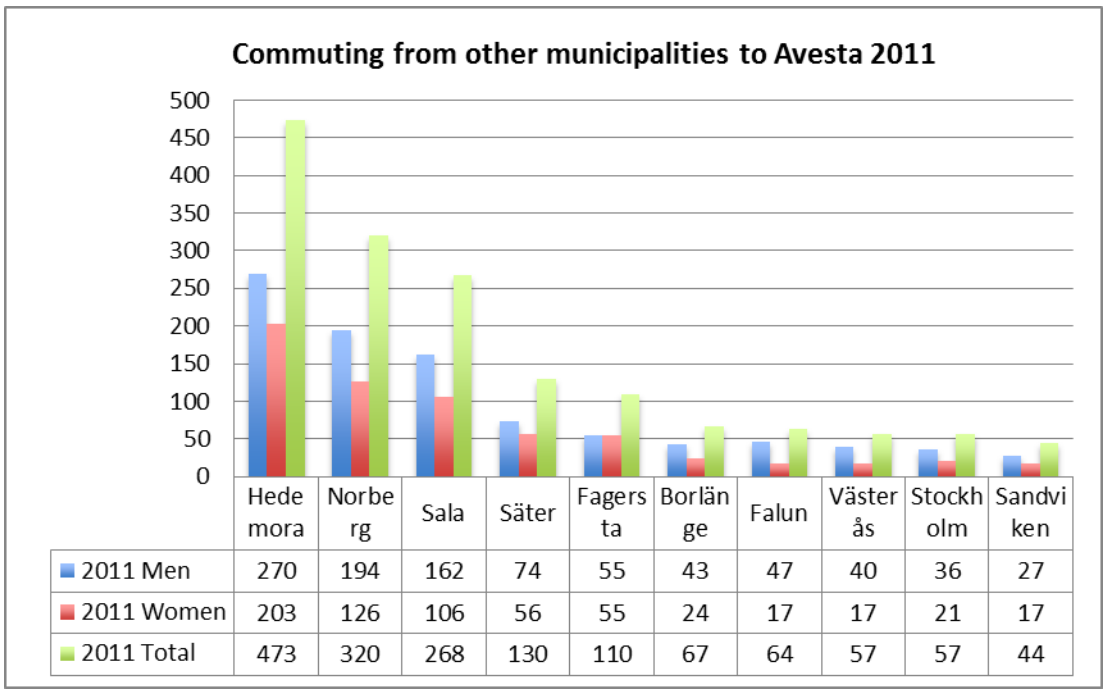
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
To Avesta	1545	1647	1625	1654	1734	1822	1872	1914	2004	1919	2072	1995
From Avesta	1406	1361	1444	1433	1399	1488	1540	1688	1724	1754	1725	1817

