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**INTERNAL MIGRATION AND
REGIONAL POPULATION DYNAMICS
IN EUROPE:
SWEDEN CASE STUDY**

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ABSTRACT

This paper describes the structure of internal migration and population change in Sweden in recent decades, focussing on the years 1988 and 1998 to capture change in the last decade.

Up to the 1970s and again in the early 1990s natural increase play an important role in regional population dynamics. In the late 1990s growing international migration, decreasing fertility and strong net internal migration into large cities increased the importance of migration at both national and local levels. In 1988 migration flows contributed to a pattern of relatively even deconcentration of population. Urban centres and surrounding communities experienced mixed patterns of growth. The pattern observed in 1998 was entirely different. It showed a strong movement up the urban hierarchy. Rural and remote areas, especially those in Norrland, depopulated. In 1998 migrants moved from low-density areas to high-density. High density areas had much higher population gains than low density over the 1988–1998 period.

There is a difference in migration pattern between the north of the country, which mostly loses population and the central and southern parts, which mostly gain people. The pattern of migration of the Swedish population is, to large extent, related to the level of unemployment. Low unemployment areas attract migrants; high unemployment areas lose them. However, the level of unemployment cannot be considered in isolation, because the level of unemployment is correlated with the level of urbanisation and with type of regional economy. Areas with an educated population have a very strong attraction for migrants. A high level of education is indispensable for high level services, including tertiary education, and for high technology enterprises, which attract migrants. Young people migrate to metropolitan areas and university towns out of the other types of municipality. Medium sized municipalities attract families. Outflows from industrial regions and Inner Norrland

municipalities are visible in all age groups. Metropolitan areas are gaining popularity among families. The elderly population migrates to university and medium size municipalities.

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1. CONTEXT

The Economic and Social Research Council have funded a project *Internal Migration and Population Change in Europe. A Comparative Study* which is a continuation of a project on *Internal Migration and Regional Population Dynamics in Europe* funded by the Council of Europe and the European Commission over the period 1995-1998. This study is one in the series of studies covering the whole of Europe, from Norway to Italy and from Estonia to Portugal, country by country. The studies have been designed to be as comparable as possible, using a unified methodology. Simple techniques have been used, including cartographic presentation of migration rates in late 1980s and late 1990s and examination of flows between bands of municipalities grouped according to values of a selection of exogenous variables controlling migration. A strict international numerical comparison of values of indicators is difficult, due to differences in definitions of variables in various countries, but trends and processes are easily comparable.

The aims of this study are:

- to compare the patterns of internal migration and population change in Sweden in the 1980s (using data for 1988) and the 1990s (using data for 1998);
- to examine the way in which these patterns differ between different life course stages, again comparing 1988 and 1998;
- to establish the contribution of internal migration to regional population change against the contributions of external migration and natural change;
- to review how internal migration is structured in terms of the spatial organisation of the country using classifications relating to settlement size, population density, municipality functional type and education level;

- to assess, from this analysis, the degree to which internal migration is contributing to urban concentration or deconcentration from urban areas; and finally
- to ascertain the degree to which internal migration is responsive to economic labour market conditions, as tracked by the level of unemployment.

The focus of attention in this case study, as in the others, is migration internal to the country. Comparisons across European countries in the levels and structure of internal migration at a fine spatial scale are needed because previous work has focussed on the total population change or total net migration (which includes the balance of international migration), and usually for large regional divisions which hide the complexities of settlement structure.

2. INTERNAL MIGRATION AND POPULATION CHANGE REVIEWED

Sweden is a sparsely populated country. With a population of 8.9 millions distributed over 450000 square kilometres Sweden, with only 19 persons per square kilometre, is one of the countries in Europe with the lowest population density. The population is very unevenly spread. Two thirds of the country contains only 15 percent of the population. The metropolitan areas have expanded during the last decades. One of the main components in Swedish population dynamics is the change from an emigration country (up to the 1930s) to an immigration country after the Second World War. This change gave an extra push to the pattern of migration gains to urban areas.

In this section of the paper, an overview of the demographic components of change, migration, fertility and mortality is provided. The discussion follows the theme of concentration and dispersion during recent decades.

2.1 Migration, urbanisation and suburbanisation waves

2.1.1 Concentration during the post war period to the 1970s

In the post-war period the migration pattern has changed a number of times. During the 1950s the country experienced slow urban growth, with decreasing rural population. This process was characterised by step-wise migration, from the countryside to smaller central places and further on to the cities (Bylund, Norling 1966).

As in many other European countries the 1960s was an era of great economic restructuring. A major change took place, when Sweden experienced a huge concentration process on different levels. The urban areas and especially the big cities grew, while the countryside and predominantly the peripheral regions in northern Sweden were depopulated. The migration process was characterised by the following features: a periphery to centre migration, a change in economic base to a more industry dominated economy, a strong

decline in the primary sector and finally a strong immigration, especially from the Nordic countries.

The socio-economic system was modified through the development and improvement of the welfare system during the 1960s. The ambition of the wealthy state that is Sweden was to supply all parts of the country and all citizens with essential public services, as well as jobs and decent dwellings. Social security was increasingly guaranteed by public institutions. Interpersonal contacts were to a larger extent characterised by *Gesellschaft* rather than by *Gemeinschaft* relations. Migration to the cities and spreading of an urban life-style in rural areas, resulted in a continuous transformation of the social structure. The local social network based on close personal relations became less important.

The geographical pattern of economic activities was dramatically changed. The new migration pattern was strongly related to a transformation which included the restructuring, modernisation and concentration of industry and of service activities. A substantial part of small-scale industry was closed down. At the same time industrial employment reached its maximum. The economy became increasingly export oriented and economic growth was high. The demand for labour in the expanding industrial regions and the simultaneous shutdown of factories in many peripheral areas were major factors behind increasing migration towards the cities.

The expanding industry made considerable efforts to recruit labour. At the same time, labour market policy (the so-called "Swedish model") facilitated the restructuring of the industry through a flat income distribution which favoured the development of capital intensive and technologically advanced industry, at the expense of labour intensive industry. A lot of people in the stagnating regions were forced to move. Incentives were given to the households in order to stimulate geographical mobility (Åberg 1980).

Through substantial government aid, efforts were made to stimulate new industrial investments in peripheral areas, especially in Norrland. However, migration statistics reveal a substantial net out-migration from the peripheral areas and a subsequent net in-migration into metropolitan areas throughout the whole period.

The tempo of demographic growth, fuelled by high fertility from the 1940s to the 1970s, also influenced the rapid urban growth. The large cohort born in the 1940s, reached the age in the 1960s when the tendency to migrate was the highest. Students and better educated people also became more important in the population and this contributed to increasing long distance mobility and to city growth. During the 1960s and early 1970s a substantial immigration from Finland, Yugoslavia, Greece and Turkey took place, encouraged by the government and by labour recruiting enterprises. An official policy of multiculturalism was adopted in the Immigration Act of 1974. The declared intention was to enable the integration of immigrants into Swedish society, but in reality a segregation process started (Andersson-Brolin 1984; Olsson, Hort 1992).

Investments in infrastructure were substantial during this period. About one million new dwellings were created, resulting in a net production of 650000 units, for the period 1965-1974. Transportation systems in the metropolitan areas were developed. Investments stimulated further migration to the cities, as well as from the core to the periphery within the urban regions. At the local level there was a concentration of young people and child oriented families from the working class to these areas. Commuting was stimulated by investment in local public transportation and the increasing access to private cars.

The urban way of life developed into a dominant life-style. Migration and improved mass communication resulted in a considerable shift of attitudes towards the city and towards modernisation of society. All this had great importance for migration as well as for the continuous urbanisation of the countryside as a life-style phenomenon. Many people had

roots both in rural and urban societies. This resulted in an increasing interest in developing new spatial strategies for combining the life-style of urban as well as rural life.

2.1.2 Concentrated dispersion: the 1970s

In the 1970s Sweden, along with the rest of the western industrialised countries, experienced a new radical change from concentration to dispersion (Champion 1989; Forsström, Olsson 1982; Ahnström 1980). On the national level there was a net out-migration from metropolitan areas, while the more peripheral areas, including the remote forests, experienced a positive net internal migration. On the local level the expansion resulted in dispersion to the new suburban settlements. Old villages and new suburbs in the vicinity of the cities expanded. Suburbanisation was the dominant form of migration. The Swedish "Turn Around Trend" was predominantly a concentrated dispersion. Another feature of Swedish migration that became increasingly obvious was decreasing geographical mobility (Bengtsson, Johansson 1992).

