

Demographic trends in the Nordic local labour markets

Johanna Roto

NORDREGIO WORKING PAPER 2012:13



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NORDREGIO
Nordic Centre for Spatial Development

Nordregio Working Paper 2012:13
ISSN 1403-2511
ISBN 978-91-87295-02-7

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Nordic co-operation

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Stockholm, Sweden, 2012

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Preface

The Nordic working group for the exchange of experience and knowledge development (urban policies), appointed by the Nordic Committee of Senior Officials for Regional Policy under the Nordic Council of Ministers, has as its mandate the creation of knowledge on new trends in urban and regional development.

One issue that has gained political recognition in recent years is the consequences for, and challenges faced by, regions marked by significant demographic change. As such, one of the primary themes addressed by the Nordic working group has been 'Regions and the demographic challenge¹.' This report represents a part of that ongoing work.

In addition to introducing new material this report also includes follow-up analyses to a 2006 study, "The role of urban areas in regional development – a European and Nordic perspective" with the intent of tracking the changes to the functional local labour markets that have occurred in the interim.

The typology used in this report is based on population data as of 1st of January 2012 and commuting data from 2010. The analysed demographic trends focus on developments since 2000. The urban typology constructed in this report has also been used as the basis for the selection of case studies undertaken in the context of a separate report, "Demographical change and planning future housing: examples of strategies and situations in Nordic municipalities" in which the question of how selected municipalities do or do not prepare for demographic change and the consequences this has for future housing needs, is analysed. This report is available for download at www.nordregio.se.

This report was written by Johanna Roto. José Sterling assisted with the commuting material and Haukur Claessen with the Icelandic material.

Nordregio would like to thank the Nordic Working Group for initiating this report and for their timely feedback, comments and support.

¹ The role of urban areas in regional development – a European and Nordic perspective. Proceedings of the Nordic Working Group on Cities and Regions, p.97f, NordregioWP 2006:4

Introduction

The general level of individual mobility – both in terms of migration and commuting - has undoubtedly risen over time. In 2010 every tenth Nordic resident moved over municipal boundaries while fully one third of all employed persons live and work in different municipalities. Commuting distances have also been increasing though the lion's share of both travels to work and permanent changes in places of residence still tend to take place in the same functional area. This report focuses on these functional areas.

In order to highlight the various territorial development patterns currently prevalent in the Nordic Countries, and the differences that occur across similar types of regions, a common starting point is needed. With the establishment of common criteria, the analytic comparison of the city and other types of regions across Norden can be undertaken on more comparable basis, with the results presented in a more harmonised way. This paper outlines the various possibilities for analytic comparisons to be made between the Nordic

countries at two levels. Firstly, local labour markets can be used to highlight the key development trends in functional areas of various sizes. These areas are based on common definitions and thresholds of settlement structure, administrative divisions and commuting statistics for each Nordic country. Secondly the 'Nordic urban typology' can be used as a spatial analytical tool to map regional development trends while distinguishing between different urban types of Nordic labour markets in a comparable manner.

In addition the delineations of the local labour markets and their classifications are summarised in comprehensive tables with comparable up-to-date demographic key data for each region. These tables and all graphical material - including background maps focusing on the individual indicators not included in this paper - can be accessed from our homepage.

Local labour markets – A Nordic comparison

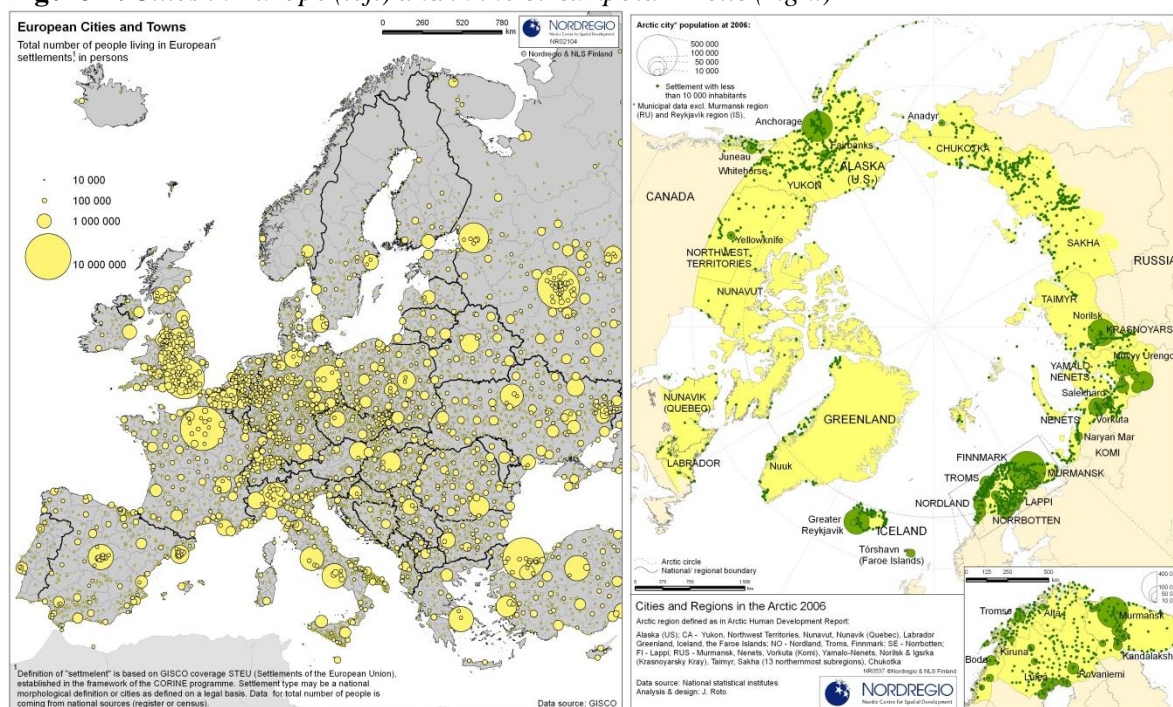
Nordic Urban System

The Nordic settlement pattern and territorial structure is unique. As such the Nordic population is quite heavily polarised in spatial terms, both from north to south and especially towards larger urban settlements and regional centres. In terms of population almost every third Nordic inhabitant lives in the capital labour market regions thus highlighting the relative monocentricity of all the Nordic national urban systems. The dominance of the capitals and other metropolitan regions is one of the three Nordic urban characteristics that Hanell (2006) takes up. The other ones are an unbalanced system of cities with large distances between them and the important role of small and medium-sized cities (SMESTOs).

Indeed, from a broader European point of view only a few large cities and agglomerations can be seen in the Nordic countries. A fact, that

highlights this importance of small and medium sized cities in the Nordic regional context. At the same time large sparsely populated land areas in the northern parts of the region can be identified. The European Commission, in its Green Paper on Territorial Cohesion, identified 18 Sparsely Populated NUTS3 Regions in the European Union. The criterion for this definition is an average population density of less than 12.5 inhabitants per km² in a NUTS3 region. The vast majority of these regions are located in the Nordic Countries though similar regions can only be found in parts of inland Spain (e.g. Teruel) and in Scotland. However, from the circumpolar Arctic point of view the Nordic region has a number of large, in relative terms, cities and the highest population densities in the region (figure 1).

Figure 1: Cities in Europe (left) and in the circumpolar Arctic (right)



Commuting and local labour markets

Functional integration across the Nordic countries and regions represents another increasing trend. The administrative location of homes and firms has become less important as improvements in transport infrastructure have enabled ever longer daily distances to be commuted between places of residence and work (Neubauer et al 2007). Indeed, commuting over municipal boundaries has steadily increased even as the number of municipalities has declined in most Nordic countries in recent decades. In 2010, one third of all employed people in the Nordic countries commuted on a regular basis over the municipal boundaries between their homes and jobs. Thus, when analysing regional development trends and labour market requirements in the Nordic countries the notion of mobility should specifically be taken into consideration. This chapter will thus focus on commuting-based functional areas. The main national commuting patterns will first be described and, following that, local labour markets will then be defined and described.

Commuting flow patterns

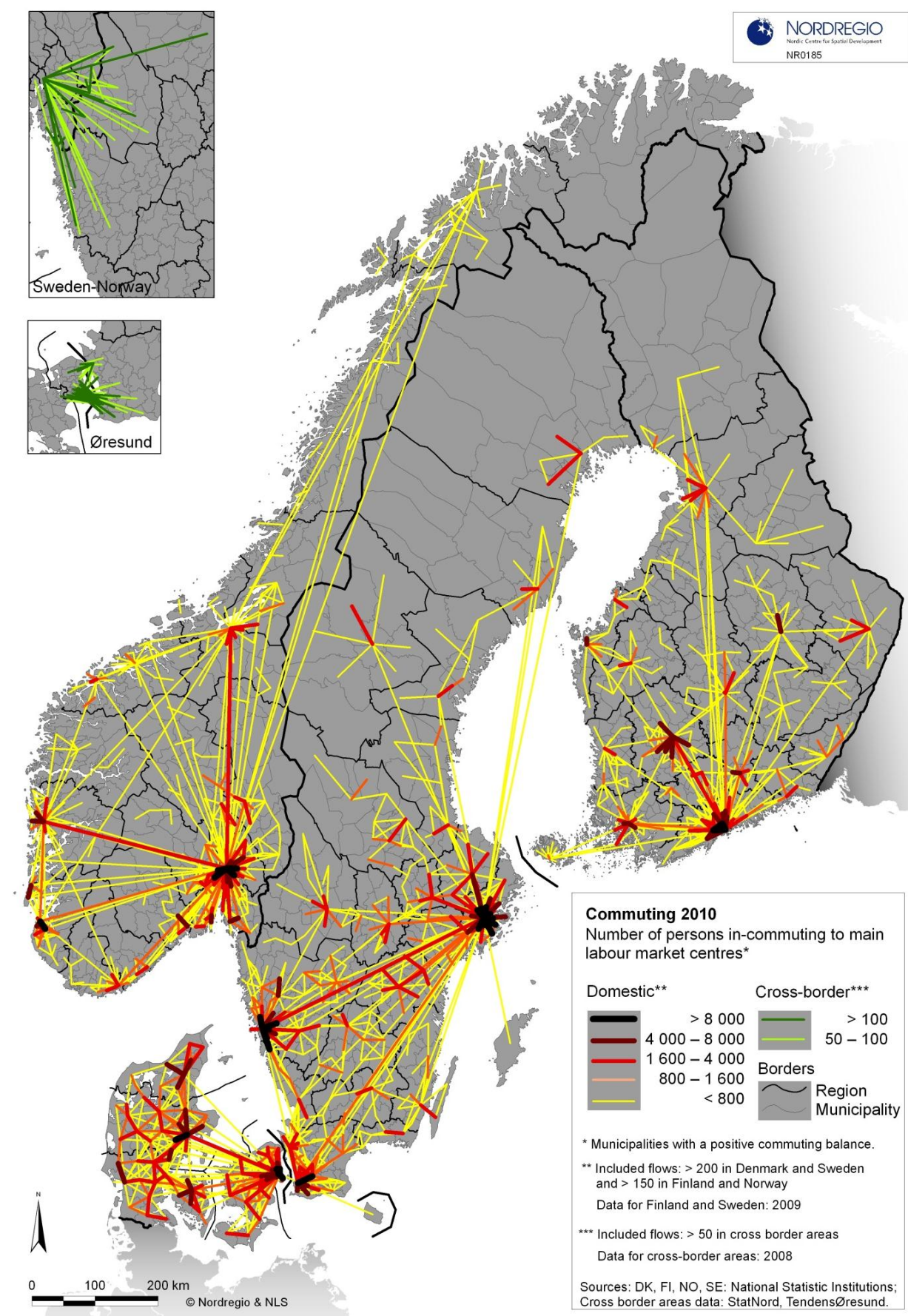
A commuter is defined as an employed person who lives in a different municipality from that in which they work. In terms of statistics this means that an employed person's place of residence is registered in one municipality while their place of work is located in another. A commuter is counted as an out-commuter at their place of residence and as an in-commuter at their place of work. Since the figures on commuting are municipality-based, all other employed persons who do not cross a municipal boundary on their trip between home and work are not included in this analysis. In addition to the impact of the general settlement pattern, national and regional differences in commuting patterns are also significantly impacted by reference to what is often termed the Modifiable Areas Unit Problem (MAUP) as the size of the municipalities has its effect (please see page 17). There is a clear correlation between the geographic extension of a municipality and the share of employed persons counted as intra-municipal commuters, e.g. those who reside and work in the same municipality. As persons travelling to work over the same distance can be classified as 'commuters' only in those cases where they cross a municipal boundary, the smaller the municipality the more likely it is that the crossing of such administrative boundary during travel will take place (Neubauer et al 2007).

The data do not however say anything about the time expended or distance, i.e. whether it is physically possible to commute between one's place of residence and work within a reasonable period of time. Nevertheless, as most commuting distances are rather short and generally between two municipalities that belong to the same local labour market or between two municipalities that otherwise share a common land boundary, the potential for daily commuting between home and place of work is good. After Gløersen et al. (2006) the 'reasonable commuting distance' was first operationalised as the area encompassed within a 50 km radius. This 'as the crow flies' measurement of distance is however rather arbitrary because real commuting distances are dependent on the availability of transport infrastructure, thus it was ultimately proposed that travel times be used instead. A detailed mapping of the road network using 45 minutes isochrones as a measurement of this 'reasonable commuting distance' was thus utilised. As claimed in the same report, the distance-time of 45 minutes has achieved a kind of consensus throughout the scientific and policy community as the distance that people are willing to commute on a daily basis. Thus the overall pattern can be shown as follows:

On average two thirds of the people in Norden live and work in the same municipality. The most labour force independent municipalities are geographically large rural municipalities, like Kiruna, or islands, like Bornholm, with limited commuting possibilities to larger settlements or urban areas. In both of these municipalities the share of the employed population who both live and work in the same municipality is over 95%. The other group of municipalities with a high share of their population living and working in the same municipality includes the major regional centres and some medium-sized cities which function as the main employment node in their regions, namely cities like Tromsø, Umeå and Rovaniemi. At the other end of the scale there are some small municipalities, mostly in the capital regions or other larger labour market areas, where only some 20% of people live and work in the same municipality, places such as Vallensbæk in the Copenhagen area or Sundbyberg bordering Stockholm municipality.

The main difference between the rural and the city municipalities mentioned above is the balance between homes and jobs. While in the larger rural municipalities and islands the number of employed inhabitants and jobs is almost the same,

Figure 2: *Commuting over municipal boundaries in 2010*



most of the regional centres and medium-sized cities have more jobs than employed inhabitants. In total 22% of the municipalities have more jobs than employed people living there thus displaying a commuter surplus.

The Nordic capital and metropolitan areas need to be highlighted when looking at those areas, in relative terms, with the most both in- and out-commuters. This is related to the fact that in the larger city regions there are good transport connections on the one hand and a clearer diversification between living and working areas on the other.

In figure 2 the main commuting flows over municipal boundaries are shown for 2010. Three main patterns can be seen. Flows are most intense at the local level in larger city regions and in some other regional centres. These flows are intense both in terms of absolute and relative numbers and effectively delineate the limits of the functional urban areas concerned. The second type of significant commuting flow emerges between the larger urban centres; between the capital and second or third order urban centres and to some extent also the other regional administrative centres. These flows are highly intense in terms of the actual number of commuters. It can thus be assumed that a significant share of these flows does not occur on a daily basis especially if travel time is not included as working time. Thirdly the inter-linkages between the labour markets are clear. Only a very limited number of labour markets, shown among the main flows, are separated from the overall network of national commuting flows. These labour markets can in the main be characterised as bilateral and situated in rural surroundings.

As such, compared to the situation in 2004 (Neubauer et al 2007), it can be seen that commuting distances have steadily increased in the intervening period particularly in relation to the number of people commuting between the larger urban centres. Some local and regional increases in commuting can however be explained simply by reference to improvements in traffic infrastructures around the main labour market centres and between them.

On an intra-Nordic scale the volumes of commuter flows are lower but of particular regional relevance. Based on the material provided in the Nordisk Pendlingskarta (2011) some 53 000 people commuted over national boundaries in the Nordic area in 2008. This represents an increase of almost 400% compared to 2001 data when data on this subject was first collected. In-commuting from Sweden dominates the data as some 26000 persons commuted from Sweden to Norway and some 21000 persons from Sweden to Denmark. A fact

that can perhaps be explained by the existence of higher salaries in both Denmark and Norway. Cross-border commuting is also more popular among males and the young. Over half of the cross-border commuters are under 35 years (Wallin 2012). On the municipal level the Copenhagen and Oslo municipalities had the highest number of in-commuters from the other Nordic Countries. As such, a specific focus can be given to three cross-border labour market areas, namely Øresund region, "Södra gränsregionen" and Tornedalen. Øresund region covers the cross-border region of Hovedstaden and Sjælland in Denmark and Skåne in Sweden. In 2008 some 20000 persons commuted over national boundaries in this region and over half of those commuted from Malmö to greater Copenhagen. The Södra gränsregionen, southern Norwegian-Swedish border region, is a rather large area covering Västra Götalands, Värmlands and Dalarnas län in Sweden and Østfold, Oslo, Akershus and Hedmarks fylke in Norway. There were some 10 000 cross-border commuters in this region. The third region, Tornedalen, is much smaller than the other two but has significant local importance as the Swedish municipality of Haparanda belongs to the Finnish Kemi-Tornio local labour market.