Avesta 10. In- and out-commuting 2000-2011 in relation to total population



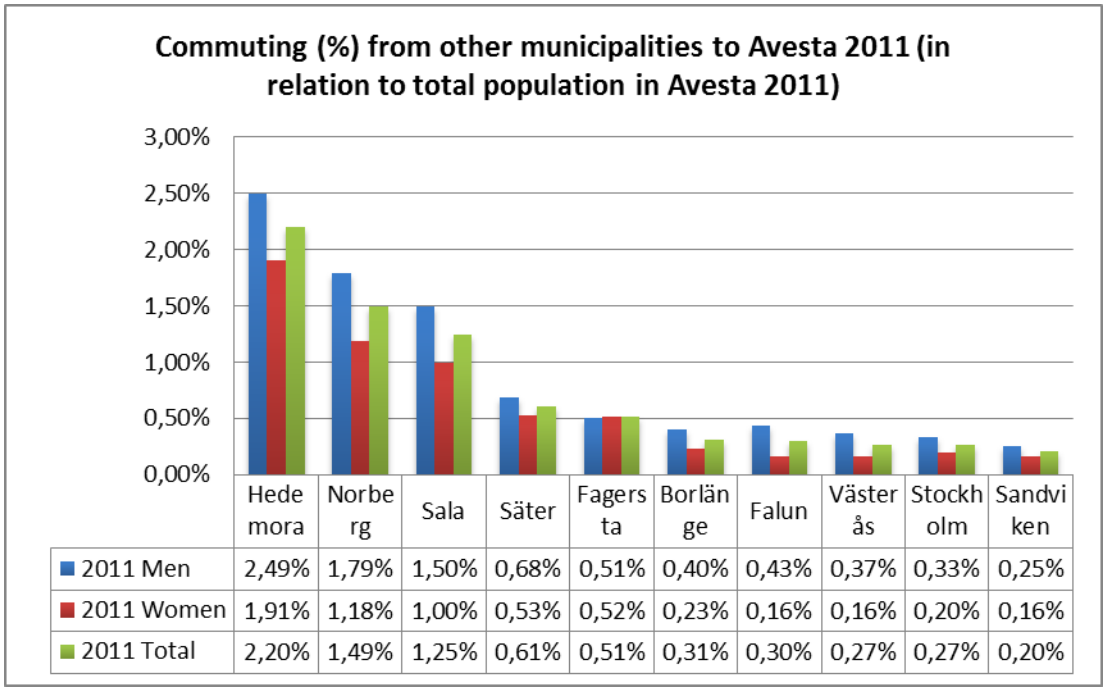
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
To Avesta	6,91%	7,38%	7,29%	7,43%	7,85%	8,30%	8,52%	8,75%	9,14%	8,82%	9,60%	9,29%
From Avesta	6,28%	6,09%	6,48%	6,44%	6,33%	6,78%	7,01%	7,71%	7,86%	8,06%	7,99%	8,46%

Avesta 11. In-commuting to Avesta 2011



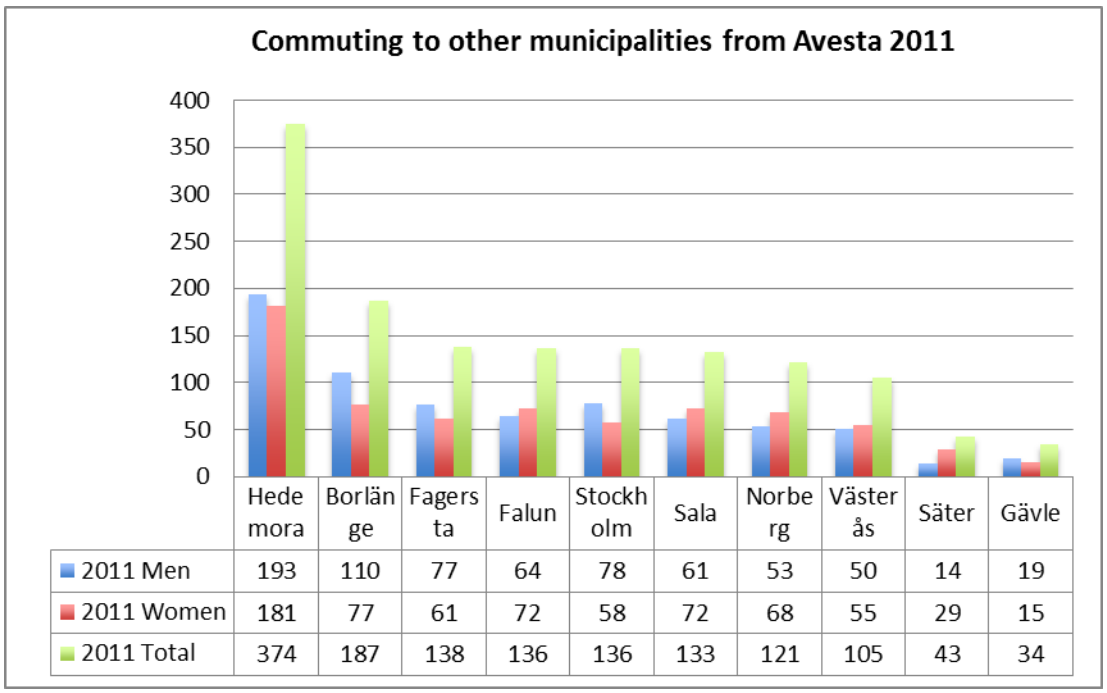
	Hedemora	Norberg	Sala	Säter	Fagersta	Borlänge	Falun	Västerås	Stockholm	Sandviken
2011 Men	270	194	162	74	55	43	47	40	36	27
2011 Women	203	126	106	56	55	24	17	17	21	17
2011 Total	473	320	268	130	110	67	64	57	57	44