An important explanation for the deconcentration on a national level was the growth of jobs in the public service sector. Service jobs were to a large extent located close to where people lived. These activities and important parts of the public administration were decentralised to regional and local centres. Jobs were created in the periphery. At the same time new university colleges were opened in regional centres. Young people now had greater opportunity to gain education and stay within their home regions. People who had migrated to the metropolitan areas during the 1960s now had a greater opportunity to return "home".

One important demographic factor was the growth of child-oriented families, demanding houses and suitable environments for their children to grow up in. This was the same generation that to a large extent had migrated to the big cities in 1960s (Borgegård *et al.* 1987).

The changes in the social structure had an important effect on the mobility pattern. Women's labour force participation grew as a result of the increasing demand for labour in public sector, and Swedish families became increasingly dependent on two incomes. As long as demand for jobs grew in the public sector it was relatively easy to find jobs for both adults in two-income families. But dependence on two incomes has in the long run become a major obstacle to geographical mobility in Swedish society (Nilsson 1987).

The planning policy enabled the expansion of suburban areas as well as the filling in of houses in old villages. Increased access to private cars and state subsidies for commuting were important preconditions for settlement and population dispersion on the local level.

Commuting became an important strategy for mixing urban and rural life. Another way was to live and work in the periphery but to adapt more to the urban life form, resulting in the so-called "urbanisation of the countryside". Return migration was important, as many people in the cities still had strong roots in the rural society and in the places from where they or their family originated (Borgegård *et al.* 1987).

The new trend was often described as a "green wave", a concept that indicates some kind of change in the attitude towards urban and rural life. The out-migration rate for families with children increased substantially and their number in the metropolitan core areas was dramatically diminished. There was an obvious change in preferences for urban living.

However, the changing migration pattern can, to a large extent, be related to important features in the demographic, economic and social structure that created new constraints and opportunities for spatial mobility. These preconditions enabled people to realise some of the ambiguous attitudes that most people have to urban and rural life, leading to both dispersion and concentration.

2.1.3 Concentration and dispersion: the 1980s

During the 1980s there was been no single trend in Swedish migration. The extensive counter- and suburbanisation of the 1970s was followed by a positive net-migration to urban areas in the early 1980s and by a new, but less numerous, counterurbanisation in the later part of the decade. During the last part of the 1990s the population in rural and attractive areas has increased (Glesbygdsverket 2000).

The net-migration of young people to the metropolitan areas has continued. In the early 1980s the prime destinations were large cities. However, since 1986 this flow has decreased. In the early 1980s the out-migration of families with children from the metropolitan areas decreased. At the end of the decade the emigration of families with children from the urban core areas increased again. During this period the destinations were more varied. Apart from the traditional migration to suburbs, more remote rings in the proximity of the metropolitan areas became popular. Also retired people (aged 65 and over) and middle-aged (aged 45-64) have, to large degree, migrated out of the city regions. These groups have also found their way to more remote areas.

Changing attitudes to urban life have been regarded as an important explanation for the urban growth of the early 1980s. At this time “yuppification” and “gentrification” were obvious phenomena in Sweden. The out-migration of the late 1980s could partly be explained by the increasing problems with finding suitable dwellings for families with children and child care services during periods when the number of children has grown as a result of natural population growth and migration (Gustavsson, Johansson 1989).

An important feature of migration in the 1980s has been the substantial increase in young people’s migration to university towns outside the metropolitan areas. This is not only the result of educational policy but also of the changing characters of these middle-sized towns. The increasing supply of cultural activities, amusement and entertainment facilities

have made them increasingly attractive for young people and the towns could be regarded as an alternative to the metropolitan areas. Job opportunities for highly skilled couples could be expected in these regional capitals.

Population growth resulted from the baby-boom and from increasing foreign immigration had an important impact on migration in the 1980s. Immigration had a substantial influence on the population redistribution during the period. In many regions the international migration gain was more important than the contribution of internal net migration. Foreigners are much more mobile than Swedes. They have a very strong tendency to concentrate in urban centres.

In order to decentralise the migration pattern, to arrange for the social care of immigrants and to avoid strong segregation in metropolitan areas, a new migration policy was introduced in 1985, the so-called “*la Sverige Strategin*” (The Entire Sweden Strategy, see Andersson 1993). The objective was to spread the immigrant population to all parts of the country. The policy has had an effect on foreign immigration to metropolitan areas, but it is not clear what the long term consequences will be, as immigrants still have a high propensity to migrate to large cities.

In a recent study “Regional Policy Development” (SOU 2000:87) some important findings are emphasised. One of the ‘myths’ to be rejected is the depopulation of the Northern region. one hundred years ago 14 percent of the population lived in Norrland, the same proportion as now. The depopulation of remote areas is also slower than expected from the public debate and is due more to a lack of in-migration than to a big out-migration. The increasing population of metropolitan areas is mostly due to relatively high birth rates and in-migration, either directly from abroad or as a result of migration within Sweden, one step in a life career of migration.

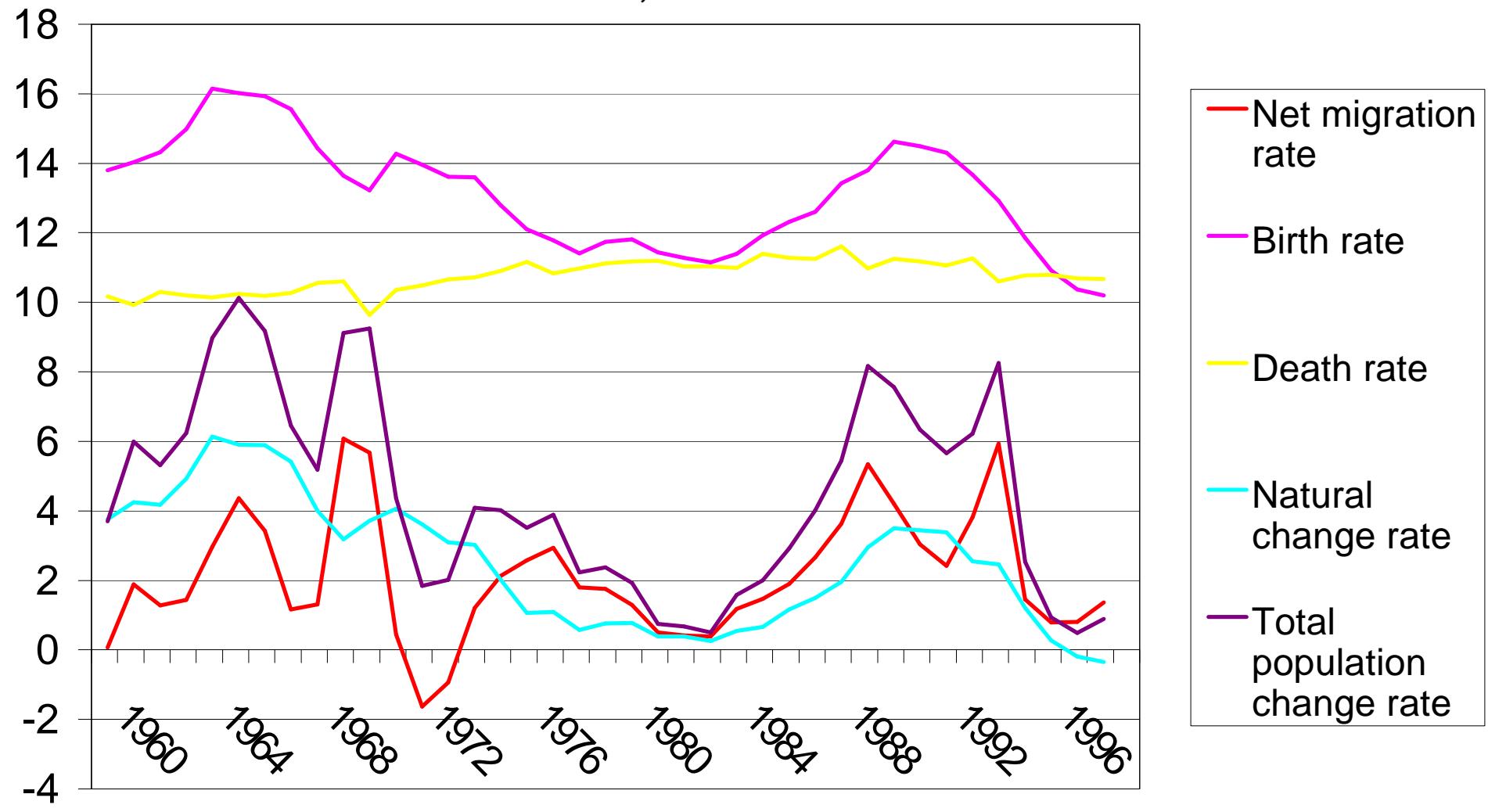
2.2 The interplay of fertility, mortality and international migration