Creating Nordic local labour markets

The functional units of individual mobility can be illustrated and analysed statistically via the local labour market-based grouping of municipalities. In the Nordic countries, with the exception of Iceland, a system already exists for the measuring of commuter catchment areas based, at least in part, on flows across municipal boundaries. In Finland and Sweden local labour markets are classified by the national statistical institutions and are updated on an annual basis. In Denmark the notion of 'commuting areas' was included in the Danish National Planning Report 2006, though this was based on the pre-2007 municipal division. These commuting areas were subsequently modified in line with the new municipal division but using the same commuting data from 2004 (Nielsen 2005). In Norway the first municipally-based classification was done by NIBR in 2002 while in 2009 Statistics Norway made a further classification based on economic regions (LAU1) although this does also include some functional elements over regional (NUTS3) boundaries (Bhuller 2009). In addition Juvkam et al (2011) made a local labour market study from the main urban regions. In that study two aspects of commuting are included, crossing municipality borders and commuting as a burden

delimited at more than 45 minutes spent on ones' journey to work.

As such, these national definitions and delineations in respect of the statistical labour market regions are not based on the same criteria and are not therefore directly comparable. The volumes and the threshold values used in relation to local labour market regions also vary from country to country. In Sweden the share of out-commuters from the local centre shall not be more than 20% of the employed population and one single flow between two municipalities shall not be over 7.5% whereas in Finland the overall share should be below 25% and a single flow below 10%. In Denmark local labour markets are defined such that the number of people working and living in the same commuting area is at least twice the number of in- and out-commuters to and from the area; or in other words at least 80% of employed persons living in a commuting area work in the same area. In Norway the delineations are based on economic regions (LAU1) or a Norwegian centre structure and to 10% commuting flow to those municipalities within 30-45 minutes travel time.

In order to render local labour markets (LLM) comparable across the Nordic Countries, new regions have been calculated based on a common methodology (table 1). The starting point has been the labour market register based on commuting statistics over municipal boundaries from the national statistical institutions, thus identifying where a person lives in one municipality and has their place of work in another municipality. The commuting data gathered is from 2010 and the municipal division is as of January 1st 2012.

Table 1: Defining local labour markets in the Nordic context

A. Defining the LLM centres
In order to be classified as a centre: 1) the municipality's share of out-commuters shall not be over 20% of its employed population, or 2) there should be more places of employment than employed residents AND the highest single out-commuting flow to another municipality shall not be over 10% of the sending municipality's employed population.
B. Municipalities are defined as belonging to a local labour market when
3) They have a single out-commuting flow to another municipality that is over 7.5% of sending municipality's employed population.

C. Defining secondary LLM centres

4) A municipality can also be defined as a LLM centre if the share of out-commuters is max 25% of the municipality's employed population AND the highest single out-commuting flow to another municipality is below 7.5% of sending municipality's employed population AND the municipality has its own LLM, meaning municipalities fulfilling rule 3).

On this basis 184 local labour markets can be identified. In addition, 226 municipalities are located outside the identified labour markets as the commuting flows from these municipalities are too low. As an exception to the general rules, there are further two LLMs in Norway that both consist of two municipalities and are each defined as isolated LLMs although neither of the municipalities could be identified as a centre. But due to the extensive nature of the bilateral commuting flows between these pairs of rural municipalities a local labour market has been created.

In Iceland no statistics exist combining peoples' places of work and residence. Therefore commuting data cannot be provided and no analyses made on the same basis as in the other Nordic countries. Local labour markets in Iceland are based on the findings of a study made by the Icelandic Regional Development Institute, Bygðastofnun (2011). For the study the eight regional business agencies were asked to analyse commuter areas for the settlements in their area based on local knowledge and existing information about daily commuting flows. The 13 LLMs defined in this study have been adjusted to follow administrative, municipal divisions. This was done in order to include and enable comparison with the context of the broader Nordic analysis undertaken in relation to the current paper.

In table 2 and in figure 3 the 197 identified Nordic local labour markets are shown. 81% of Nordic municipalities belong to a LLM of at least two municipalities. Of the LLMs, 75 are LLMs of two municipalities, 91 are LLMs of 3 to 6 municipalities, 25 are LLMs of 7 to 20 municipalities and the remaining 5 larger LLMs are the Nordic capital labour markets combining 24 to 47 municipalities in their catchment areas. The remaining 237 municipalities that do not belong to any LLM are mostly located in sparsely populated and rural areas with relatively long distances to regional centres.

In Finland and Sweden, where the local labour markets are defined on annual basis, some small differences to these national delineations should be noted. In Finland there are less LLMs in the national delineation. The Nordic comparison thus adds some small LLMs to the Keski-Suomi, Satakunta and southern Pohjois-Pohjanmaa regions. In Sweden the main differences can be seen in Mälardalen and Västra Götaland where the Nordic comparison adds some small LLMs while, in addition, some small Swedish LLMs in Småland are not visible in the broader Nordic context.

Table 2: *Total number of local labour markets and municipalities in the Nordic Countries*

	LLM	Municipalities outside LLMs	Total number of municipalities
Denmark	17	7	98
Finland	47	66	336
Iceland	13	11	75
Norway	75	91	429
Sweden	45	62	290
<u>Total</u>	197	237	1228

Local labour markets are centralising and becoming larger

The area of commuter catchment is generally enlarging up the urban hierarchy, i.e. depending on the size and importance of the main labour market centre (Neubauer et al 2007). In all of the Nordic countries the largest LLMs are the capitals and those are often multipolar labour markets with a number of discrete centres within the LLM. The regional centres generally have smaller LLMs that are often related not only to the location of the city itself but also to the location of a few large industrial sites. Outside these larger city regions LLMs are primarily bilateral.

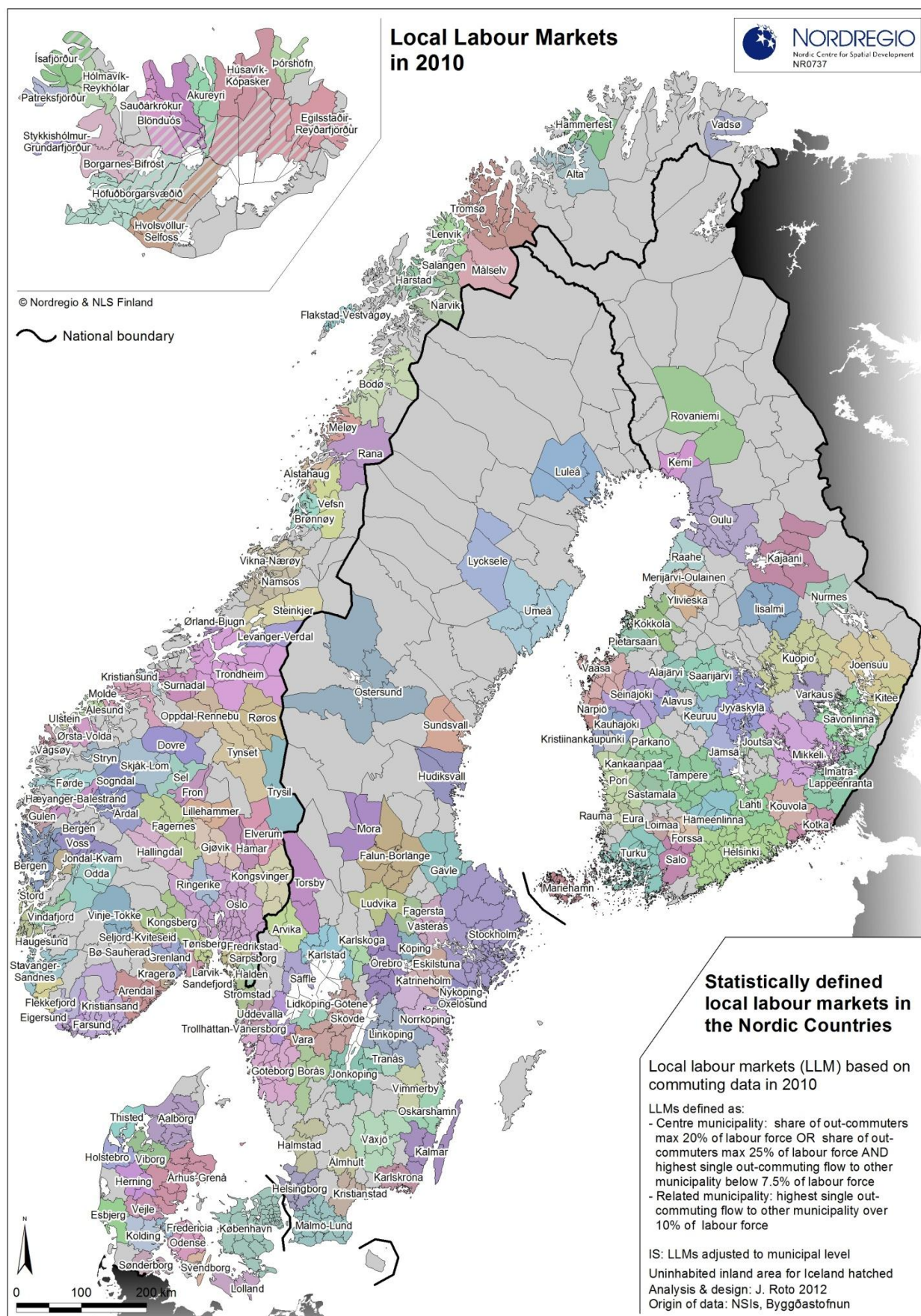
As previous studies of local labour markets in the Nordic countries have taken their delineations from the prevailing national definitions, clear comparisons over time cannot be made. Based on the commuting data alone however, some key development trends can nevertheless be identified. In all of the Nordic countries people's labour-related mobility has increased while the size of local labour markets has also become larger. This is

particularly the case in capital and metropolitan labour market areas advertising good employment opportunities. The increasing size of LLMs means also that the number of municipalities remaining outside the LLM structure is declining as is the number of small LLMs based around two small municipalities. In addition, a number of municipal mergers have also made some LLMs larger, especially in a geographical sense. The municipal merger process has undoubtedly affected the size of LLMs in Finland. In Denmark and Sweden LLMs have experienced only a few minor changes over the last five years whereas in Finland and Norway, particularly in relation to regional centres on the one hand and the capital regions on the other, LLMs have grown markedly in size.

In Denmark the municipal reform in 2007 had a significant effect on municipal commuting patterns. The whole of Zealand belongs to the Copenhagen labour market area and includes 43 municipalities. The main cities of Århus, Odense and Aalborg have labour markets of 6 to 10 municipalities each. All the other LLMs are relatively small, with a maximum size of three municipalities. But as the demographic size of Danish municipalities is larger than in the other Nordic countries, the average number of people in a LLM is also higher. Compared to the pre-municipal reform situation, the main commuting catchment area related changes occurred in the Trekantområdet area in Eastern Jutland: the Horsens area that previously belonged to Vejle LLM is now a part of Århus LLM while Fredericia LLMs is now a LLM of its own, separate from Kolding LLM.

In Sweden five larger LLMs can be identified. The Stockholm LLM, including also the cities of Uppsala and Södertälje, is the largest with 36 municipalities followed by Göteborg and Malmö-Lund both of which have 17 municipalities. The LLM pattern in Southern Sweden is rather interesting as Malmö-Lund and Helsingborg (11 municipalities) are located in close proximity to each other while the functional connections and existing infrastructure make it possible that these two areas could be understood as 'one region' although after looking at the commuting data they remain separate units. In addition, the Skövde LLM has up to 10 municipalities. The main changes in commuting catchment areas compared to the 2005 situation were rather small relating primarily to the inclusion or exclusion of individual municipalities.

Figure 3: Local labour markets in the Nordic Countries in 2010



In Finland and Norway where the overall geographic and demographic size of the municipalities is smaller than in Denmark and Sweden, the numbers of municipalities in one, even medium-sized, LLM can be larger. In Finland the largest one is Helsinki with 29 municipalities. In addition the LLMs of Turku, Mariehamn, Tampere, Oulu and Kuopio each contain ten or more municipalities. The main commuting catchment area related changes took place around regional centres and some medium-sized towns; Kokkola, Kuopio, Mikkeli, Oulu, Savonlinna and Seinäjoki LLMs in particular all expanded. In most of these LLMs the increase in size was partly related to municipal mergers.

In Norway the Oslo LLM with 47 municipalities has expanded significantly in recent years not least due to the fact that the medium-sized cities of the Drammen and Moss regions can now be counted as part of greater Oslo in the light of commuting statistics. In addition the LLMs of Bergen, Trondheim, Stavanger-Sandnes and Kristiansand each have ten or more municipalities. Trondheim and Kristiansand LLMs however experienced the largest increases in the size of their commuting catchment areas.

In Iceland the capital region covers an area including 24 municipalities surrounding Reykjavík and expanding into the Reykjanes peninsula. The other LLMs are rather small in population terms.

Settlement patterns and the effect of administrative divisions

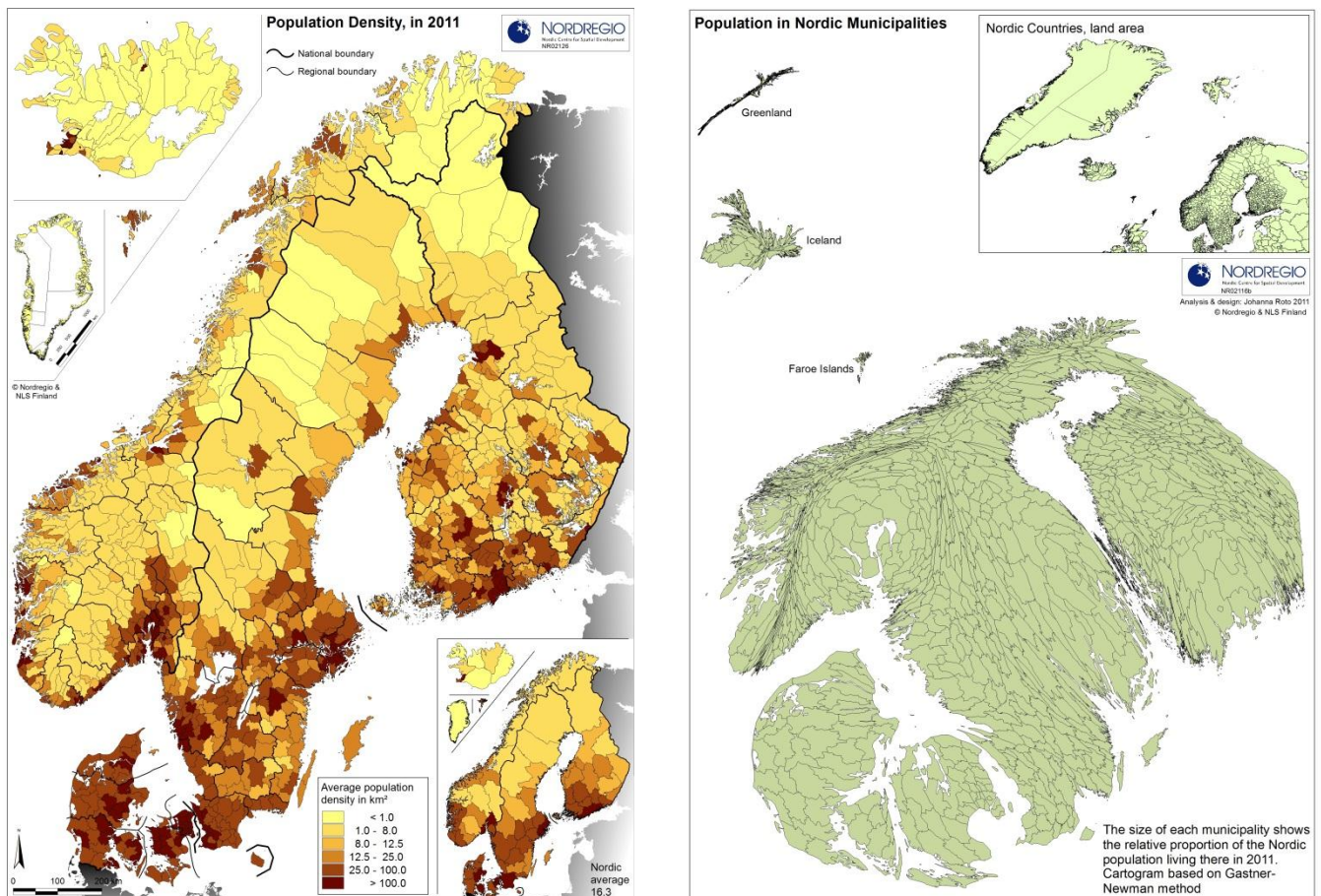
The Nordic Countries are home to 25.6 million people, who in a geographical sense unevenly inhabit a land area corresponding to a quarter of the European Union including Iceland and Norway. At the Nordic level, if the measurement is done on 1×1 km grid cell level, about 65% of the population lives on 10% of the land. When looking at the land area per country, it should be noted that 99% of Iceland's, 81% of Norway's, 71% of Sweden's and 66% of Finland's land area is uninhabited. In contrast up to 97% of Denmark is inhabited. When re-tabulating these figures for the municipal level, the primary dichotomy is reflected in e.g. population density (inhabitants/km²). At the one end of the scale, there are 82 municipalities mostly

in the northernmost part of Norden with a population density below 1 inhabitant per km². These municipalities cover altogether some 25% of the land area. At the other end of the scale there are some 30 municipalities in the Nordic metropolitan areas with population densities above 1000. These metropolitan municipalities cover less than 1% of the Nordic land area but contain 18% of the total population. In Denmark the median population density is around the EU average and even the sparsest populated municipality has a population density above the Nordic average. All the other Nordic countries have municipalities with population densities below one inhabitant/km² (table 3).