Avesta 12. In-commuting to Avesta 2011 in relation to total population



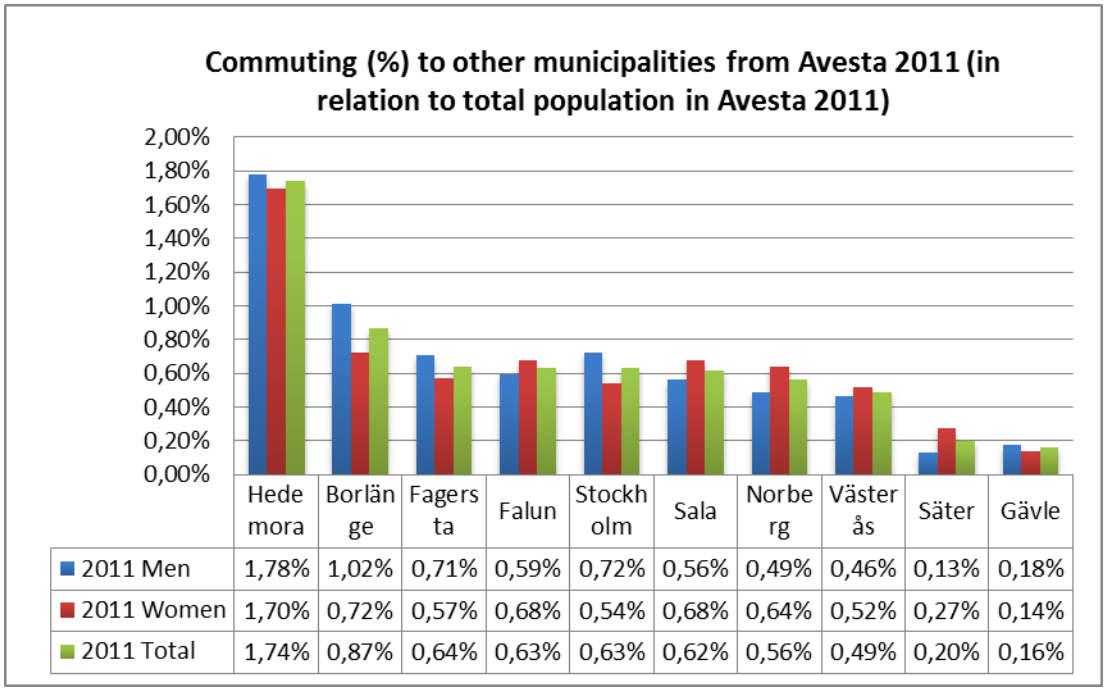
	Hedemora	Norberg	Sala	Säter	Fagersta	Borlänge	Falun	Västerås	Stockholm	Sandviken
2011 Men	2,49%	1,79%	1,50%	0,68%	0,51%	0,40%	0,43%	0,37%	0,33%	0,25%
2011 Women	1,91%	1,18%	1,00%	0,53%	0,52%	0,23%	0,16%	0,16%	0,20%	0,16%
2011 Total	2,20%	1,49%	1,25%	0,61%	0,51%	0,31%	0,30%	0,27%	0,27%	0,20%