Crude fertility, mortality and net migration rates as well as natural change and total change rates are shown in Figure 1 and in the Appendix. In the last forty years fertility in Sweden has experienced roller-coaster changes. The total fertility rate, a synthetic one-number measure of the intensity of reproduction, showing the number of children born per woman, changed from almost 2.5 in 1964 down to 1.6 in the early 1980s. Quite unexpectedly it rose in the second half of the 1980s and early in 1990s, reaching a maximum of 2.13 in 1990, but dropped very rapidly in the second half of 1990s to its lowest ever level of 1.51 in 1998. The crude birth rate changed in line with the change in the total fertility rate, oscillating around 14 per thousand in the 1960s (taking a maximum value of 16 in 1964) and in the early 1990s and shifting to lower values of slightly above 11 in the late 1970s and early 1980s and slightly above 10 in the last three years of the analysis. Researchers have debated the reasons for the short lived, but rapid increase in fertility in the 1989-91 period. Hoem (1996:1) formulates these questions in the following way:

“Politicians, demographers, economists, and the general public wanted to learn how that could happen in this country, where labour force participation rates for women are at an international high, where gender equality has come further than in most other countries, where cohabitation is more wide-spread than anywhere else, and where dissolution rates are among the higher ones too. Was it because of the favourable economic situation with full employment and so on, was it due to our generous family policies, or was the reason perhaps more of a reaction to the postponement of childbearing that Sweden had experienced since the mid-1970s like most other Western countries? Another question asked was whether Sweden remained a forerunner of trends to come, which would mean that other countries could expect the same development in the near future.”

What we can say now is that the increase in fertility was short lived and did not start any new pan-European trend. Far reaching fluctuations in total fertility have little relationship to other characteristics of fertility: the mean age of childbearing has become steadily older, despite some minor fluctuations between 1960s and 1990s. In particular the increase in TFR

Figure 1: Crude fertility, mortality, net migration, natural change and total change rates, Sweden 1960-1998



in the early 1990s was accompanied by the increase in the mean age of childbearing, of both all children and of the first child. This suggests that the increase in fertility was due to realisation of fertility postponed in the late 1970s and early 1980s. Simultaneously, the share of extramarital births has risen from slightly above one in ten in 1960 to one in two in 1998. Most of these births occur to parents in stable consensual unions.

The crude mortality rate was remarkably stable over entire period in question, only rarely going outside the 10 to 11 deaths per thousand range. However, the age distribution of the deceased changed dramatically. Infant mortality dropped from 16.6 per thousand in 1960 to 3.6 in 1997. At the same time a rapid increase occurred in the number of deaths in the oldest age groups. Most of the Swedish population survives beyond retirement and so dies in old age. Life expectancy at birth increased from 71.2 years for males and 74.9 years for females in 1960 to 76.7 and 81.8 years respectively in 1997.

The difference between fertility and mortality yields the natural increase of the population, which, due to the stability and low level of mortality rates, is predominantly dependent on the fluctuations in fertility. The 1960s and 1970s witnessed the highest natural increase, mostly above 3 *pro mille*, with a maximum of 6 *pro mille* in 1964. Similar values were seen in the early 1990s. Over the remaining period the natural increase was low, often below 1 *pro mille*. In 1997 and 1998 natural change was negative.

International migration has a fluctuating impact on population growth in Sweden, though its significance is not as strong as in countries with lower fertility. Population gains due to international migration between 1960 and 1998 equalled 641 thousand, that is 7.2% of total population in 1998. Some 971 thousands, out of the total Swedish population of 8854 thousands at the start of 1999, was born abroad. The foreign-born make up 11% of population, quite a high proportion in comparison to other European countries. The inflow to Sweden consisted of two main components: immigrants from other Nordic countries and

asylum seekers. Only in 1972 and 1973 was net international migration negative. Large inflows were observed in the mid 1960s. Introduction of immigration control in 1968 (UN ECE, UNPF 1994) curtailed the inflow of migrants for some time. It revived between 1989 and 1994, in the period of very high emigration from Central and Eastern Europe of economic migrants and of asylum seekers, particularly from the former Yugoslavia.

The rate of total population change is calculated as the natural growth rate modified by net international migration rate. Rapid population growth occurred in 1960, reaching in 1965 a maximum value of 1%, and at the end of 1980s to the mid 1990s. The lowest population increases, below 1 *pro mille*, were observed in early 1980s and late 1990s, when the migration gains saved Sweden from overall population decline.

We turn now, in section 3, to a brief résumé of the data sources, variables and methods to be used in examining the pattern of internal migration and population change within Sweden at a fine geographical scale.

3. METHODS USED AND DATA EMPLOYED

3.1 Geographical scale, geographical units and variables used

The basic geographical divisions used throughout this study were the 288 municipalities, as defined in 1998 in Sweden (Figure 2). Since the beginning of the 1970s there have been only minor changes in municipality boundaries. The years for which the data were collected, 1988 and 1998, were selected to coincide with turning points in the Swedish economy which, as a consequence, fuelled changes in population development. The excellent Swedish statistical system allowed us to examine migration by age at the level of municipalities, rather than for larger units, as was the case in a number of other countries. Data on births and deaths are also available at the level of municipality, along with data on unemployment and educational attainment.

3.2 Mapping techniques and problems

In the Swedish internal migration and population dynamics case study, standard mapping techniques described in Rees, Durham and Kupiszewski (1996) were used. A cartographic coverage of administrative boundaries of Sweden was purchased from Megrin, the international consortium of European national mapping agencies, and was available for 1991 and 1995. The boundaries for the latter year were chosen for further analysis. As the demographic, social and economic data were supplied for 1988 and 1998 and were based on the 1998 administrative structure there was a need to match these data sets with the cartographic boundaries. However, as the administrative structure of Sweden is remarkably stable, only a very few changes and estimations had to be made in order to bring all data to the common 1995 base.

Figure 2: The municipalities and principal cities and towns of Sweden, 1998

Main towns and cities

- 01 Stockholm
- 02 Göteborg
- 03 Malmö
- 04 Helsingborg
- 05 Borås
- 06 Jönköping
- 07 Linköping
- 08 Norrköping
- 09 Västerås
- 10 Uppsala
- 11 Gävle
- 12 Sundsvall
- 13 Umeå
- 14 Luleå
- 15 Örebro



3.3 Variables and key indicators used

One of the aims of this study is to make it as comparable as possible to other studies prepared so far and summarised in Rees and Kupiszewski (1999). The requirement of comparability makes it necessary to use relatively simple measures, which could be calculated in a reliable way in most of the countries studied. Measures and variables used in this study are briefly discussed below.

3.3.1 Population and population change data

The data on the number and structure of population in municipalities comes from periodic censuses of population modified regularly with the results coming from the registration of demographic events – births, deaths and migration, both internal and international. A person is deemed to inhabit a certain community based on his or her usual domicile. That means that some people who commute a long distance to study or work in a municipality different from the municipality of inhabitation of their families may be counted as the inhabitants of the latter if they still stay with their families over weekends or holidays. Population change data are based on notification of births, deaths and intra-municipality as well as inter-municipality migration, from the Tax Authorities. Between 1686 and 1991 it was a task for the Church at the parish level to report those changes. The information is passed on a weekly basis, to the Total Population Register kept by Statistics Sweden. A Residence Unknown Register accounts for all persons whose domicile is unknown. The real estate property parcel is the smallest geographical unit for which data are collected. The registration system is among the oldest and most complete in the world.