Table 3: Nordic municipalities by size

Country	Name	Number of municipalities	Population 2012			Land area (km2)			Population density 2012		
			Smallest	Median	Largest	Smallest	Median	Largest	Smallest	Median	Largest
Denmark	Kommune	98	1897	42429	539542	9	304	1489	17	114	11427
Finland	Kunta	336	103	5844	595384	6	528	15052	<1	11	2795
Iceland	Sveitarfélag	75	52	889	118814	2	511	8916	<1	1	2157
Norway	Kommune	429	218	4581	613285	6	453	9082	<1	9	1920
Sweden	Kommun	290	2431	15238	864324	9	670	19371	<1	26	4604

Figure 4: Population density (left) and the population- related size (right) of Nordic municipalities

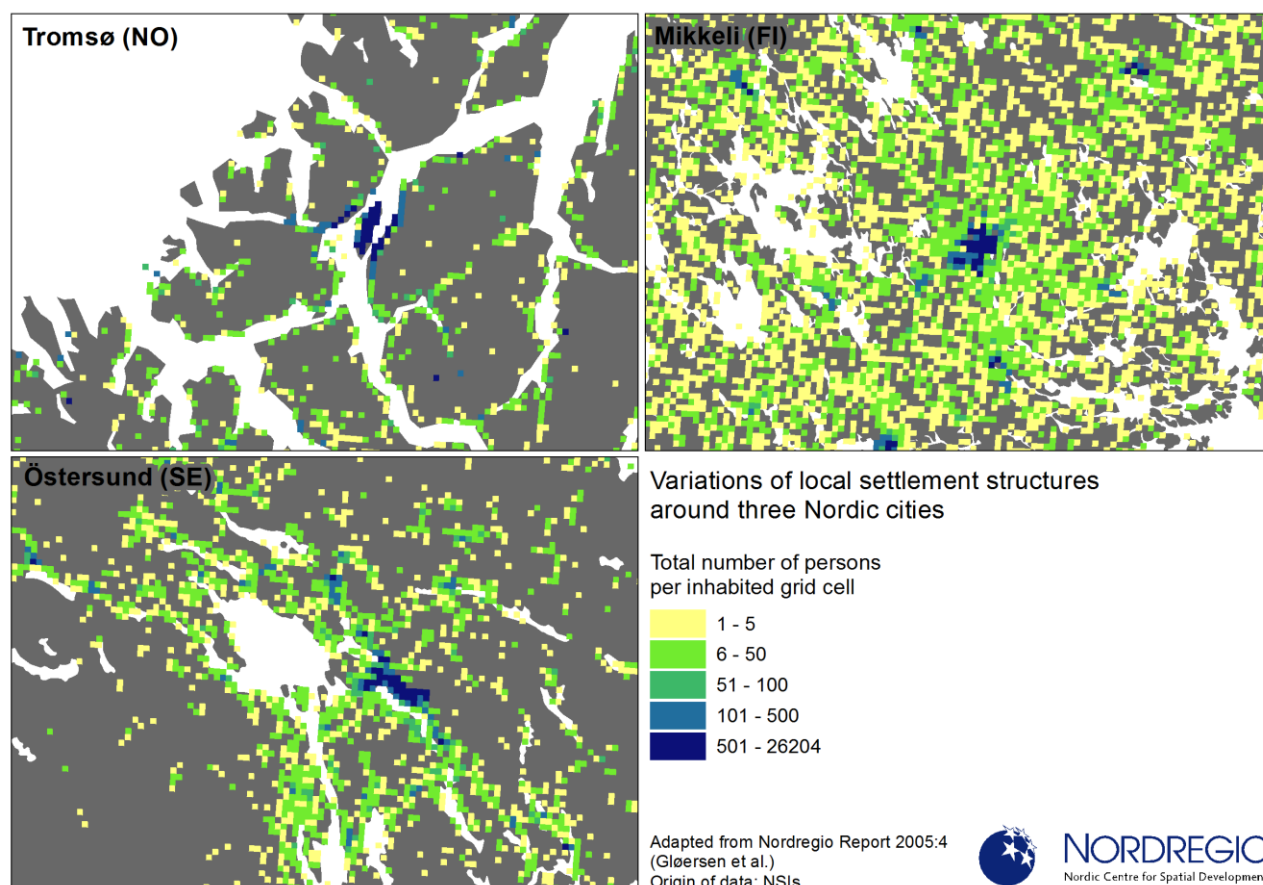


In this light it is clear that the main spatial dichotomies are between the north and south and between urban and rural areas. In figure 4, two different maps of the Nordic countries are shown. The map on the left hand side shows population density in the municipalities. The size of the municipality relates to its actual geographic area and position while the colour shows the density. The map on the right hand side relates the size of the municipalities to total population. Thus the southern parts of the countries and the main city regions are highlighted whereas the sparsely populated but geographically large municipalities get less attention. The population-related map also visualises the spatial structure of the countries. In Denmark where the municipalities are, in general, larger than in the other Nordic countries the shape of the country remains rather similar although its size related to other Nordic countries becomes

larger. In Finland and Sweden the capital regions and southern parts of the country become larger while the northern areas become smaller. In Norway the capital region and the west coast are highlighted whereas the mountain areas and northern part of the country are reduced in size.

Also the pattern of how people are settled in a municipality affects. In figure 5 profoundly different settlement patterns on the grid cell level (1 x 1 km) in three similarly sized Nordic cities - with the same average population density - are shown. The differences are mainly related to the specific topography. In Norwegian mountain and coastal areas the inhabitants are clustered mainly on valley floors and along the fjord coastlines. In Finland the distinction between city and rural areas is rather vague, especially when it comes to the edges of the cities and people living outside these settlements. Sweden lies somewhere in the middle (Hanell 2006).

Figure 5: Visual presentation of various local settlement structures in Norden



Settlements as urban fabrics

As the size of the municipalities, measured both by the land area and population, varies significantly between the various Nordic countries, the administrative division of municipalities does not always give a clear picture of the settlement pattern and location of settlements in the Nordic countries. Thus when looking at municipal level residential patterns the location of the settlements, defined as build-up areas (Denmark: byområde; Finland: taajama; Norway: tettsted; Sweden: tätort), is used. In the Nordic countries settlements are defined as clusters of buildings with at least 200 inhabitants where the distance between buildings does not exceed 200 metres (Norway 50 m). In defining settlements, residential, business, office and other buildings used as workplaces are also taken into account. In Iceland a group of inhabitants numbering at least 50 persons is enough for designation as an 'urban nucleus', but for the purposes of comparability we have excluded all those settlements with under 200 persons from our analysis. Administrative regional divisions do not influence the definition of settlements – the same settlement can be divided between two or more

municipalities. This measure thus provides us with a rather coherent and comparable picture of where the inhabitants live while also identifying the physical urban fabric of each country.

Taking this statistical definition of a settlement as our starting point, there are over 5100 settlements in the Nordic countries and in total some 84% of the Nordic population live in these settlements (table 4). At the national level the rates vary between 79% (Norway) and 94% (Iceland). In Denmark both the average and median-sized settlements are smaller than in the other Nordic countries but on the other hand they are far more numerous, especially when related to the geographic size of the country.

In Finland settlement size is on average the largest and the number of settlements lower than in the other larger Nordic countries. This can be related to both general settlement pattern in Finland (see figure 5) and to the fact that in Finland the area of settlement is delineated on the basis of 1x1 km grid cell data and not the actual location of the houses as in the other Nordic countries.

In Norway and Sweden the size of the settlements is rather similar, but as the maximum distance allowed between buildings is 50m in Norway as opposed to 200m in the other countries,

the number of localities would increase substantially in Norway if the common 'Nordic' delimitation were to be applied. The number would increase substantially, to some 1 500 and the degree of urbanisation to some 83% (Hanell 2006).

When matching each built-up area with the surrounding municipality it can be seen that some of the most densely-populated municipalities share a relatively small land area and a high share of built-up areas, but that is not always the case. In Denmark and in the southern parts of Finland, Norway and Sweden there are plenty of densely populated small municipalities with a low share of population living in the settlements. Many of these small municipalities have good commuting possibilities as a part of a dense urban network as in Denmark and Southern Sweden or otherwise good

connections to a regular but looser system of cities. A specific Nordic character is also present in that many extremely sparsely populated areas with geographically large municipalities are nonetheless extensively centralised with most of the population concentrated in a number of isolated towns. The population densities are often higher for the central municipality itself, for instance in Kiruna and Rovaniemi. This pattern of low population densities but a high level of centralisation is even more visible in a regional context. But because of the long distances it can be challenging to reach a sufficient number of people within daily commuting range to run public and private services cost-efficiently and to establish a well-functioning labour market. The current trend towards depopulation makes this even harder (Hansen et al 2011; Roto 2011).

Table 4: Basic indicators of the Nordic settlement structure on national level

	DK	FIN	IS	NO	SE	NORDEN
Population density (inh./km ²)	129	18	4	16	23	16
Urbanisation rate (%)	86.9	83.2	93.6	79.3	85.1	84.1
Number of localities	1435	716	66	936	1956	5109
- Median population	623	872	842	684	656	673
- Average population	3366	6246	4517	4166	4098	4211

Larger settlements are attracting population

In 2010 there were 550 settlements in the Nordic countries with 5000 or more inhabitants with two thirds of the Nordic population living in these settlements. The larger settlements are, in general, also the main growth poles. While the total population in the Nordic countries increased by 5.7% during the period 2001-2011, the change rate in settlements with over 5000 inhabitants was 9.3% and in those 24 settlements that had over 100 000 inhabitants the increase was 11.0%. On the other hand, taken as a group, the population segment in settlements with less than 5000 inhabitants and those living outside settlements decreased by 0.7% on the Nordic level (figures 6 & 7).²

In Denmark larger settlements can be found in each LLM with the total number of such settlements being 116. Excluding Esbjerg and Svendborg, all Danish settlements with over 25 000 inhabitants have experienced a population increase.

The population increase is highest in the settlements that are located in the densely populated core areas of the eastern part of Jutland (the area integrating Århus and Kolding LLMs) and in Copenhagen LLM which covers the whole of Zealand. In these two areas the total number of settlements has also been decreasing as some settlements have merged creating even larger built-up areas. The number of people living outside the main settlements decreased.

The 106 large settlements in Finland are predominantly located in the southern half of the country. The main population increase is taking place in the largest settlements, namely those with over 100000 inhabitants, and in the local labour markets attached to them. Most of the settlements that function as regional centres also have a rising population. Geographically the main growth is taking place in the Greater Helsinki metropolitan area and all the way to Lahti, Tampere and Turku each of which are serviced by good transport corridors. Outside this triangle in Southern Finland Oulu and Jyväskylä are the main growth nodes. From a Nordic point of view the Finnish countryside (settlements with less than 5000 inhabitants and outside those) have seen the most severe population decrease of 3%.

In Iceland only nine settlements have more than 5000 inhabitants. Five of those are located in

² It should be noted that it has not always been possible to identify whether the population increase at the municipal level is the result of an actual increase or if the mergers of small settlements into larger ones has been the main driver of this development.

the capital region with three others, Akranes, Selfoss and Keflavík, located within commuting distance to Reykjavík. Akureyri is the only large settlement outside the South-West corner of Iceland. As such, the main population increase has taken place in settlements within commuting distance to Reykjavík but also in some smaller settlements.

In Norway the population has been increasing rapidly in the 95 main settlements. In total those settlements with over 5000 inhabitants experienced a population increase of 16%. The main growth area was the greater Oslo region though the five major cities of Kristiansand, Stavanger, Bergen, Trondheim and Tromsø – each of which is a regional centres in their part of Norway – were the main drivers of this population increase. The only larger settlement to experience a population decrease was Narvik in Nordland region. The number of people living outside the main settlements remained stable.

Some 40% of all the larger settlements in the Nordic countries are located in Sweden (221 settlements). The three main settlement areas

around Stockholm, Gothenburg and Malmö dominate both the urban pattern and the recorded population increase. In addition however many of the other larger settlements located along the good transport corridors to these three cities have also experienced a population increase. On the northern part of the Bothnian coast, between Luleå and Umeå, the main cities have seen a population rise while a number of inland settlements in Mid- and Northern Sweden have experienced a population decrease.

Viewed from the Nordic local labour market level, each LLM has, on average, 3 larger settlements. The variation between LLMs remains however quite large. The number of large settlements is highest, in every Nordic country, in the capital LLMs, ranging from 8 (Reykjavík) to 40 (Copenhagen). As such, seven LLMs have over ten larger settlements in their area, all being capitals or second-tier city regions. 44 LLMs have from 3 to 9 larger settlements and one or two larger settlements can be found in 89 LLMs. 61 larger settlements are located outside urban LLMs.

Figure 6: Population density in local labour markets and the location of localities with 5000 or more inhabitants in 2010

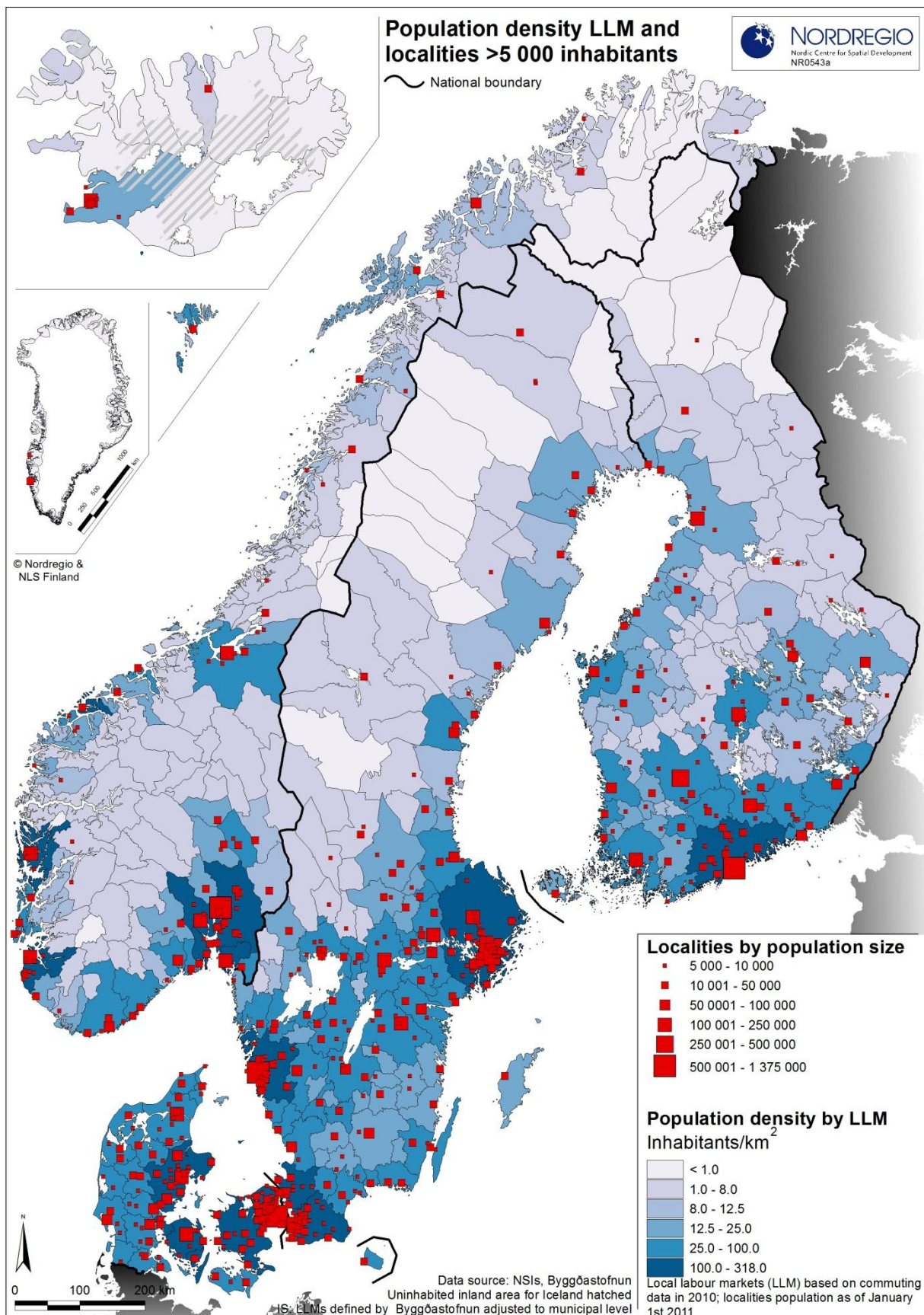
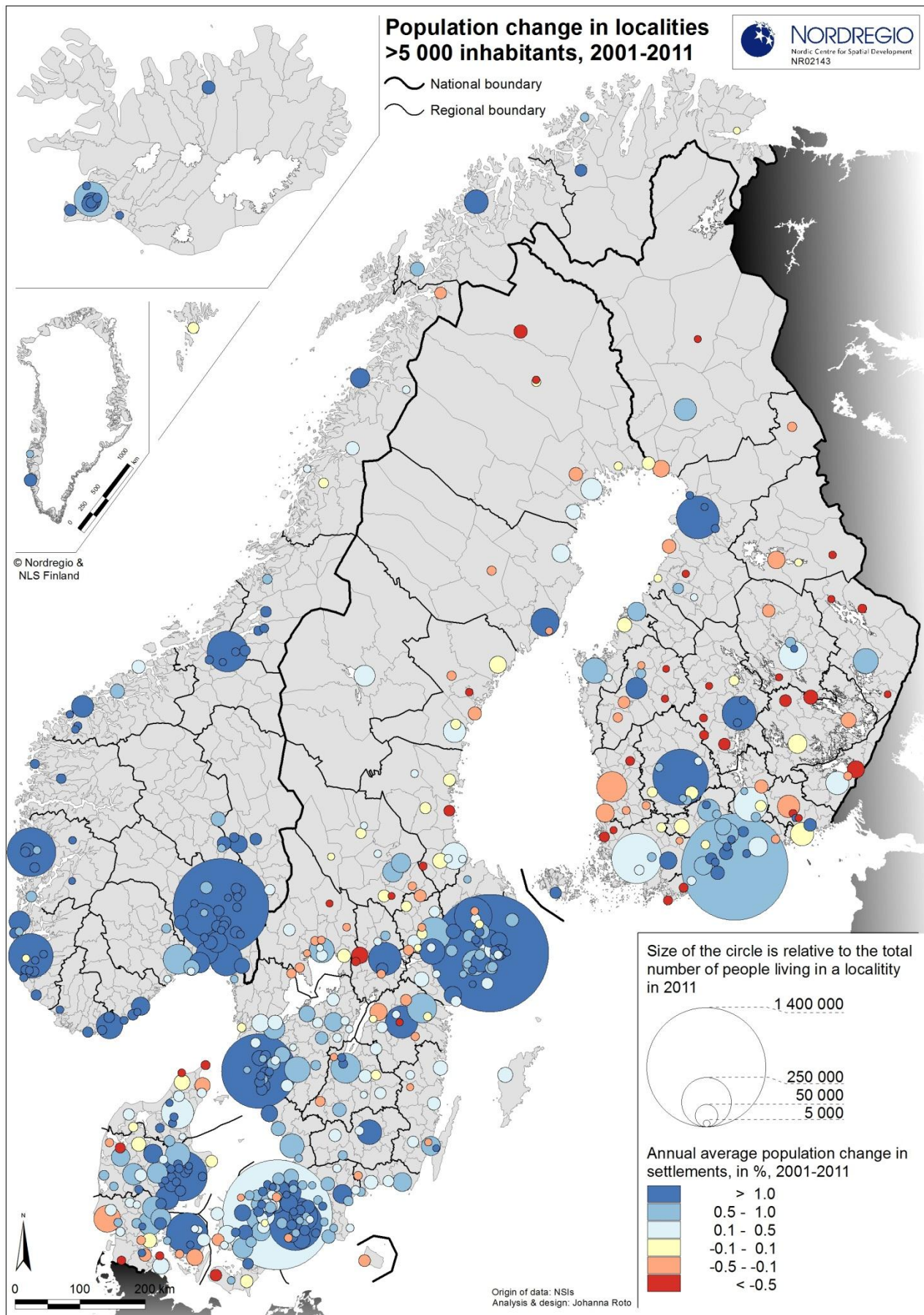