Avesta 13. Out-commuting from Avesta 2011



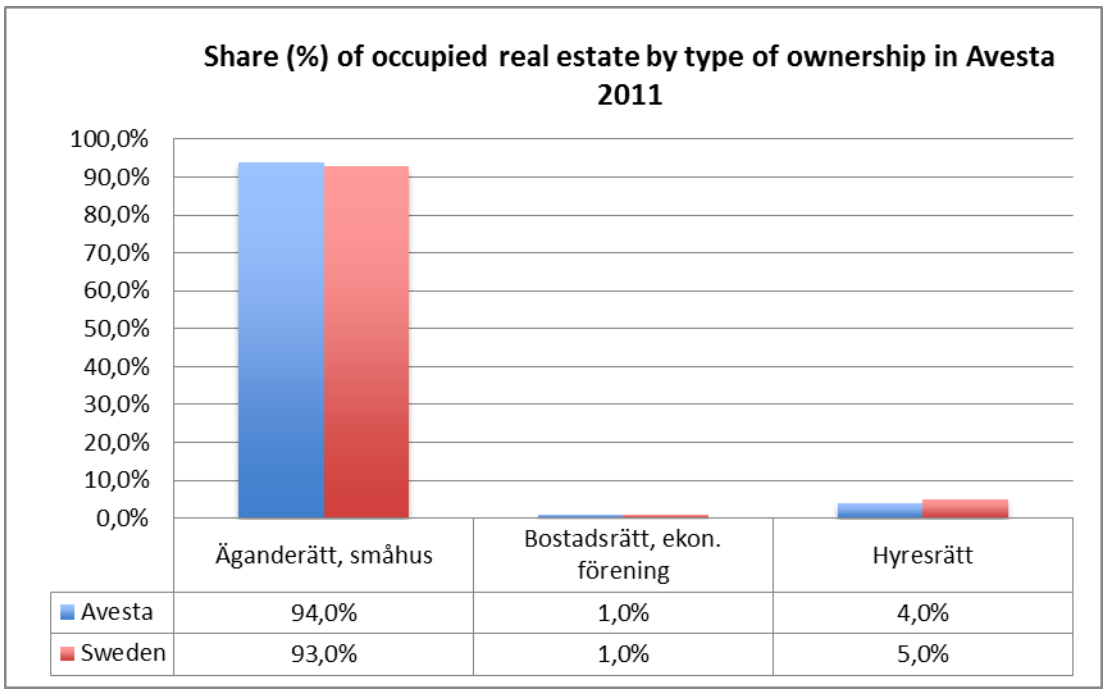
	Hedemora	Borlänge	Fagersta	Falun	Stockholm	Sala	Norberg	Västerås	Säter	Gävle
2011 Men	193	110	77	64	78	61	53	50	14	19
2011 Women	181	77	61	72	58	72	68	55	29	15
2011 Total	374	187	138	136	136	133	121	105	43	34

Avesta 14. Out-commuting from Avesta in relation to total population



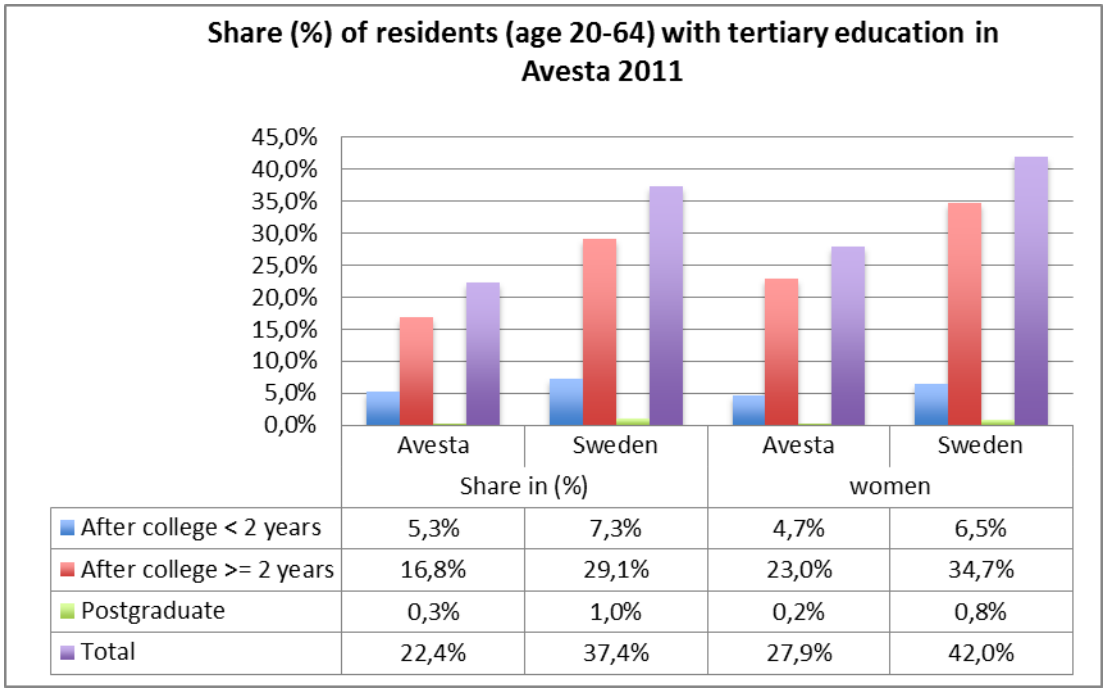
	Hedemora	Borlänge	Fagersta	Falun	Stockholm	Sala	Norberg	Västerås	Säter	Gävle
2011 Men	1,78%	1,02%	0,71%	0,59%	0,72%	0,56%	0,49%	0,46%	0,13%	0,18%
2011 Women	1,70%	0,72%	0,57%	0,68%	0,54%	0,68%	0,64%	0,52%	0,27%	0,14%
2011 Total	1,74%	0,87%	0,64%	0,63%	0,63%	0,62%	0,56%	0,49%	0,20%	0,16%