In this study data on the stocks of population by municipalities for 1988 and 1998 by age and sex were used. The data were recalculated for the 1995 administrative division of the

country and population change was calculated expressing the 1998 population as a fraction of 1988 population. The results were mapped.

3.3.2 Migration statistics and the migration registration system

A migration is defined since 1978 as a move from one real estate property to another. However, in the current study only inter-communal migration will be considered. The migration data for 1988 and 1998 were collected as inflows to and outflows from each community by age and sex. It is important to note that such detailed information on age structure of migrants for fine spatial units is not usually available. The detailed level of Swedish statistics makes it possible for us to look at the age pattern of migration for much smaller spatial unit than in most European countries (Rees, Kupiszewski 1999).

3.3.3 Births and deaths

Births and deaths are registered in the same way as migration. Principally, the place of usual residence of mother defines the place of birth of children. The place of usual residence of a deceased person defines his or her place of death. Exceptionally for persons without permanent place of residence the place of event (birth or death respectively) is taken into account (Andersson, Holmberg 1980). The number of births and deaths were obtained from population registers for 1988 and 1998. They were disaggregated by age of mother or deceased person respectively.

3.3.4 Population density

Population density was calculated as the number of people inhabiting a municipality by the area of this municipality and expressed as persons per square kilometre. This variable has been used to create tables of net internal migration between various municipalities within predefined density of population bands.

3.3.5 Size class of municipalities

The size of municipalities was measured in terms of the size of their populations. This variable is used in the same way as the population density variable. It should, however, be noted that such measure of the size of a unit is inaccurate when large urban agglomerations are considered. They usually consist of a number of municipalities which constitute a functional unit. Therefore there is a discrepancy between the sizes of municipalities and the size of the functional unit. This is especially the case for the Stockholm agglomeration. The population in the Stockholm municipality makes up only 64% of the population of the agglomeration.

Sweden is sparsely populated. Most of the municipalities are small. Just 11 municipalities out of 288 have more than 100000 inhabitants. An additional 31 municipalities have between 50000 and 100000 residents. In these municipalities live half of the total population of Sweden. Most of them are situated in the southern and central part of the country.

3.3.6 Functional classification of municipalities

There are several different ways of classifying Swedish municipalities: according to size and urban hierarchy, according economic base and finally according to a geographical dimension which roughly indicates a centre–periphery character. In our classification we combine the different indicators to generate five groups of municipalities: metropolitan areas, university municipalities, industrial municipalities, inner Norrland and "other" municipalities. To the class of *metropolitan areas* belong three large cities of Stockholm, Göteborg and Malmö together with surrounding municipalities. The *industrial municipalities* are defined as those in which more than 20% of their work force is employed in the industrial sector. Municipalities with more than 2000 students in universities are classified as *university municipalities*. The *inner Norrland* area largely consists of regions in north-western Sweden, included in the

economic support area that Sweden has negotiated with the European Union (with exceptions of municipalities classified as industrial or university municipalities). All other municipalities are classified as '*other municipalities*'. They include relatively small peripheral or close to but not a part of metropolitan areas, industrial municipalities and university municipalities. These "others" are distinguished from the inner Norrland, which has a very low population density, giving the area a special character. The categorisation is not a perfect one, but it is adequate.

3.3.7 Unemployment rate by municipalities

The unemployment rate was measured by the percentage unemployed in the labour force aged 16-64 years in December 1999. For municipalities in the counties of Blekinge, Värmland and Västernorrland figures on unemployment were available only at the county level. A person is reported unemployed when he or she registers as unemployed at the local office of the National Labour Market Board. Registration is a requirement for the unemployment benefit to be paid. In this study the definition of unemployment covers also persons taking part in public policy programmes.

3.3.8 The level of educational attainment of municipality populations

Data on the level of educational attainment were obtained from Statistics Sweden. Migration flows between bands of municipalities with similar levels of education were computed. Four levels of education are recognised: elementary, secondary (gymnasium), tertiary (post-gymnasium) and research degree. The last two levels make up higher education. For each municipality educational attainment, measured by the percentage of people aged 16-74 with higher education, was computed for 1988 and 1998. In 1988, 6.17 million people were classified by education level, with missing data for 5.4% (mostly elderly or immigrants). In 1998 6.32 million people were classified (1.8% missing).

4. THE PATTERN OF INTERNAL MIGRATION BETWEEN MUNICIPALITIES THROUGH THE LIFE COURSE

There is a strong correlation between migration and age. This has been known ever since Ravenstein found empirical evidence for this relationship more than a century ago. A research breakthrough was the seminal work on “Why families move” by Rossi (1955), in which he showed the relevance of the life cycle stages to the study of migration. In this section we classify the migration data according to age groups. In general terms the Swedish population moves ten times over the life cycle with a high concentration of six moves during the age span 19-35 years. Most of the moves are short and within the local housing and labour market.

The in- and out-migration rates are biased by the size of the municipalities. Many of the municipalities are quite large, especially in the periphery of Sweden. A move across the border of a municipality means that the migrant has to move a substantial distance. For many areas in southern and central Sweden a move across the border could be regarded as a move within the local labour and housing markets, a residential mobility move. The data available do not reveal these differences. Net internal migration maps are free of this bias, as they simply show migration gain or losses relative to population size for a given territory.

The analysis is split into three stages. In the first stage, we look at the maps of in- and out-migration for total population for 1988 and 1998, bearing in mind the caveats of the previous paragraph. In the second stage, net internal migration by broad age groups at the same points in time will be examined. In the third stage, to do more than just describe the migration map patterns, we have also used net internal migration between the functional classes of municipalities. To see the broader picture of population change from 1970 onwards, we also analyse migration balances between settlement types by age of migrants.

4.1 In-migration patterns by municipality 1988 and 1998

The patterns of in-migration are fairly flat, both in 1988 and 1998 (Figures 3 and 4). Most municipalities received between 25 and 50 persons per 1000 inhabitants. Higher inflows (50 to 75 persons per 1000) occurred in suburban and periurban areas of the largest cities. The highest inflows, exceeding 75 persons per 1000 inhabitants, were seen in Solna and Sundbyberg, suburbs of Stockholm.

4.2 Out-migration patterns by municipality 1988 and 1998

Out-migration patterns resemble those of in-migration (Figure 5 and 6) and are relatively flat, with highest out-migration rates occurring in municipalities around Stockholm. The only difference is that in 1998 more municipalities than in 1988 experienced high out-migration, exceeding 50 *pro mille*. These municipalities are located mostly in central Sweden, but do not form any recognisable geographic pattern.

4.3 Net internal migration patterns by municipality and age 1988 and 1998

4.3.1 Net internal migration by municipality for all ages

Patterns of in-migration and out-migration do not really disclose much information about the Swedish migration system. A lot more can be learnt from the net internal migration pattern. The first observation is that due to low natural increase, and in 1998-99 natural decrease, the migration balance plays a significant role in the population dynamics in most municipalities.

In 1988 net internal migration was an important redistribution factor (Figure 7). Slightly more municipalities (160) gained migrants than lost them (128). Jömtlands län (county) and Kopparbergs län are the main rural beneficiaries of the process, as are municipalities located on the western coast. Municipalities in Norrland predominantly lost people, but some municipalities, mostly coastal, gained population. In the Stockholm