Figure 7: Population change in localities with 5000 or more inhabitants in 2001-2011



Potential proximity between the settlements and integration areas

Networks and interaction between settlements is crucial for urban development and in order to best utilise an area's population potential for both public and private service provision. In order to statistically identify the potential proximity area between settlements, components related to location, distance and density have been used. For location the mid-points of the variously sized settlements have been used. For distances, 'as the crow flies' radiuses have been used. Gløersen et al. (2006) note that the 'reasonable commuting distance' was first operationalised through an area encompassed within a 50 km radius. It should however be noted that as commuting distance is dependent on the availability of transport infrastructure, this radius of 50 km refers only to potential accessibility. Thus although the limit of 50 km has generally been used longer distances were used for larger settlements. For the densities both 1x1 km grid cell data and average population density in administrative divisions were used.

In figure 8 four different ways of defining potential proximity between settlements and thus of the integration of area are shown. In figure 8A all of the settlements with over 5000 inhabitants that are located within at least 50 km of two similar settlements are shown. An 'as the crow flies' radius of 25 km was created from each settlement point of 5000 inhabitants. Then the continuous areas of the radii were calculated in a way that each continuous area has at least three larger settlements. All the other larger settlements and their potential influence areas were excluded. Based on these criteria what emerges is a rather continuous network of settlements starting from the Norwegian west coast through Denmark, southern Sweden and into southern Finland. In addition, some regional centres, mostly located in coastal areas, are also visible in the more northerly latitudes, namely, Trondheim, Umeå and the cluster in Finnish Ostrobothnia.

In figure 8B population potential over 100000 inhabitants has been used (Nordregio 2007). The population potential represents a measurement of the number of persons that are in reach of each 'point' in Norden within a reasonable commuting distance of 50 km as the crow flies. Compared to figure A this delineation includes more areas especially those on the both coasts of the Bothnian Bay, in Eastern Finland and in Swedish Småland.

Figure 8C includes settlements with over 5000 inhabitants only in those LLMs where the

average population density of the LLM is over 25 inhabitants per km² (marked in darker red). The 50 km 'as the crow flies' delineation has also been added. This delineation narrows the potential proximity area measurement thus leaving, for example, Halland and Småland regions in Southern Sweden and Satakunta in Finland outside of the core.

Figure 8D takes its starting point from the central settlement of each larger local labour market. A radius of 100 km has been drawn from the centre point of each LLM with over 300 000 inhabitants (darker blue) or a radius of 50 km from each LLM with a university, regional administrative centre or one with over 75 000 inhabitants (lighter blue). Here the Nordic picture becomes rather more diverse as such but when looking at the area that is continuously covered by the potential proximities to midpoints, the picture corresponds rather well with the previous examples highlighted.

As such, each of these ways of defining potential proximity shows the differences between urban systems and natural geography in the Nordic countries. In each figure more or less the whole of Denmark is included. In Norway four main areas can be seen, greater Oslo, Agder (Arendal-Kristiansand), Vestlandet and Trondheim. In Finland and Sweden however each approach produces, to some extent, a different pattern.

Figure 9 sums up the four alternatives presented in figure 8 zooming in to the southern parts of the Nordic countries. The black line shows the continuous potential proximity area identified in at least three of the four alternatives shown in figure 8 while green area refers to those local labour markets that have their midpoints inside the continuous potential proximity area.

Based on this LLM-adjusted delineation, it can be noted that 16% of the Nordic land area and 73% of total population is included in the potential urban proximity area.

This division includes 92% of Denmark's land area and 97% of its population. Only the LLMs of Thisted, Tønder and a number of small islands are left outside. In Sweden the potential urban proximity area covers 24% of land area starting from Gävle and Stockholm forming a belt over the larger lakes down to Gothenburg and then following the coastline along the entire west and south coasts to Kalmar. 79% of the Swedish population live in this area.

Figure 8: Defining proximity to urban LLMs

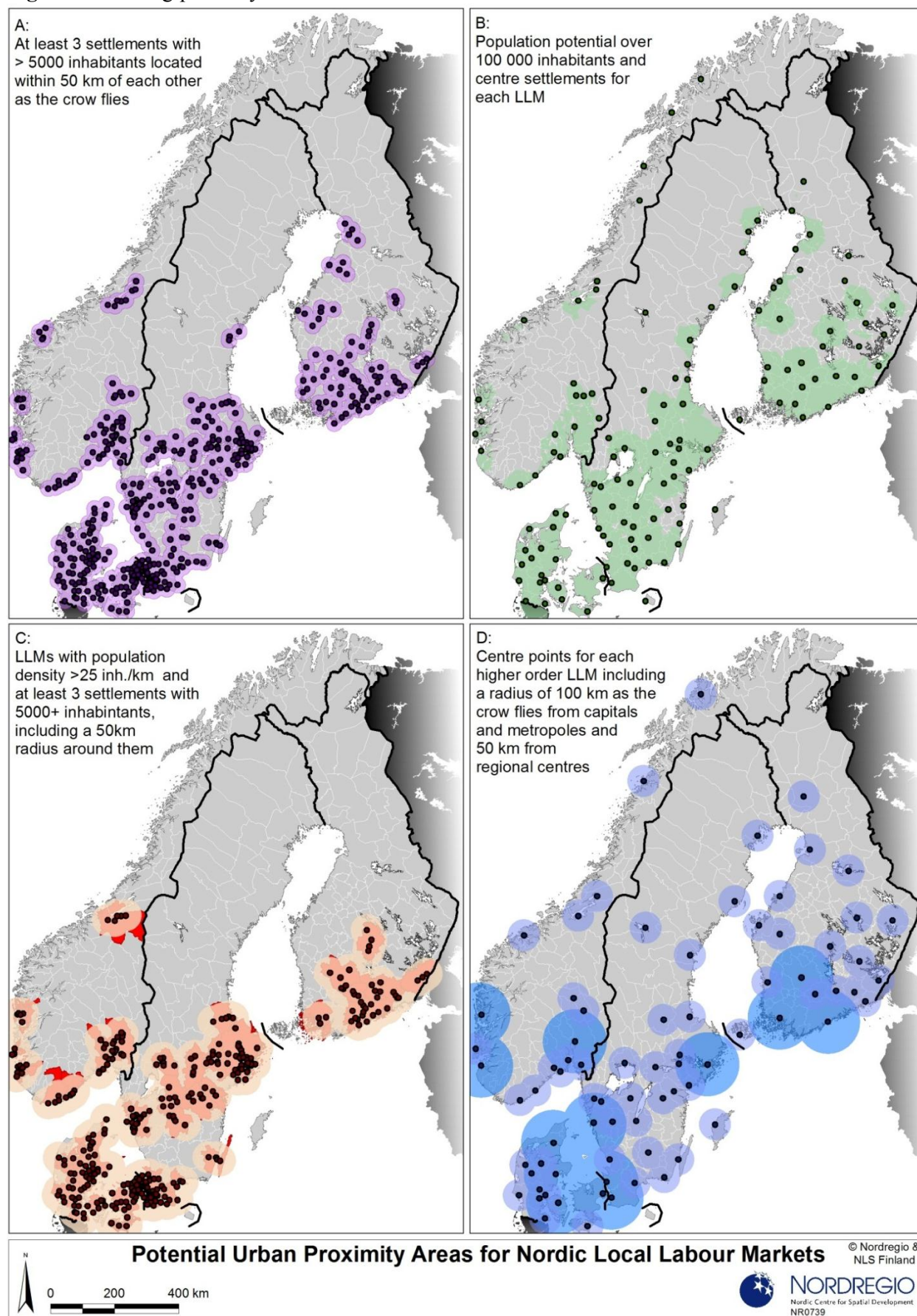
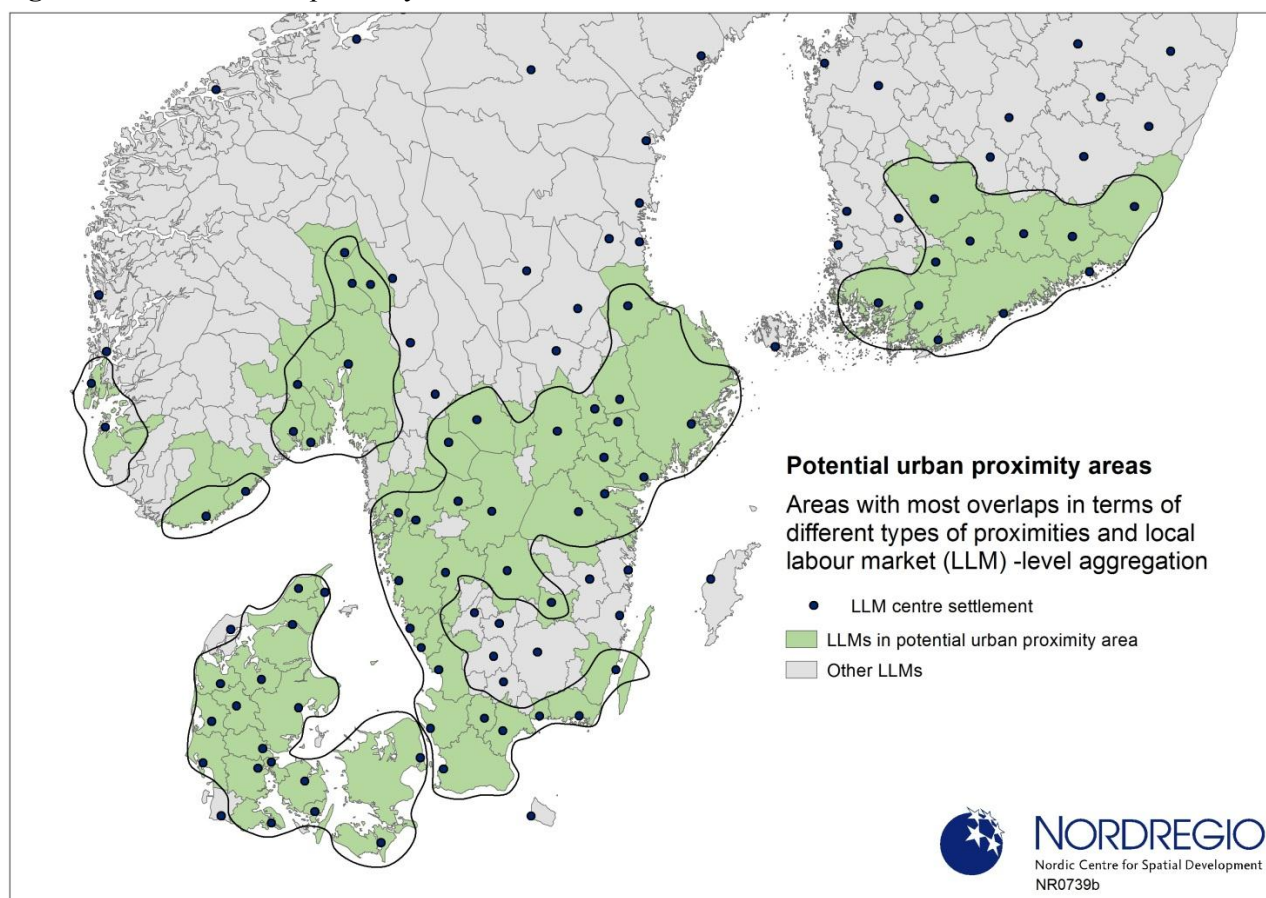


Figure 9: Potential urban proximity areas



In Finland and Norway the relative coverage of the potential urban proximity area is approximately the same, just below 15% of the land area and almost 60% of total population. In Norway the cities along the coastal rim from Haugesund to Halden on the Swedish border are included as is the most densely populated area around Oslofjorden up

to Lillehammer. In Finland the potential urban proximity area covers the main urban area between the three largest cities of Helsinki, Tampere and Turku and continues eastward to Imatra and Lappeenranta near the Russian border.

Nordic city regions: characteristics and development trends

Towards an updated Nordic urban typology

The characterisation and comparison of Nordic local labour markets can be undertaken in various ways. In the 'Nordic urban typology' build by Hanell and Persson³ and further developed in the work subsequently done by the Nordic Working Group on Cities and Regions⁴ in 2006, four main aspects are included. Firstly the typology includes the settlement structure, measured both in terms of total population and population density in the LLMs and settlements. Secondly the administrative status and the existence of a university in the LLM are also included as functional components. Thirdly the location of each LLM was considered with respect to its surrounding urban pattern, thus providing an indication of whether the LLM was situated in a polycentric surrounding or not when it comes to the number and density of localities in the LLM and its neighbours. Finally the employment structure of the smallest LLMs was also distinguished on the basis of whether their labour markets are based on productive industries or services (Hanell 2006).

The typology was used as a spatial analytical tool to distinguish regional development trends between different urban types of labour markets in a Nordic comparable context. Nevertheless, as the Nordic countries have been one of the fastest growing regions in Europe with general mobility increasing, there was a need to update the typology with fresh data and adjusted criteria. In addition, since the typology compilation was published in 2006 a considerable number of changes have occurred in the regional structure across the Nordic countries. Thus the typology update takes its starting point from the regional division as of

January 1st 2012 and uses the latest population figures from 2012 and commuting patterns from 2010.

The basic unit of both the old and the updated typology is the Local Labour Markets (LLMs) that have more than 25000 inhabitants, thus omitting those LLMs that do not effectively display typical urban characteristics. The classification of different urban types is developed by using combinations of structural factors describing each LLM and the size of the LLM in population terms reflecting the range of variation in four Nordic countries. The five major urban classes are (1) Nordic capital regions; (2) other Nordic metropolises; (3) Nordic regional centres with a university; (4) other Nordic regional centres and (5) Nordic medium-sized towns. For a description of the typology classes see table 5 and figure 10 for the geographic location of all Nordic LLMs grouped according to these criteria.