Avesta 15. Housing structure 2011



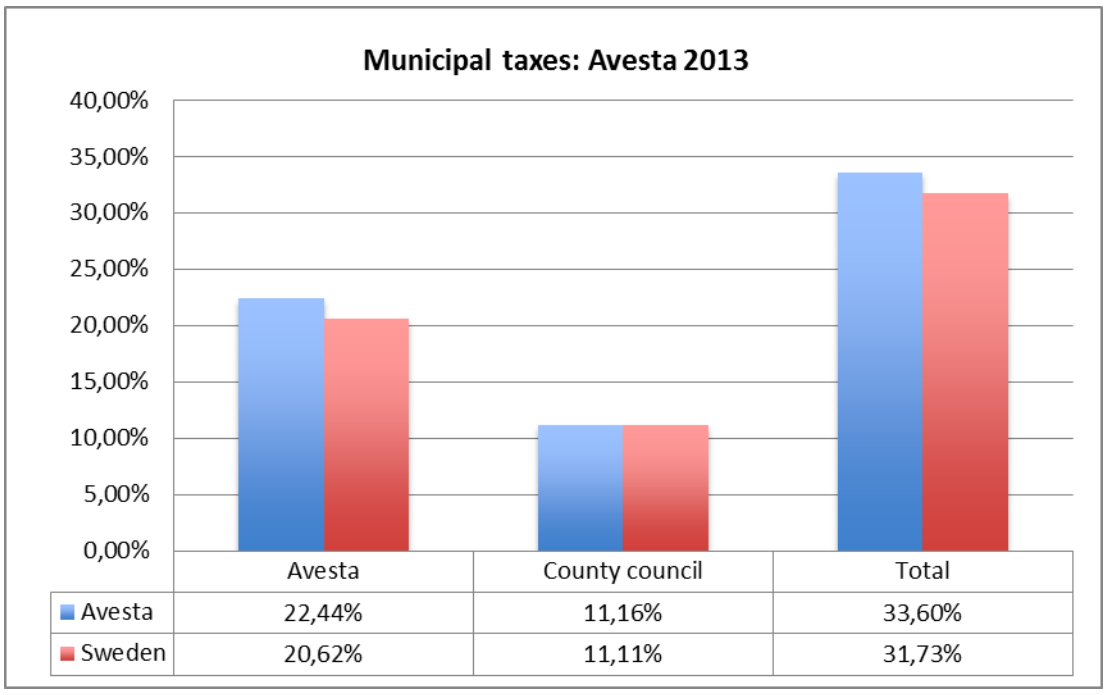
	Äganderätt, småhus	Bostadsrätt, ekon. förening	Hyresrätt
Avesta	94,0%	1,0%	4,0%
Sweden	93,0%	1,0%	5,0%

Avesta 16. Educational structure 2011



	Share in (%)		women	
	Avesta	Sweden	Avesta	Sweden
After college < 2 years	5,3%	7,3%	4,7%	6,5%
After college >= 2 years	16,8%	29,1%	23,0%	34,7%
Postgraduate	0,3%	1,0%	0,2%	0,8%
Total	22,4%	37,4%	27,9%	42,0%

Avesta 17. Local taxes 2013



	Avesta	County council	Total
Avesta	22,44%	11,16%	33,60%
Sweden	20,62%	11,11%	31,73%

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