Figure 3: In-migration rates by age, municipalities, Sweden, 1988

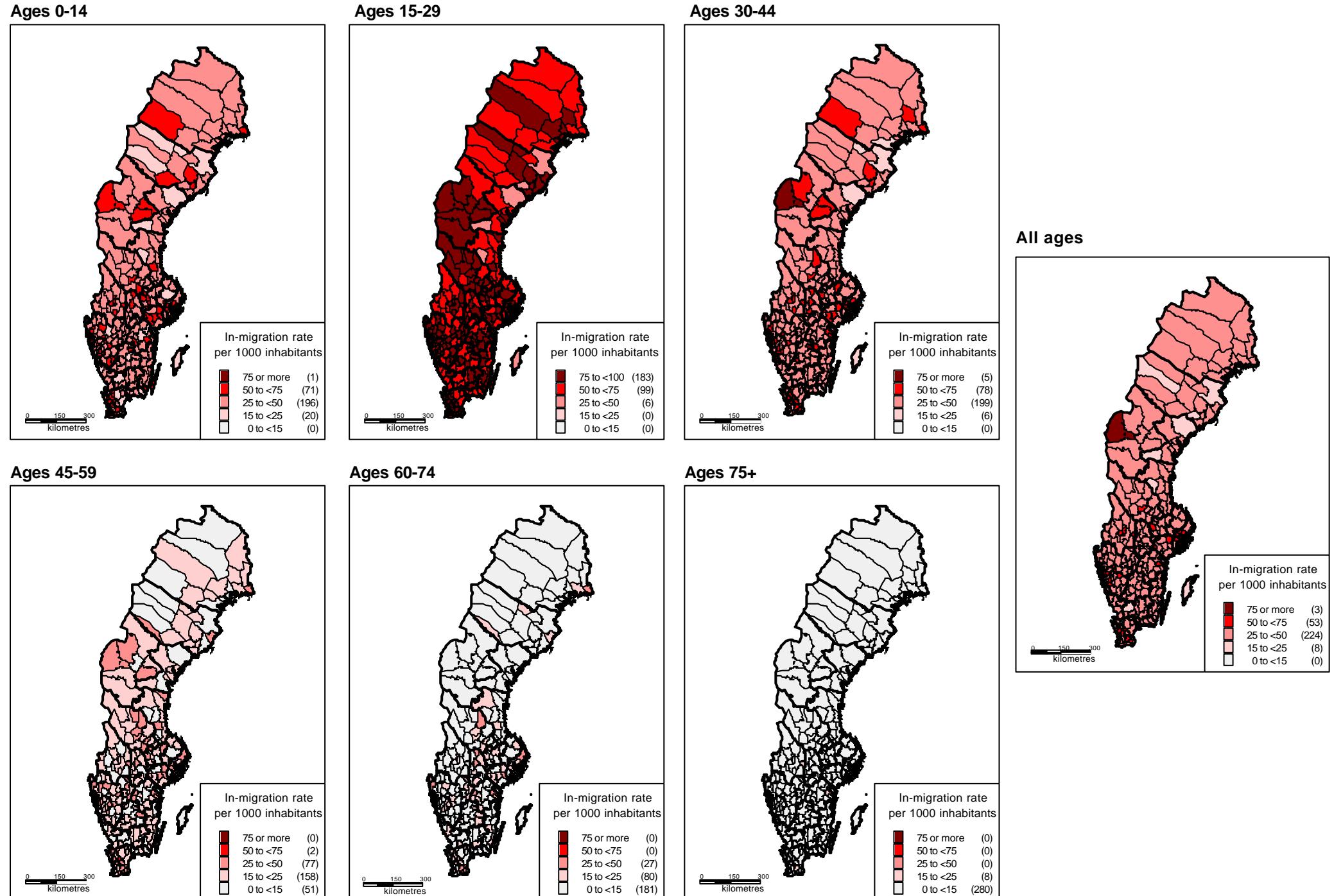


Figure 4: In-migration rates by age, municipalities, Sweden, 1998

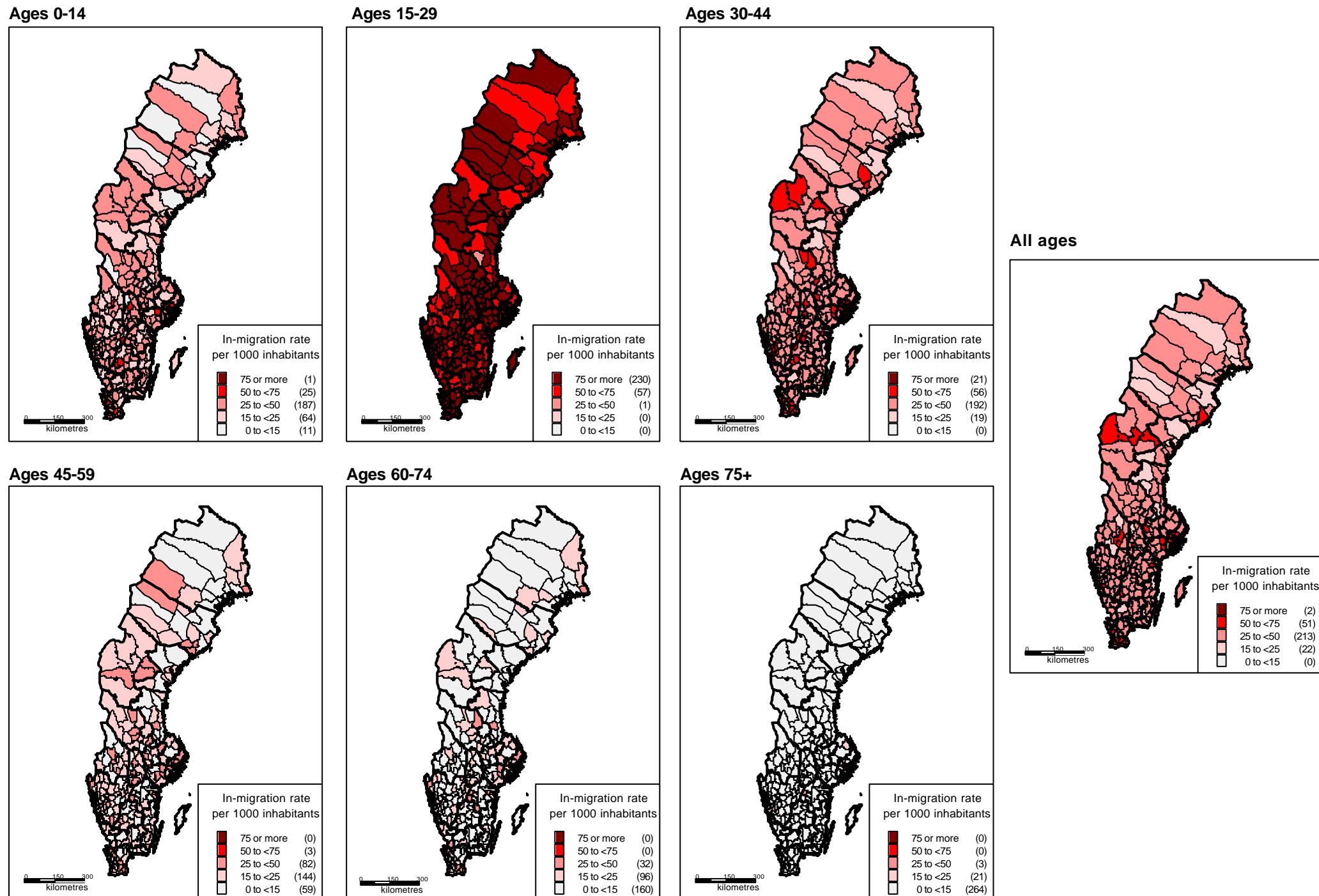