Beyond these classes there is a wide variety of regions, both small LLMs and municipalities outside the LLMs/single municipality LLMs all of which are small in population. Those LLMs and municipalities can nevertheless play an important role in their local context, especially in the sparsely populated northern areas.

In the analysis the Nordic capitals and metropolises are further sub-divided into core cities and the 'rest' of the LLM. The basis for this delimitation is the statistically defined continuous built-up urban areas, i.e. municipalities where at least 50% of the population lives in the settlements that belong to the same build-up area as the LLM centre (figure 11).

³ Hanell & Persson (2003): Performance of Local Employment Systems in Nordic Countries. Paper presented at the 43rd European Congress of the Regional Science Association, Jyväskylä, Finland August 27-30, 2003.

⁴ The role of urban areas in regional development – a European and Nordic perspective. Proceedings of the Nordic Working Group on Cities and Regions, p.97f, Nordregio Working Paper 2006:4

Table 5: Criteria of the typology categories

Code	Category	Location	Criterion/a
1	Nordic capitals		National capital Local Labour Market (LLM)
2	Nordic metropolises		300 000 – 1 million inhabitants within LLM
2.1		In potential urban proximity areas	LLMs that best overlap with criteria of location of settlements with over 5000 inhabitants, 50km continuous accessibility ‘as the crow flies’ population potential over 100 000 inhabitants, average LLM population density >25 inh./km ² and the location of neighbouring higher order LLMs. (see page 25).
2.2		Outside potential urban proximity areas	LLM not fulfilling criteria of 2.1
3	Nordic regional centres with university		LLM with university or technical university. Universities or technical universities are considered higher educational institutions if they offer PhD classes in at least two different subjects.
3.1		In potential urban proximity areas	See 2.1
3.2		Outside potential urban proximity areas	See 2.2
4	Other Nordic regional centres		Regional administrative centre (NUTS2 in Denmark, NUTS3 in others) or >75 000 inhabitants in LLM
4.1		In potential urban proximity areas	See 2.1
4.2		Outside potential urban proximity areas	See 2.2
5	Nordic medium- sized towns		25 000 – 75 000 inhabitants within LLM, not fulfilling criteria for 3 or 4
5a	Production-based		> 33.3% of employment within primary production, manufacturing and construction
5a.1		In potential urban proximity areas	See 2.1
5a.2		Outside potential urban proximity areas	See 2.2
5b	Service-based		> 66.6% of employment within services
5b.1		In potential urban proximity areas	See 2.1
5b.2		Outside potential urban proximity areas	See 2.2

Figure 10: A typology of Nordic local labour markets - update with 2010 data

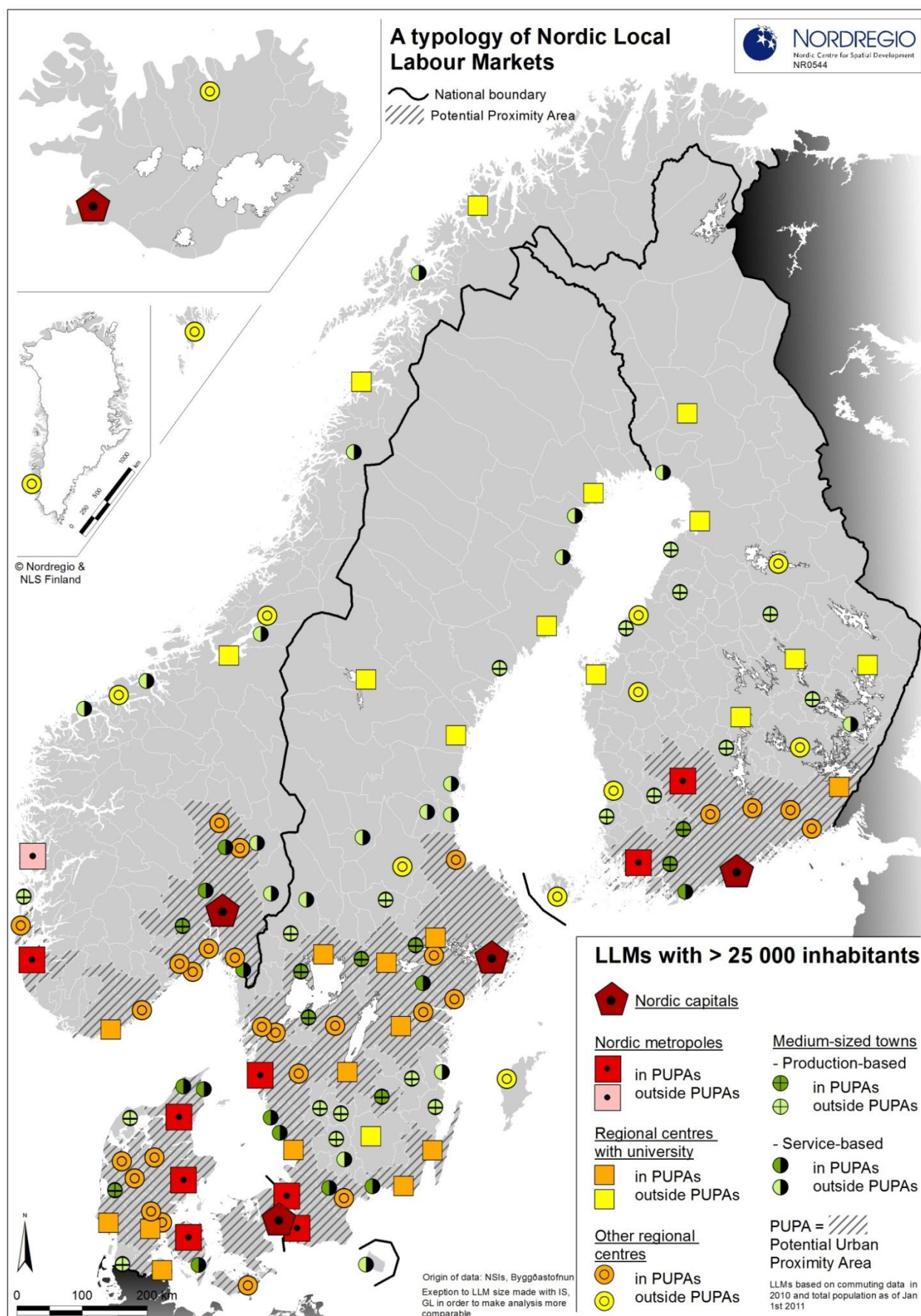
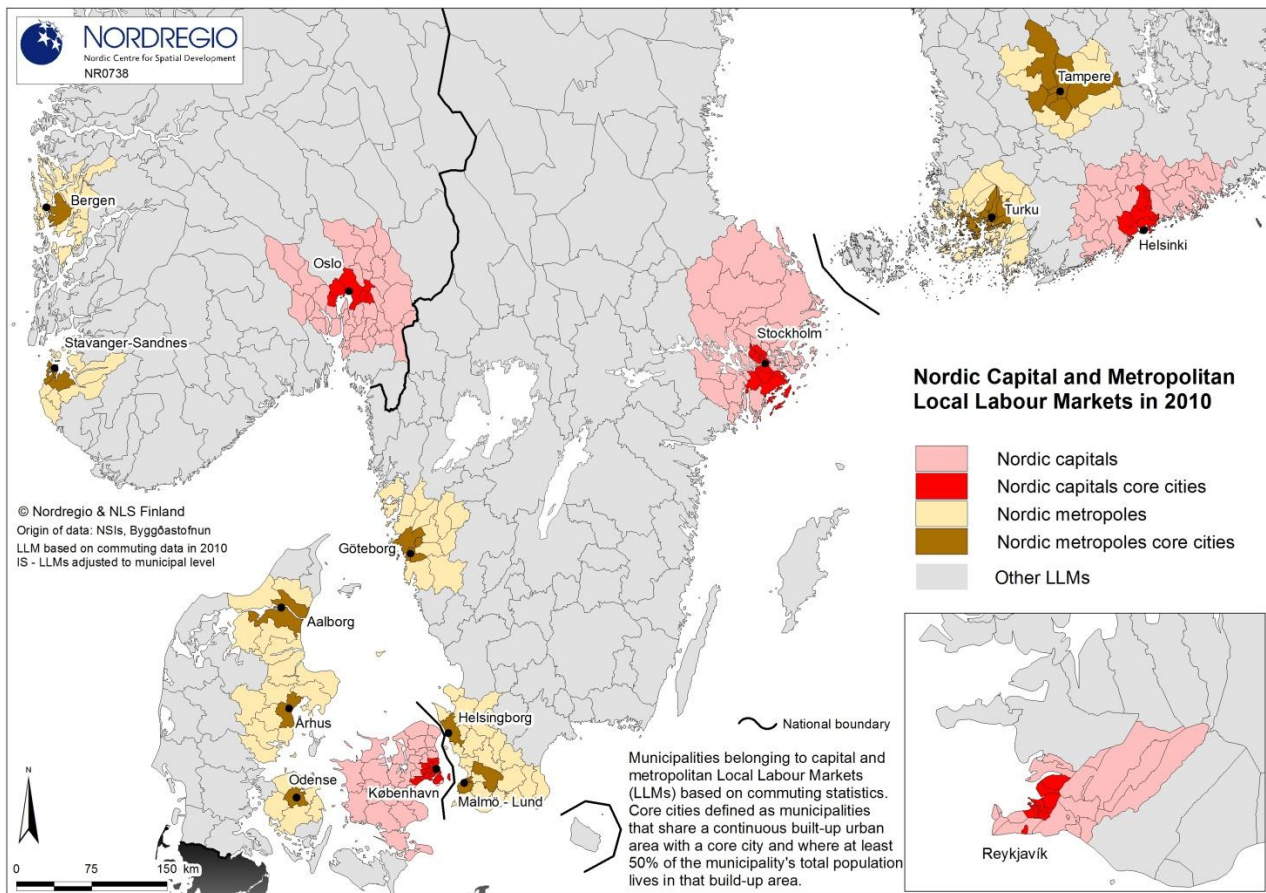


Figure 11: Nordic capital and metropolitan LLMs



One of the main differences to the previous version is that the previous sub-division of labour markets according to location in polycentric and in non-polycentric surroundings is now replaced with the notion of the potential urban proximity area in order to more fully include the various aspects of accessibility and cooperation possibilities. This also better reflects the specific character of the Nordic city regions in a broader European context.

The other main difference between the 2006 and 2012 typologies is that the 2012 edition also includes West Norden more fully in its analysis. Due to the low population levels in these areas a greater focus has been placed on the issues of administrative and functional importance. Therefore the city regions of Akureyri (IS) - the only city region outside the capital region in Iceland - and Nuuk, capital of Greenland, are included in the typology although the total population in these LLMs is below 25 000 inhabitants. In the Faroe Islands the Tórshavn LLM is estimated to be over 25 000 inhabitants as the total population in Tórshavn municipality is 19 800 inhabitants, some 5000 more people live within 50 km from Tórshavn

city centre while an additional 14 000 people have a road connection to Tórshavn.

Commuting flows and municipal mergers are the main reasons for changes in typology

When comparing the 'old' and 'new' typology, the main changes in the classification of different city regions relate to changes in commuting catchment areas, municipal mergers and to either population increase or decrease. Per country the following main changes on the LLM level can be identified:

In Denmark the municipal reform in 2007 had its impacts as the number of municipalities was not only significantly reduced but administrative boundaries were also changed. These issues are particularly apparent in Kolding, Fredericia and Vejle which are all now LLMs of their own. As the municipalities in Lolland were merged, the LLMs of Nakskov and Nykøbing-Falster were merged into one LLM. In addition, the former LLM of Morsø

was merged together with Thisted whereas Svendborg is no longer part of Odense LLM.

In Finland the changes are primarily relating to LLM issues such as increasing commuting flows and municipal mergers. Two new medium-sized towns, Sastamala and Ylivieska, have been added. Lohja is now a part of the Helsinki LLM while the LLMs of Imatra and Lappeenranta have now merged.

In Norway the main change relates to the expansion of the capital's LLM as the previously separate LLMs of Drammen, Moss and Askim are now included in the capital region LLM. Due to the increasing size of the population, the Stavanger LLM is now classified as a metropole. Other changes in the city typology relate to methodological differences in terms of defining LLMs where, for example, while both Ålesund and Sortland have benefited from a rising population over the last ten years, Ålesund has now been dropped as a medium-sized town while Sortland has been excluded from typology altogether due to changes in commuting pattern and used thresholds.

In Sweden changes in population and commuting patterns have also prompted changes. A decline in population has dropped Härnösand and Åvesta from the city list while Örnsköldsvik has been given a lower status. Due either to changes in commuting patterns, or to rather more mundane methodological issues, some LLMs were divided into two. Piteå now has an LLM of its own as it has now been separated from Luleå, with Uddevalla from Trollhättan and Hässleholm from Kristianstad being similarly treated. In Southern Sweden some LLMs have become larger thus seeing Vimmerby added as a medium-sized town and Simrishamn now included in the Malmö-Lund LLM. In addition the university-related activities in Halmstad have been increasing and thus the city is now classified as a regional centre with a university.

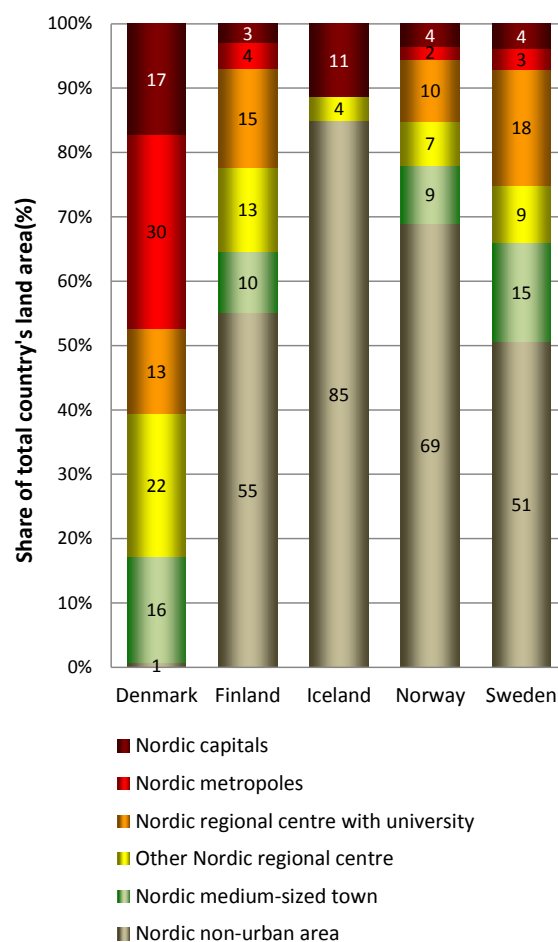
Geographic coverage of the LLM types

The geographic coverage of the different LLM types again highlights the main spatial dichotomies between the north and south and between urban and rural areas on the one hand and the variations in the spatial structure of the countries on the other. On the Nordic level the capital labour market regions cover some 5% and the metropolitan areas some 4% of the total land area. The other city labour market regions cover one third of the land area while the remaining 58% of the total land area

is classified as non-urban. Non-urban area refers only to those rural municipalities and small labour markets with less than 25 000 inhabitants (figure 12).

While Finland, Norway and Sweden conform to the Nordic average structure rather closely, albeit with some minor differences, Denmark and Iceland present an entirely different pattern. In Denmark the relative share of the land area of the capital region and the metropolises is the highest in the Nordic context while the land area share of other regional centres was also high. Non-urban areas cover only 1% of the land area. In contrast, 85% of Iceland's land area is non-urban though, like Denmark, the relative importance of the capital area is high.

Figure 12: Share of land area by type of local labour market in 2012



The demographic situation and current trends in Nordic urban areas

Almost every third person resident in the Nordic countries was living in the capital labour market regions at the beginning of 2012. In addition, some 20% of the Nordic population lived in metropolises, 16% in regional centres with a university, 15% in other regional centres and 9% in medium-sized towns with the remaining 8% of the population living in non-urban area (figure 13).

In Denmark 71% of the population lives either in the capital or metropolitan labour markets with only some 12 000 inhabitants corresponding to 0.2% of the total population living in non-urban areas. In Finland and Norway the relative share of population in various urban types was rather similar, with some 30% of the population in the capital regions and 14% in the metropolises of which both countries had two each. In Finland the relative share of the population in regional centres with universities was however higher – at the same level as in Sweden with around 20%. In Norway the share of the population in non-urban area was highest. In Sweden the relative division of people between urban classes lies somewhere between the other countries. As in Finland and Norway, almost half of the population lives in the capitals or metropolises whereas only 6% live in non-urban area. In Iceland the demographic dominance of the capital region is clear with 77% of the population living there.

Share and size of population in higher order LLMs is increasing

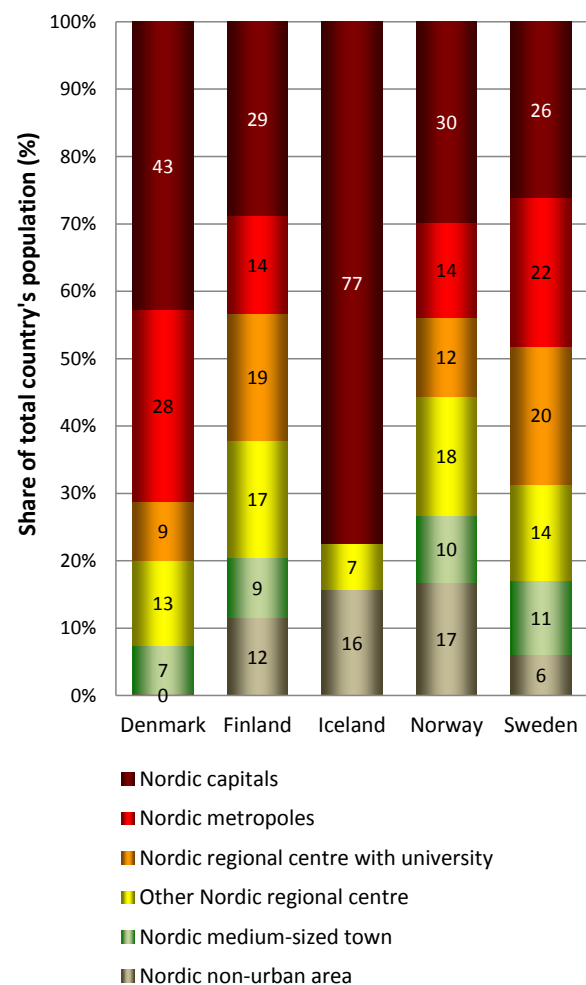
Taken as a group, Nordic capitals and metropolises saw the highest increase in population over the last ten years. In the core cities of both city types the increase was over 10% during the period 2002-2012 and even in the agglomerations the increase was 8% and 10% respectively (figure 14). The Nordic regional centres, with or without a university, experienced some increase in their populations whereas the population in medium-sized towns remained rather stable. In the non-urban areas the population decrease was however substantial.

Taken as a group the capital and metropolitan core cities with agglomerations were the best performers in relation to population change across all of the countries. Excluding Danish cities and Turku all these LLMs had an annual population increase even over 1% during the period 2002-2012. Nordic regional centres, with or without a university, experienced some population increase as a group. In five regional centres in Norway and in Oulu (FI) the annual population increase was over 1%. In the medium-sized towns the change rates varied between

the countries. Taken as a group these towns had a population decrease in Denmark and Finland, an increase in Norway and a continuing stable population development in Sweden. In the non-urban areas the population decreased in every Nordic country although in Norway the decrease was only minor (figure 15).

In the city LLMs that suffered from a declining population the change was again rather modest as none of the LLMs had an annual population decrease below 1%. In contrast among the non-urban LLMs almost 40% of the regions experienced an annual population decrease between 1% and 4%.

Figure 13: Share of national population by type of local labour market in 2012



The link between population development and settlement pattern is however not that clear. Even if the population is increasing in the potential urban proximity area and decreasing outside those areas taken as a group in Denmark, Finland and Sweden, the size of the local labour market seems to be much more important than the actual location of the LLM. In Norway the population is increasing in both region types. Thus the position in or outside the potential urban proximity area is not that important for demographic change.

The overall population change is a combination of natural population change (the difference between births and deaths) and net migration (the balance between in-migrants to, and out-migrants from, the region). The impacts of these two drivers do however differ. Up to the end of the 1980s, natural population increase was, in general, by far the major component of population increase in Europe. Since then, decreasing fertility rates, increasing life expectancy and the increasing importance of international migration have altered this picture significantly with migration now being the major component of population change.

Taking the Nordic city regions as a group, the differentiation between natural population change and net migration (further divided between domestic and international migration) is described in figure 16. In all

the city types, international net migration is the main reason for population increase, on average 0.5% annually in all types of city regions during the period 2007-2011. Domestic net migration increases the total population of Nordic capital and metropolitan labour markets whereas in the Nordic regional centres, with or without a university, domestic net migration is coming close to a standstill. In the medium-sized towns and in the rural areas domestic out-migration is the primary explanation for population decline. Natural change follows the same pattern. Larger city regions or capital, metropolitan and university labour markets are better able to attract younger population and thus nativity is also higher in these city region types while in medium-sized towns and rural areas population decline is occurring due to the existence of both low birth rates and an increasingly elderly population.

The same division between natural change and net migration is shown on the LLM level in figure 17. As such, the LLM city ranking correlates well with the ongoing population changes. The Nordic capital, metropolitan and university labour markets show a rather similar pattern. Population is increasing both due to in-migration and natural increase. In the smaller city regions regional – and national – differences exist although migration rates are, in general, higher than natural change rates.

Figure 14: Population change in the Nordic local labour market types in 2002-2012. Index, 2002=100

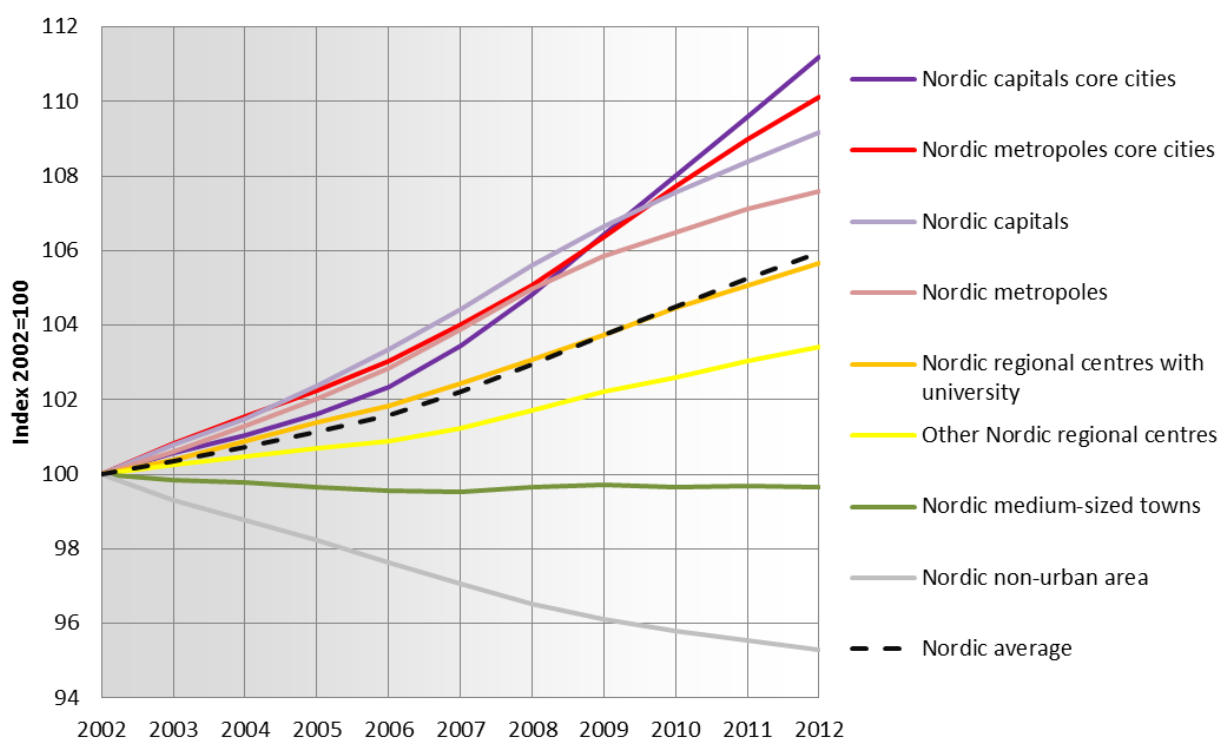


Figure 15: Population change in LLMs in 2002-2012

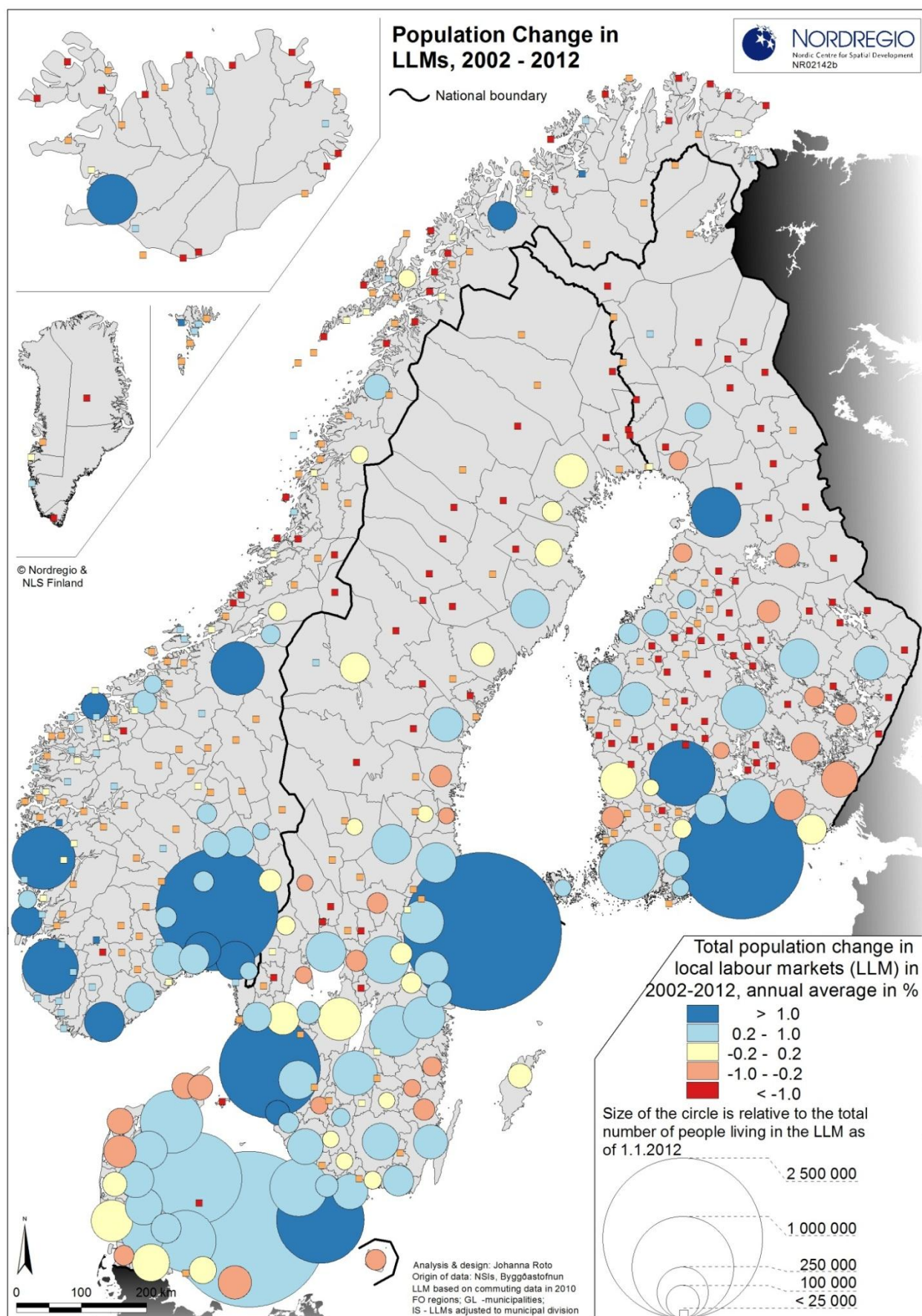
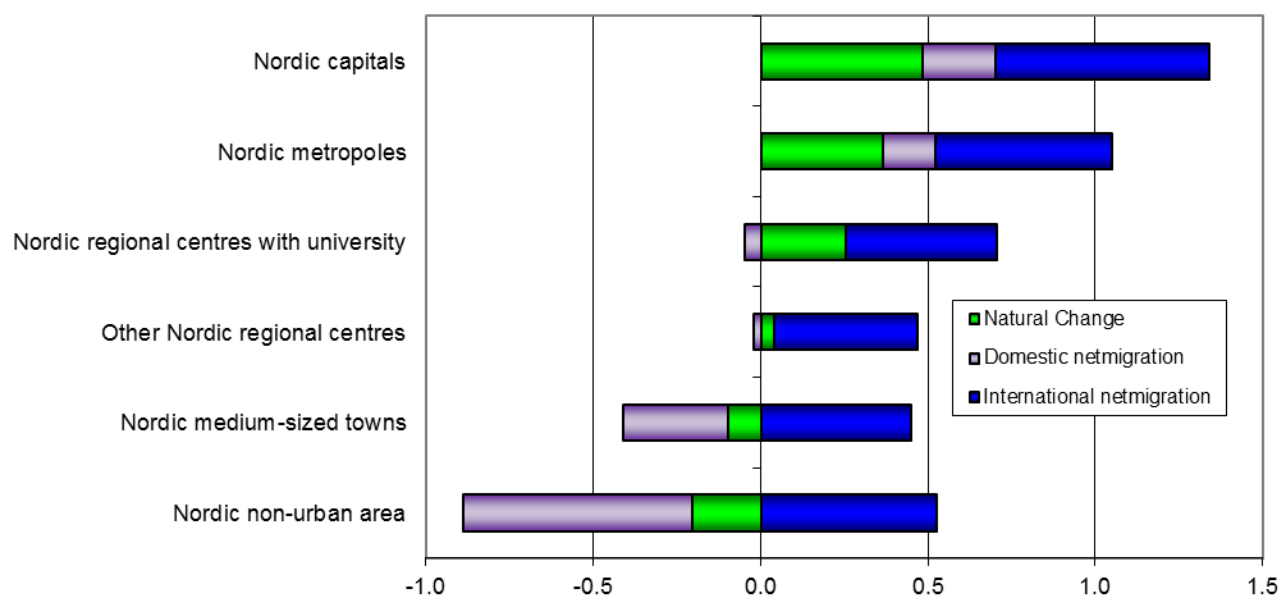


Figure 16: Population change by main components in main city types, annual average in % in 2007-2011



In Denmark the medium-sized towns and the rural peripheries are experiencing population decline. In Skjern and Holstebro in Western Jutland the high natural population increase partly compensates for the out-migration whereas in Svendborg and Sønderborg in-migration is not large enough to compensate for natural decrease. In Finland only three medium-sized towns had a population increase, namely Salo, with relatively good commuting possibilities both to Helsinki and Turku, and Pietarsaari and Ylivieska, both located in Ostrobothnia where high nativity is compensating for out-migration even in the rural areas. Excluding these and some tourism-oriented hubs, most of the rural labour markets experienced an overall population decrease.

All 29 city regions in Norway experienced a population increase and a migration surplus. In 5 smaller city regions located just outside the Oslo LLM the increase was the result of in-migration alone. In rural areas more or less half of the municipalities experienced a population increase while the other half saw a decrease. In Sweden all the regional centres experienced an increase in population although the natural change rate was negative in half of these cities. One third of the medium-sized towns, mostly in Southern Sweden, saw a population increase mostly due to high in-migration. In West Norden net migration was negative in almost all the areas outside the capital areas but thanks to high nativity, some rural areas were able to compensate their losses, or at least lessen the negative impacts.

As natural population change is closely related to the existing age structure in the regions it is harder to orchestrate than migration. Thus from a planning or policy point of view, the migration component

deserves a more thorough examination taking into account the actual differences that do exist between the various Nordic countries (Hanell 2006). When looking at the net migration pattern, both in absolute and relative terms, the higher order city regions are the main destination for both domestic and international migrants. During the five-year period 2007-2011, domestic migration flows favoured the capital and metropolitan labour markets, some university city regions and a few other city regions mostly located in commuting distance to the capital regions. The majority of the rural areas lost population due to domestic out-migration. This general pattern was rather similar across all countries.

The inflow of international migrants has increased year by year in recent decades although the numbers are rather low compared to other Western and Southern European countries. During the last five years however the international net migration pattern was more diversified between the countries and regions than domestic net migration although excluding the West Nordic region almost all Nordic city regions had a positive international net migration.

In absolute terms international migrants clearly favour large cities (figure 18). When looking at the international migration figures from 2011, the surplus was some 130 000 people. Stockholm, Oslo, Copenhagen and Helsinki LLMs were the destination for 43% of those immigrants. In addition, 12 LLMs, each a metropole or university LLM in Denmark, Norway or Sweden, had an international net migration surplus of over 1000 persons each. In relative terms the capital LLMs keep their position but the regional variations between the various countries can be highlighted.