Figure 5: Out-migration rates by age, municipalities, Sweden, 1988

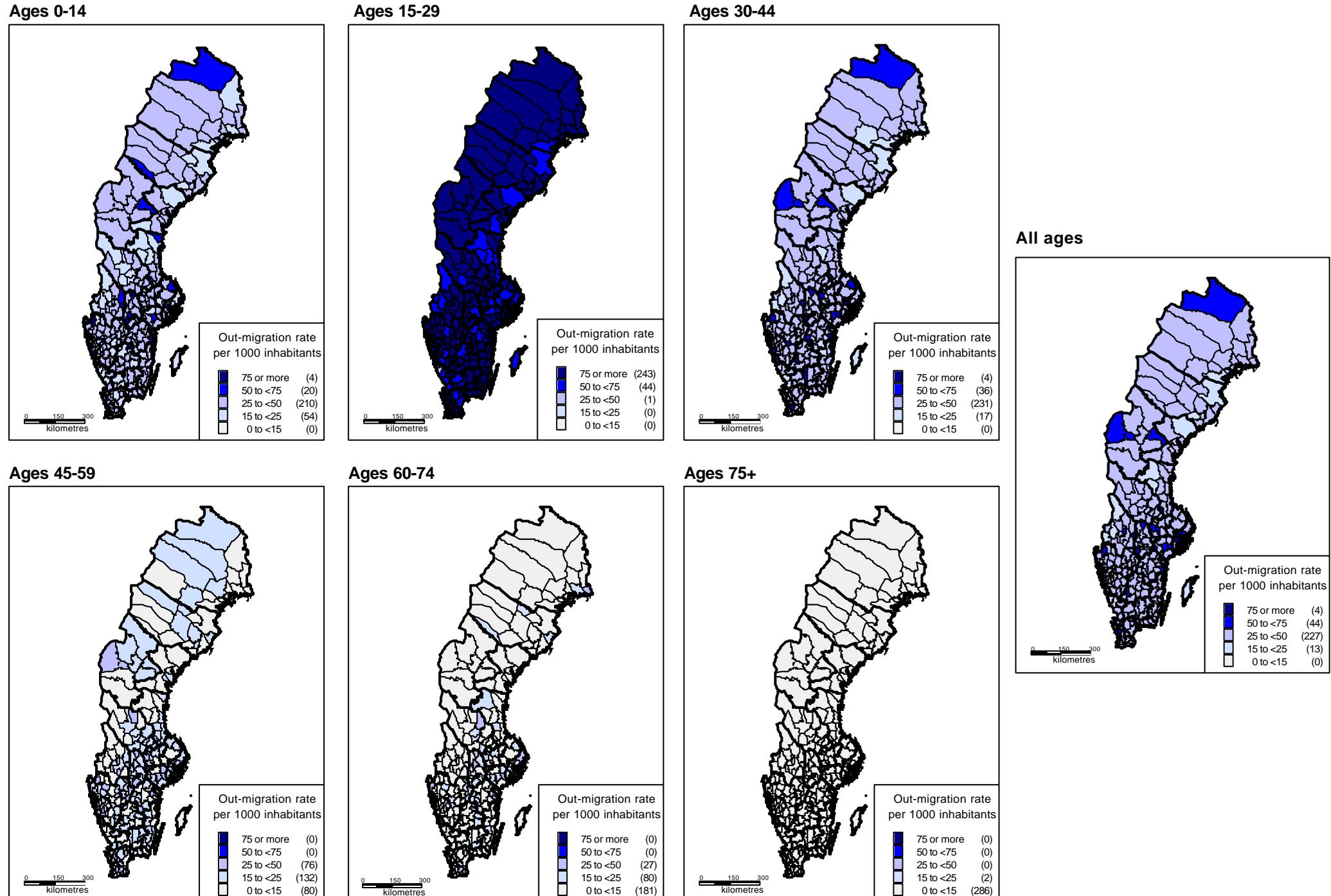


Figure 6: Out-migration rates by age, municipalities, Sweden, 1998

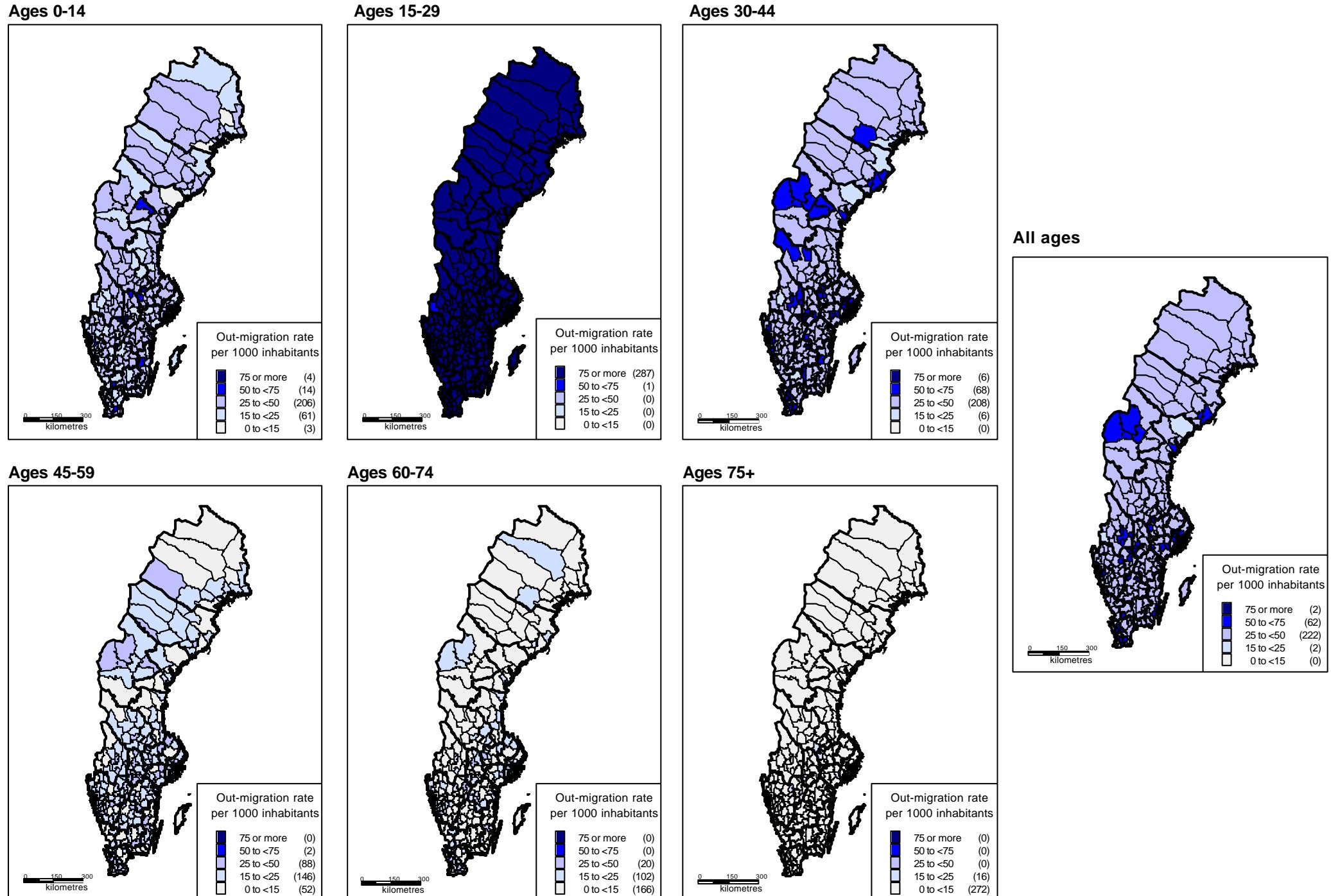


Figure 7: Net internal migration rates by age, municipalities, Sweden, 1988

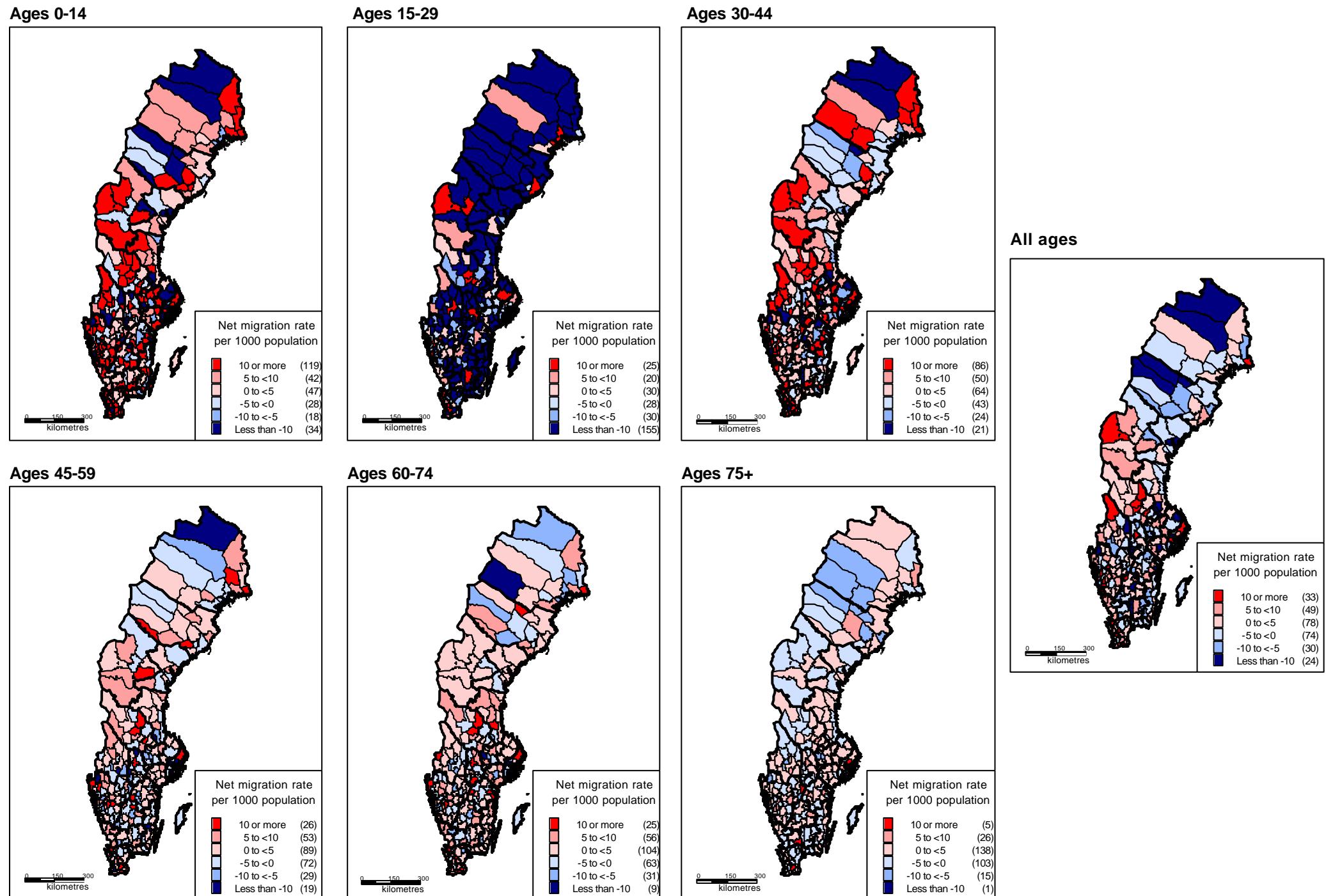
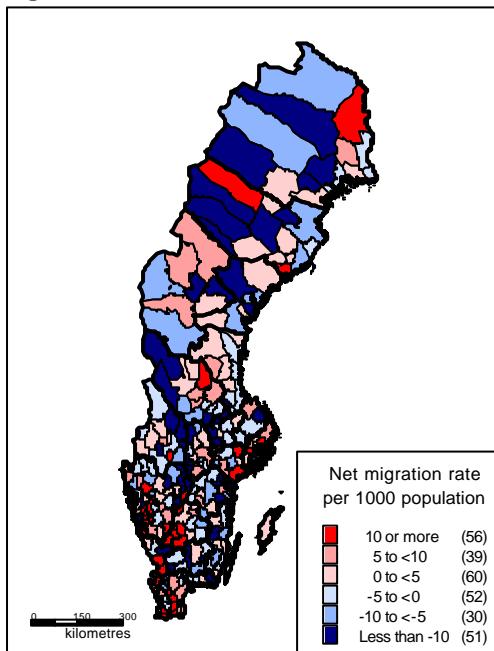
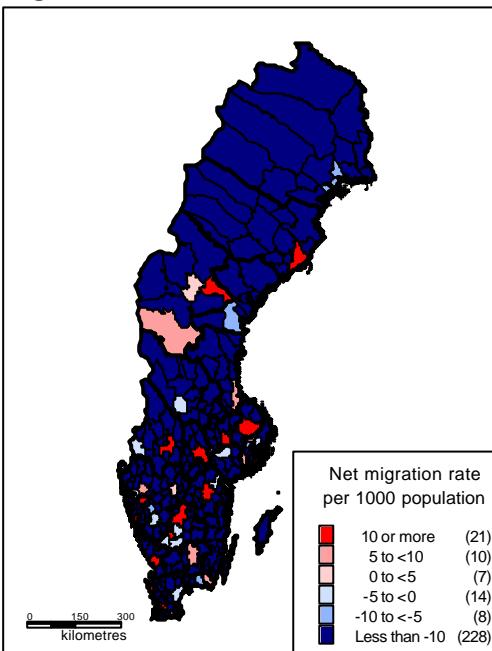