Figure 17: Population change by main components in LLMs in 2007-2011

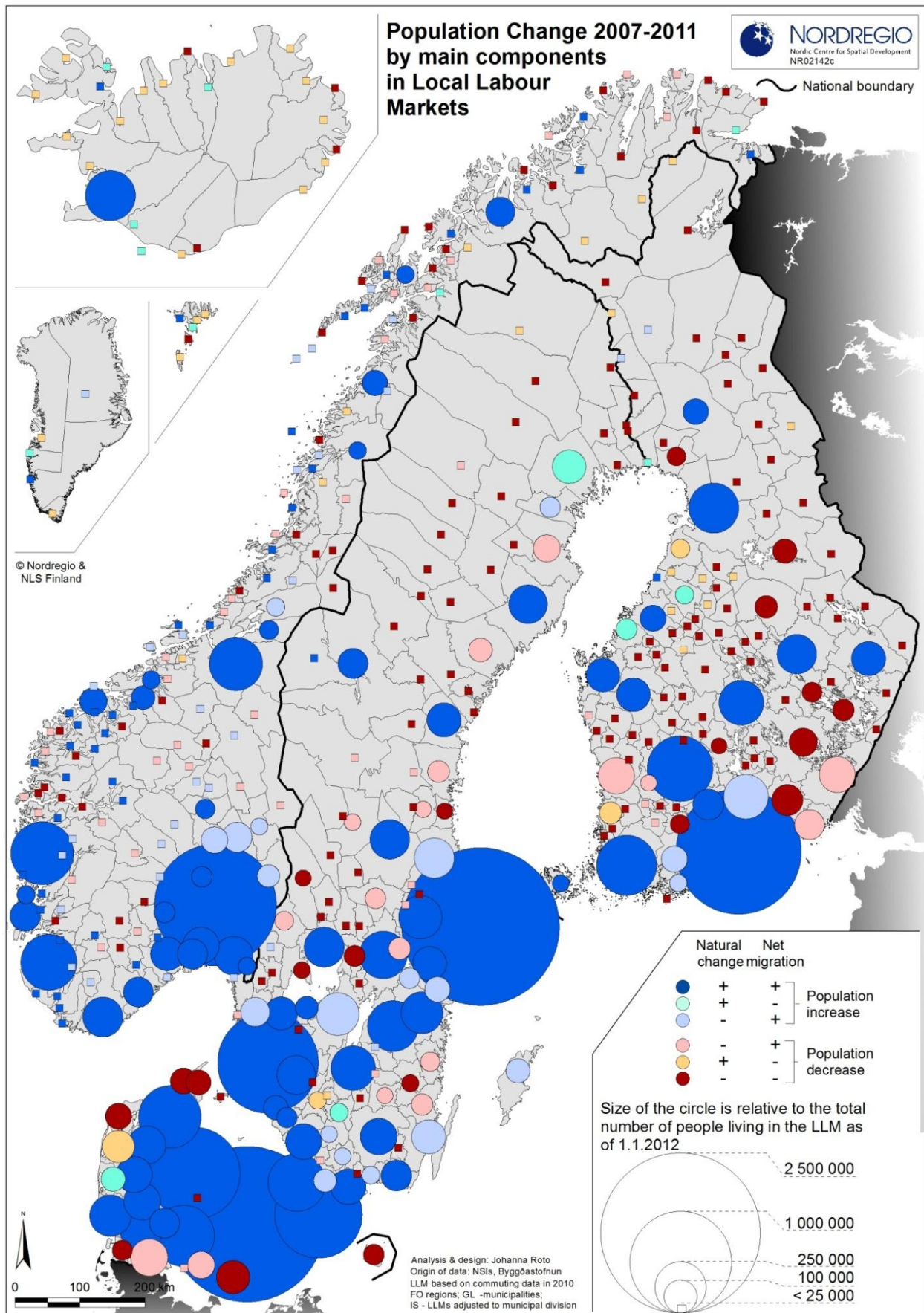
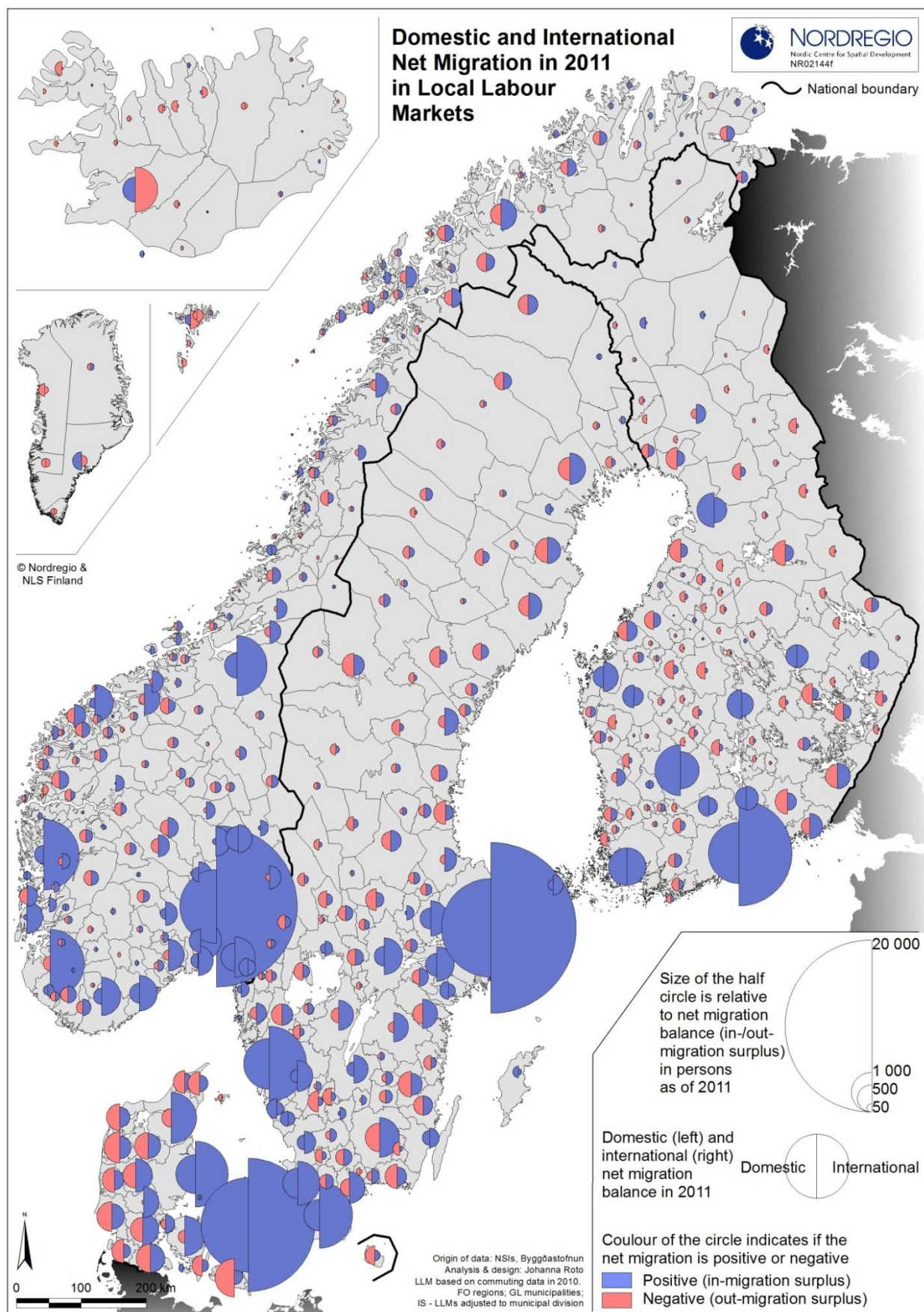


Figure 18: Impact of migration in LLMs in 2011



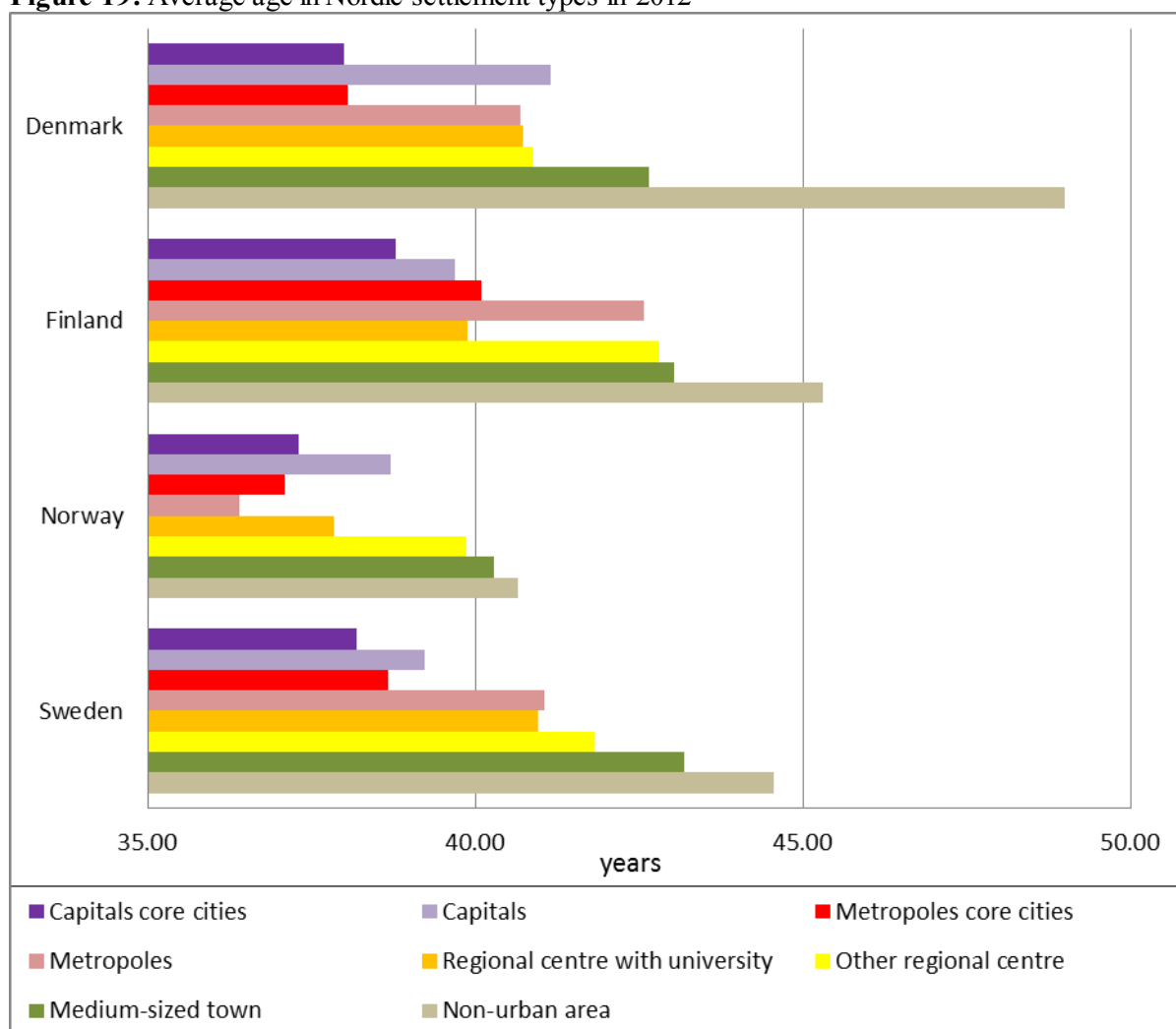
In Denmark international net migration is rather equally divided across the LLMs with no particularly high or low rates. In Finland the overall level of international migration is at a much lower level than in the other Nordic countries. The Åland and Ostrobothnia regions attract, relatively speaking, the most international migrants thus being more or less the only Finnish regions attaining the Nordic average level.

In Norway international migration is, relatively speaking, the highest in Norden. Indeed rates have been increasing with such intensity that from 2009 population change on the county level was, for the first time in over 20 years, positive in all regions. It is clearly however in Oslo and the city regions on the Norwegian west coast, that international migration has had the greatest impact on population increase in relative terms. In addition some rural labour markets in Vestlandet and in Northern Norway have also seen a relative high share of immigrants.

In Sweden international migration flows are somewhere between those of Norway and Denmark. In relative terms, city regions in Småland gained most immigrants though the rural labour markets in Mälardalen and in Northern Sweden also saw a relatively high share of immigrants.

In Iceland recent years have seen a rather spectacular migration pattern. In the period 2005-2008 the population increase in Iceland was at a record high, up to two percent per annum and was largely a result of the intensive immigration of male workers. As a combined result of the completion of the aluminium smelter building activities in Eastern Iceland and wider global economic changes the migration flows rapidly turned negative and the deficit in 2009 was some 5000 persons. In 2010 and 2011 international net migration remained negative but due to high nativity the total population of Iceland nevertheless increased, the main population increase – and concentration – taking place in the expanded capital region.

Figure 19: Average age in Nordic settlement types in 2012



The gendered and ageing reality of the cities

Today's age composition gives us an indication of how the local labour market can be expected to look in the years to come. A median Nordic citizen is 40.2 years old. Even if the population in Iceland, the Faroe Islands, Greenland and Norway is, in general, younger than in Denmark, Finland and Sweden, the same hierarchical pattern occurs when it comes to median age by city types. It is evident that the population in larger urban areas is younger than in medium-sized towns or in the rural areas (figure 19). At the Nordic level this average age difference between the youngest and the oldest city types is up to 6 years.

In Denmark and Sweden the youngest population can be found in capital and metropolitan core cities followed by those agglomerations and other regional centres with or without a university. In medium-sized towns and especially in the rural areas the population is markedly older. In Finland the same pattern exists but the university cities are relatively younger whereas the agglomerations for the metropolises core cities are older. In Norway the youngest population can be found in the metropolises, regional centres with university and in the capital area. The median age difference between the other regional centres, medium-sized towns and rural areas is also narrower.

The most commonly used classification regarding age structure is the grouping of three major age classes based on dependency. Age-dependency ratios relate the number 'dependent' individuals – children and the elderly – to the number of those individuals who are, at least in demographic terms, capable of providing such support. This comparison is generally done among persons aged 0-14 and 65 years and over, related to population aged 15-64.

From a regional development perspective the old age groups are often seen as a burden on the society whereas the younger age groups are seen as future assets. The truth however is not that simple. On the one hand the educational investment made in children before they become 'profitable' will be paid back in the larger city regions whereas in the smaller cities and in the rural areas a remarkable share of the younger population will out-migrate before entering the labour market. In addition, the training and study activities of the age group between 15 and 24 are a general trend, and thus this age group should be identified more as future contributors to the productive age group. On the other hand younger pensioners are often rather healthy and have considerable spending power as such they can help to support their local economies. The need of care, and thus burden, is anyhow rising with age.

The dependency ratio in the Nordic city regions varies between 46 (in Helsinki) and 75 in (Joutsa, FI). In the rural areas the spectrum is between 37 and 80. Taking the Nordic city regions as a group only marginal differences exist in terms of young age dependency ratios but when it comes to old age dependency ratios the Nordic city regions show a clear hierarchy that is more advantageous for the larger cities (figure 20). In the Nordic capital regions, taken as a group, the old age dependency ratio was 23 whereas in both medium-sized towns and in rural areas the ratio was over 10 persons more. The overall trend towards an older population is notable especially in the rural and peripheral areas in Finland and Sweden. This development is strengthened by depopulation in these areas. For Norway and Denmark, similar patterns emerge although the development is not so pronounced. At the LLM level the lowest dependency ratios can be found in the capital regions of Helsinki, Oslo and Reykjavík, in the other larger Norwegian cities and in some regional university cities like Rovaniemi and Umeå (figure 21).

The larger city regions are not only attracting younger population but also females. At the Nordic level the balance between females and males is rather stable, with 101 females per 100 males. Considerable regional variations nevertheless remain. Generally speaking, the city regions - with the capitals on top - have the highest share of female population while the rural regions retain a predominance of males. Taking the city regions as a group, there are 103 females per 100 males in the capital regions while in the rural areas only 98 females per 100 males. The main reasons why women move to cities or to the south generally relate to the availability of educational opportunities or to the lack of advanced jobs in rural regions.

Figure 20: Demographic young and old age dependency ratio in 2012

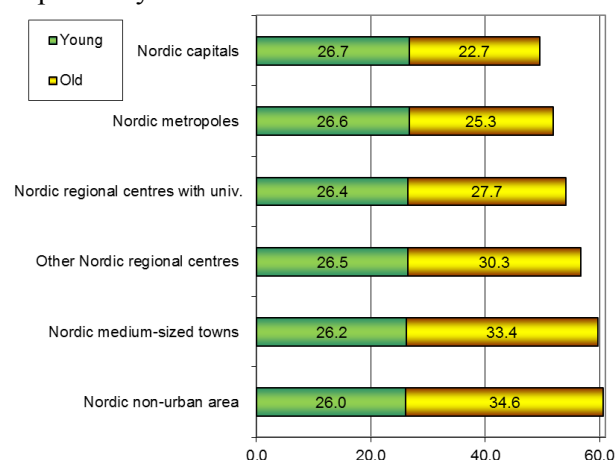
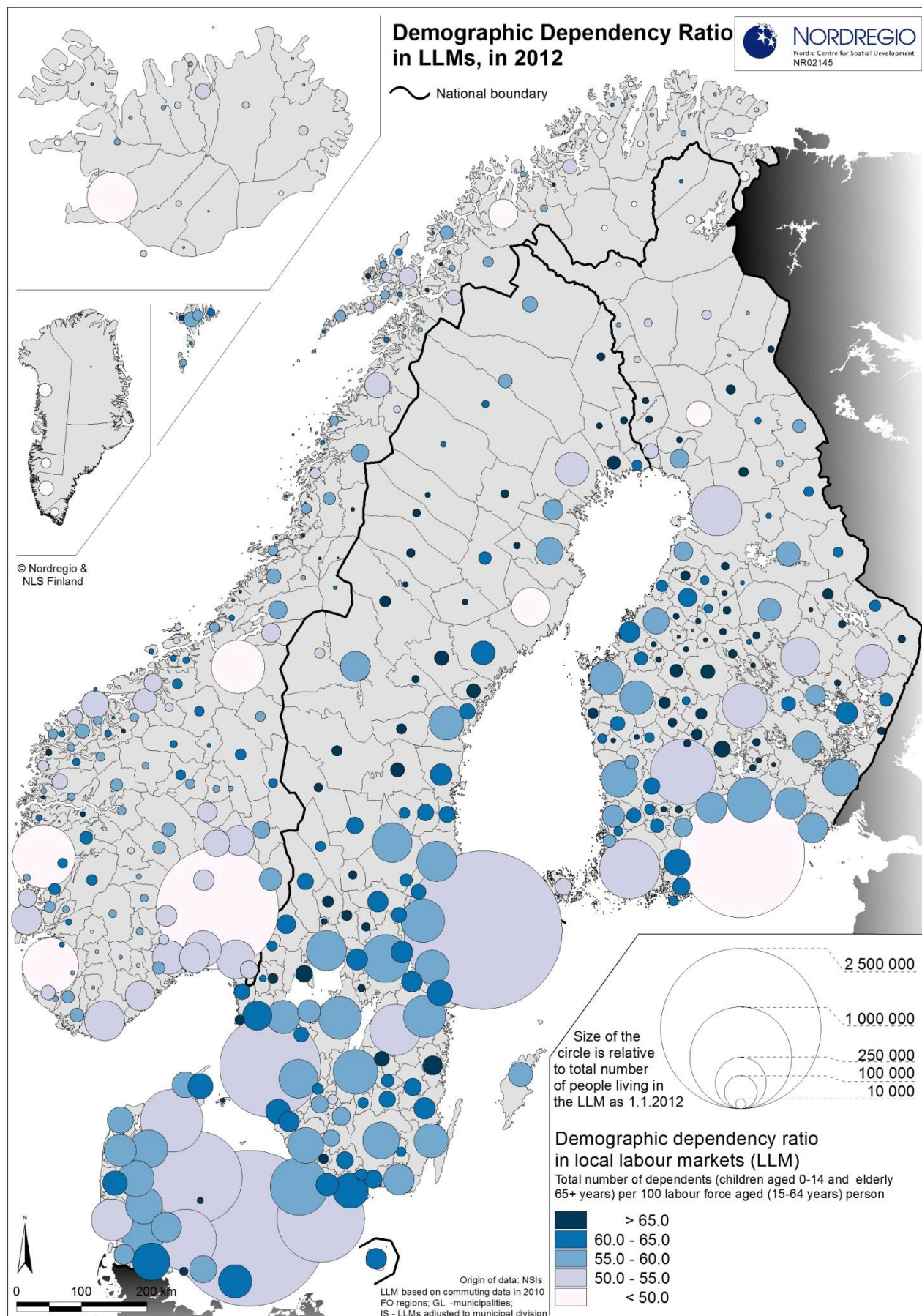


Figure 21: Demographic dependency ratio in 2012



Labour market situation in Nordic urban areas

The interplay between jobs, people and places is crucial in understanding how regional labour markets function and how individual LLMs differ from each other. As noted previously, factors such as population change and ageing are the primary drivers of change in the status of labour markets.

Employment in local labour markets

Seen from a broader European perspective, employment rates remain relatively buoyant in the Nordic countries. In 2000, the long-term target for national employment to be at least 70% by 2010 among the population segment aged 15-64 years was set in the Treaty of Lisbon. This goal was updated in 2010 in the Europe 2020 strategy, which argues that in 2020 75% of the population aged 20-64 should be employed. The total employment for people in the EU27 aged 15-64 increased from 62.4% in 2002 to 65.9% in 2008, but decreased again to 64.6% in 2009. The global financial crisis of 2008 and onwards has thus clearly had a significant impact on EU employment rates with Iceland, Sweden and Finland being particularly affected during the first years of the crisis (Lindqvist et al 2010). In 2011, the original target of 70% was attained by only by 5 EU member states, including Denmark and Sweden. Finland with 69% was just slightly below the target. In Iceland and Norway employment rates were 78.5% respectively 75.3%.

Taken as a group, all categories of Nordic cities have lived up to this objective of 70% in 2011 (figure 23). Employment rates were highest in the capital labour markets while in the regional centres with a university rates were lowest. This result is not however that surprising as in the university cities a relatively large share of the young aged labour force population remains outside the labour markets due to their study activities.

Comparing employment by city type in a Nordic context is more complex than for demographic indicators as the national differences are marked. In Denmark, Norway and Sweden the differences in employment rates between the city types are not that large whereas in Finland the differences are much more significant. Employment levels in Helsinki are comparable to the average Nordic level though in the regional centres and the medium-sized towns rates are in the region of 66%. Thus the low level of employment in the Nordic university cities taken as a group is actually the result of low levels in all Finnish cities belonging to this category. Indeed only a quarter of the Finnish city regions has an employment rate above 70%. Mariehamn with a rate of 78.4% belongs in class of its

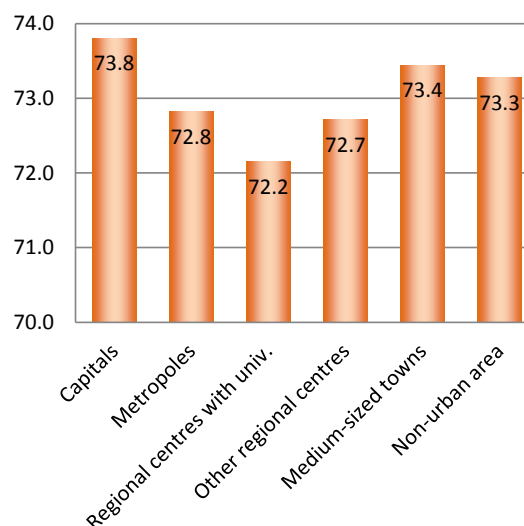
own here and is also among the top Nordic regions. In addition only four Danish city LLMs (Bornholm, Lolland, Odense and Svendborg) in a Nordic context had an employment rate below 70% in 2011.

In Norway, Oslo, the metropolises and non-urban areas as a group have employment rates over 75%. Turning to the cities the highest rates can be found in Molde and Ålesund. In Sweden the rates are quite surprising as the larger cities as a group have a lower employment rate than medium-sized towns. The highest rates can be found in cities in the central parts of Småland (the so-called Gnosjö area) which have traditionally seen high rates of labour utilisation.

In Iceland employment rates cannot really be compared to those in the other Nordic countries without a caveat being placed on them. Before the economic crisis Reykjavík, as well, in general, as the rest of Iceland enjoyed more or less full employment. Due to the economic and financial crises the employment rate decreased rapidly but nevertheless remained at a higher level than in any EU country. This related to the fact that people effectively 'voted with their feet' and in a short period some 5000 people emigrated thus obscuring the employment-related effects of the crisis.

People, in general, move to a new region after obtaining a job, not in order to find one. But when combining net migration with the employment rate, it is surprising that even though in-migration increases total population employment rates do not correlate with this change. Migration is by and large distributed linearly along the urban hierarchy though the same employment rates can be found in cities with all types of net migration rates.

Figure 22: Employment rate per LLM type in 2011 among population 15-64 years



Unemployment challenge

There are substantial regional differences in unemployment between the Nordic countries. In general unemployment rates are highest in Finland and lowest in Norway. As such some 30 Nordic labour markets had an unemployment rate below 5% in 2011. These LLMs include all Norwegian cities and Åland. The highest figures of over 10% are found in Eastern and Northern Finland (figure 24).

In Denmark the LLM level unemployment rates vary between 6 and 10%. The highest regional unemployment rates can be found in the rural outskirts of Denmark (Bornholm, Lolland etc). In Finland unemployment rates show a wide spectrum between the low rates in Åland (2.7%) and in Western Finland and rates of over 12% in Joensuu and Varkaus. The size of the LLM does not seem to have any significance. Thus a clear regional and geographic polarisation is visible in Finland.

Among all Nordic and European countries, Norway has the lowest national unemployment rate and the same goes for its cities. Six of the cities had an unemployment rate below 3% with the lowest value of 1.9% found in Stavanger thus indicating the existence of a labour shortage. In Sweden the highest rates can be found in Mid-Sweden around Värmland and in the outskirts of Stockholm's LLM as well as in Southernmost labour markets like Helsingborg. Sweden's lowest rates can be found in Småland.

Even though unemployment rate related regional imbalances are particularly large between

local labour markets in Sweden and Finland, a different perspective can be detected when looking at unemployment disparities within local labour markets where large differences in unemployment rates can be seen in municipalities located within the same local labour market. Such disparities are rather small in Norway while Denmark, Finland and Sweden display the entire spectrum of high and low disparities in terms of LLMs.

These disparities are measured by means of a standard deviation which shows how much variation or 'dispersion' exists from the average value. A low standard deviation indicates that the unemployment rates in municipalities located in the same LLM are similar while a high standard deviation indicates that a large range exists in terms of rates. The highest values, or the LLMs with the highest internal disparities, can be found in the regional centres of Varkaus (FI) and Östersund (SE) and in Stockholm. As such, the Øresund region can be seen as the most challenging area as all the large LLMs located here; Copenhagen, Helsingborg and Malmö-Lund, belong to those Nordic LLMs with the highest disparities (figure 24). This suggests that a number of challenging planning tasks must now be confronted if the region is to be developed on a path towards greater cohesion.

Figure 23: Unemployment rate per LLM in 2011

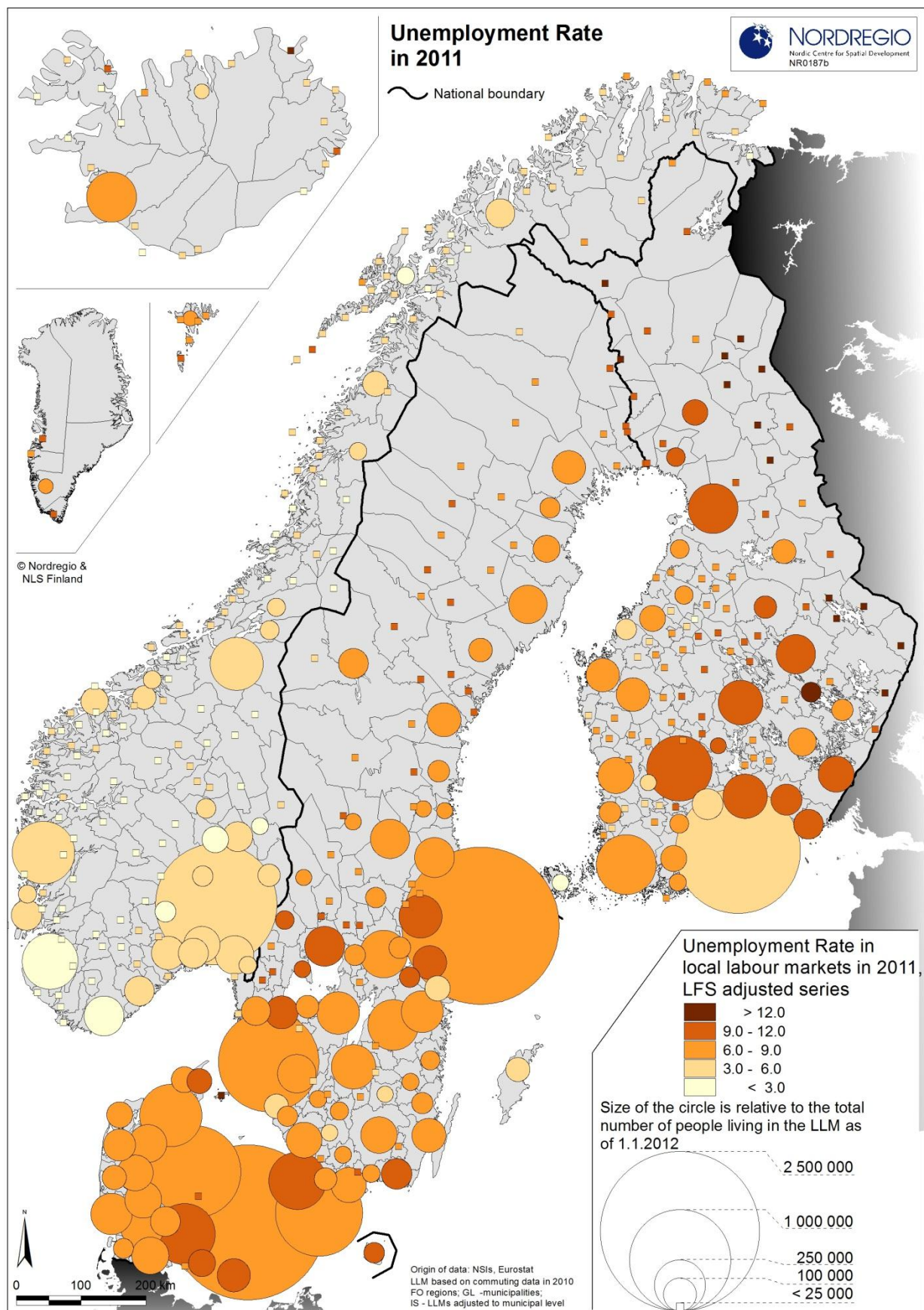
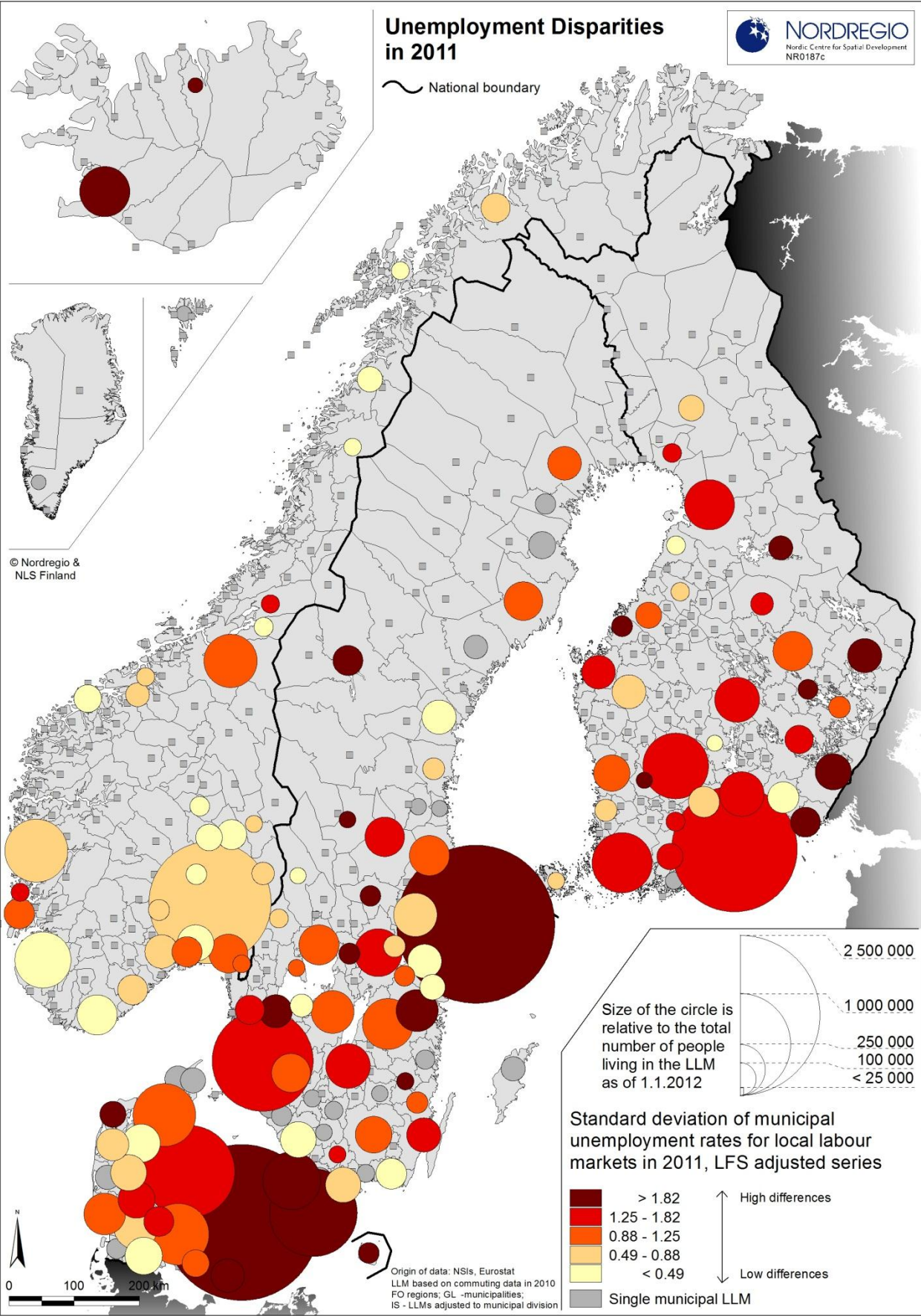


Figure 24: Unemployment disparities in LLMs in 2011



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ISSN 1403-2511