Figure 8: Net internal migration rates by age, municipalities, Sweden, 1998

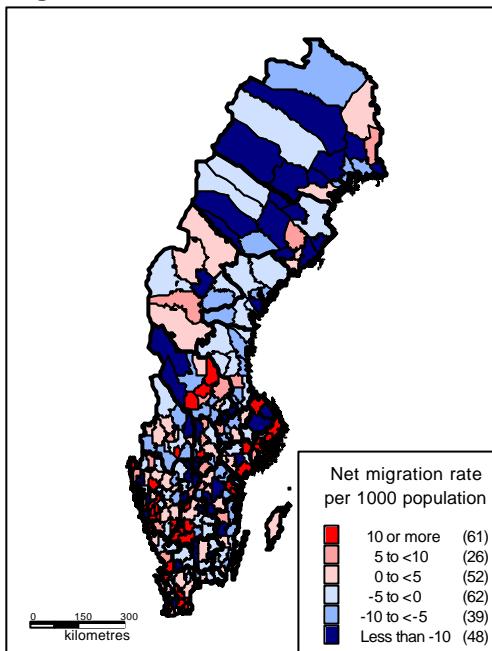
Ages 0-14



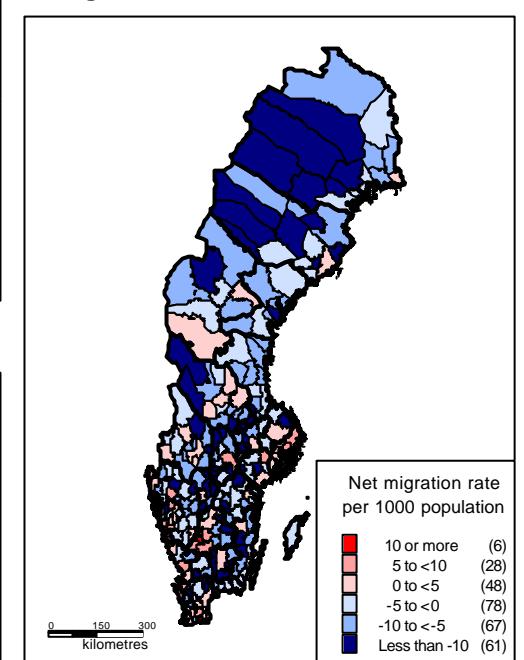
Ages 15-29



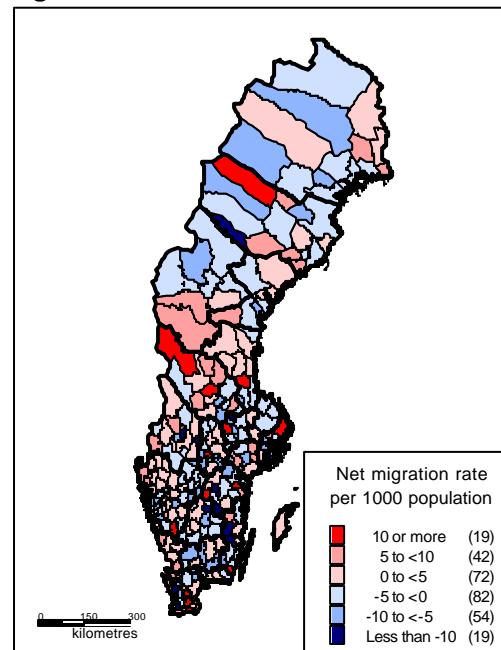
Ages 30-44



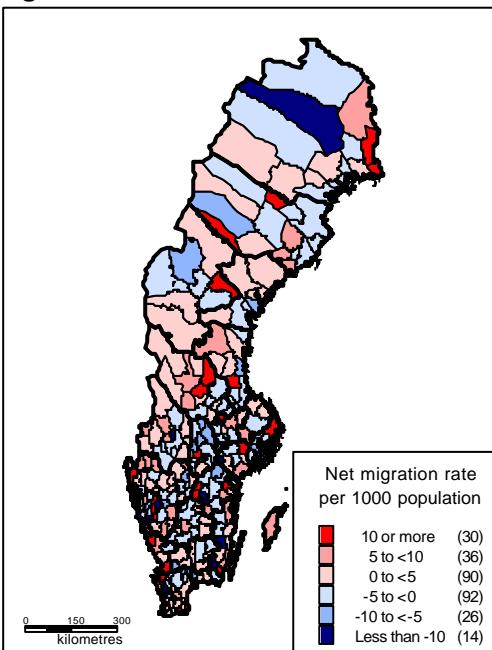
All ages



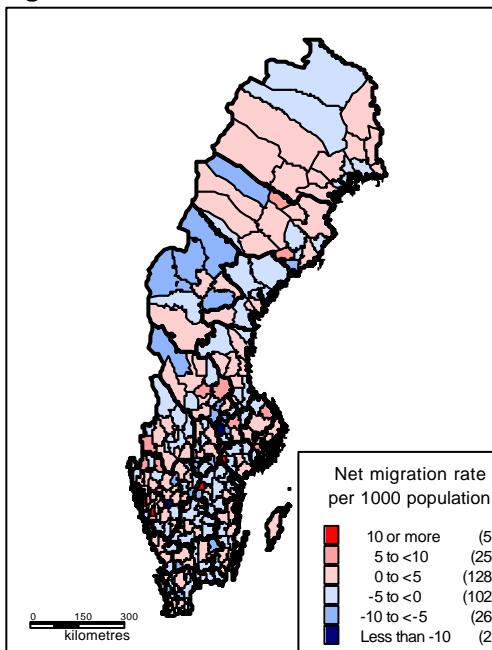
Ages 45-59



Ages 60-74



Ages 75+



agglomeration there is a mixed picture of gains and losses. Stockholm itself and municipalities south of it decreased population, whereas municipalities east and north-east of the capital city increased it. Malmö and a ring of municipalities north and east of it lost, whereas those south of it gained population. Other large towns such as Västerås, Linköping, Uppsala, Helsingborg and Norrköping were all losing population. However, in all urban areas the losses were not very high. This suggests a moderate suburbanisation.

In 1998 the pattern of internal migration was quite different (Figure 8). There was a profound shift towards urban concentration and depopulation of rural and remote areas. As many as 206 municipalities lost population and only 82 gained.

Almost all large cities and towns including Stockholm, Malmö, Göteborg, Lund, Umeå, Jönköping, Helsingborg, Örebro, Västerås and Uppsala have positive net internal migration. This attraction of large towns extends to their entire agglomerations. The suburban municipalities of the Stockholm, Malmö and Göteborg agglomerations show increases of population. This urban prosperity contrasts sharply with rural decline: among 50 smallest municipalities only 2 had positive net internal migration. In the next 50 municipalities 11 gained population. In Norrland only a few municipalities gained migrants.

Between 1988 and 1998 a fundamental change in migration direction emerged in Sweden. The population system switched from redistribution and slow deconcentration to reurbanisation and rural depopulation.

4.3.2 Net internal migration by municipality in family and older labour force ages

In 1988 there is a clear pattern of deconcentration from the largest agglomerations: Stockholm, Malmö and Göteborg to the countryside (Figure 7). Significantly, not only the cores of agglomerations lost population, but also parts of their suburban rings. Some of municipalities in the north also lost population, but in general there were no significant patterns of depopulation outside the urban agglomerations. Gaining communities were

medium and small towns as well as rural municipalities all over the country. In the family ages (0-14 and 30-44 years) only 80-90 municipalities, depending on age groups, lost population due to migration. This pattern reversed in 1998 (Figure 8): the cores of Stockholm and Göteborg lost population, but Malmö and the suburban rings of all agglomerations and a number of medium and large towns have been gaining migrants in the family ages. Areas characterised by migration losses are quite extensive and cover predominantly rural and remote areas. These changes are radical.

4.3.3 Net internal migration by municipality in the retirement ages

The net internal migration gains in the retirement ages (60-74 and 75+ ages) show rather uniform patterns in both 1988 (Figure 7) and 1998 (Figure 8). The elderly migrate out from the largest cities and from remote and rural areas to the municipalities which lie between the biggest cities and the remotest rural areas – suburban areas, medium size towns and rural communities with good access to services and amenities. There are only minor differences in trends between 1988 and 1998.

4.3.4 Net internal migration by municipalities in the young adult ages

Both in 1988 (Figure 8) and in 1998 (Figure 9) young adults migrated to large cities and university centres. The pattern of migration in this age group is the one of concentration, much stronger in 1998 than in 1988. Characteristically, young adults migrated from rural and remote areas, with much stronger intensity in 1998, when net internal migration losses exceed 2.5% in 179 municipalities, than in 1988, when migration losses above 2.5% were noted only in 59 municipalities. This strengthening of outflow from rural areas is mostly due to the greater popularity of tertiary education at the end of 1990s than at the end of 1980s.

4.3.4 Net internal migration between functional classes of municipalities by age groups during the last four decades

Migration is a selective process, especially by age composition. In the long run this process is redistributing and reshaping the demographic landscape of Sweden. Some of these tendencies are shown in the Table 1 below.

The general pattern is quite clear. Even if the lengths of periods are different, the striking feature is a persistence of the same pattern over the years. The regions winning young people (16-24 years) are the metropolitan areas, the university regions and the losers of young people are all other municipalities. The winners of the family ages (25-44 and 0-14 years) are medium sized municipalities (except university municipalities) and the rest of municipalities. The losers of almost all age groups are the industrial regions and Inner Norrland municipalities. A slight recent shift could be seen as the metropolitan areas are gaining families on the expense of the group “rest of municipalities”.

The patterns behind the Table 1 indicate a structure of ‘circular migration’, in which young people leave from most regions and return at older ages when the family stage in life cycle has been completed.

4.4 Consequences of migration: sex structure deformation

Other studies have shown that a long lasting unidirectional, net migration flow results in substantial changes of population age and sex structures, particularly in sending areas. This was, for example, the case in Poland (Kupiszewski 1992; Kupiszewski, Durham, Rees 1999) where rural depopulating regions in the north-east of the country suffered most and in Finland (Kupiszewski *et al.*, 2000), where remote areas in the north and north-east show signs of substantial modification of gender structures.

Table 1: The direction of net internal migration by age groups for four recent time periods

Type of municipality	Ages 0-15				Ages 16-24				Ages 25-44				Ages 45-64				Ages 65+				Total				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Metropolitan areas																									
University municipalities																									
Other medium sized municipalities																									
Industry municipalities																									
Inner Norrland																									
Rest of municipalities																									

Notes:

The time periods are 1 = 1970-81, 2 = 1982-88, 3 = 1989-92, 4 = 1993-98

Colours: red = indicates net in-migration (migration gain),
 blue = indicates net out-migration (migration loss),
 yellow = indicates less than one *pro mille* change

Initially sex ratios for broad age groups and for the total population were calculated. The sex ratio is the number of females per 100 males. Such an indicator shows the surplus or deficiency of females in comparison to males in a given territorial unit and varies significantly with age. In the younger age groups there is a natural surplus of boys arising from the larger number of male births. This surplus gradually shrinks with age because male mortality exceeds female. At older ages, the excess of male mortality over female mortality brings about a surplus of females, which in the oldest age groups becomes very substantial. To eliminate the impact of the age structure on the sex structures of local populations a second set of indicators, normalised sex ratios were computed. The sex ratios for territorial units both for the total population and broad ages are expressed as percentages of the national sex ratio. Only these indicators show the degree of concentration relative to the national norm of females or males in each spatial unit. The national norm is modified by both spatial variation in the differences between male and female mortality and, more importantly, by differences between men and women in their migration behaviour.

Non-standardised ratios are shown in Figure 9. There is a clear pattern of concentration of females in coastal municipalities, urban centres and university and university college municipalities. This concentration is a result of an interplay of a surplus of males in first four age groups and a deficit in the last two. It is, however, difficult to separate the effect of age from the effect of migration on gender structure.

Figure 10 shows feminisation ratios in broad age groups for municipalities standardised to the relevant national values. There is rather little deformation of the age structures for entire population, with the exception of the north, where a deficit of females is apparent, the further north we go the more evident the deficit. There are 63 municipalities with a surplus of females and well over two hundred with a deficit. This suggests a concentration of females in

Figure 9: Females per 100 males by age, municipalities, Sweden, 1998

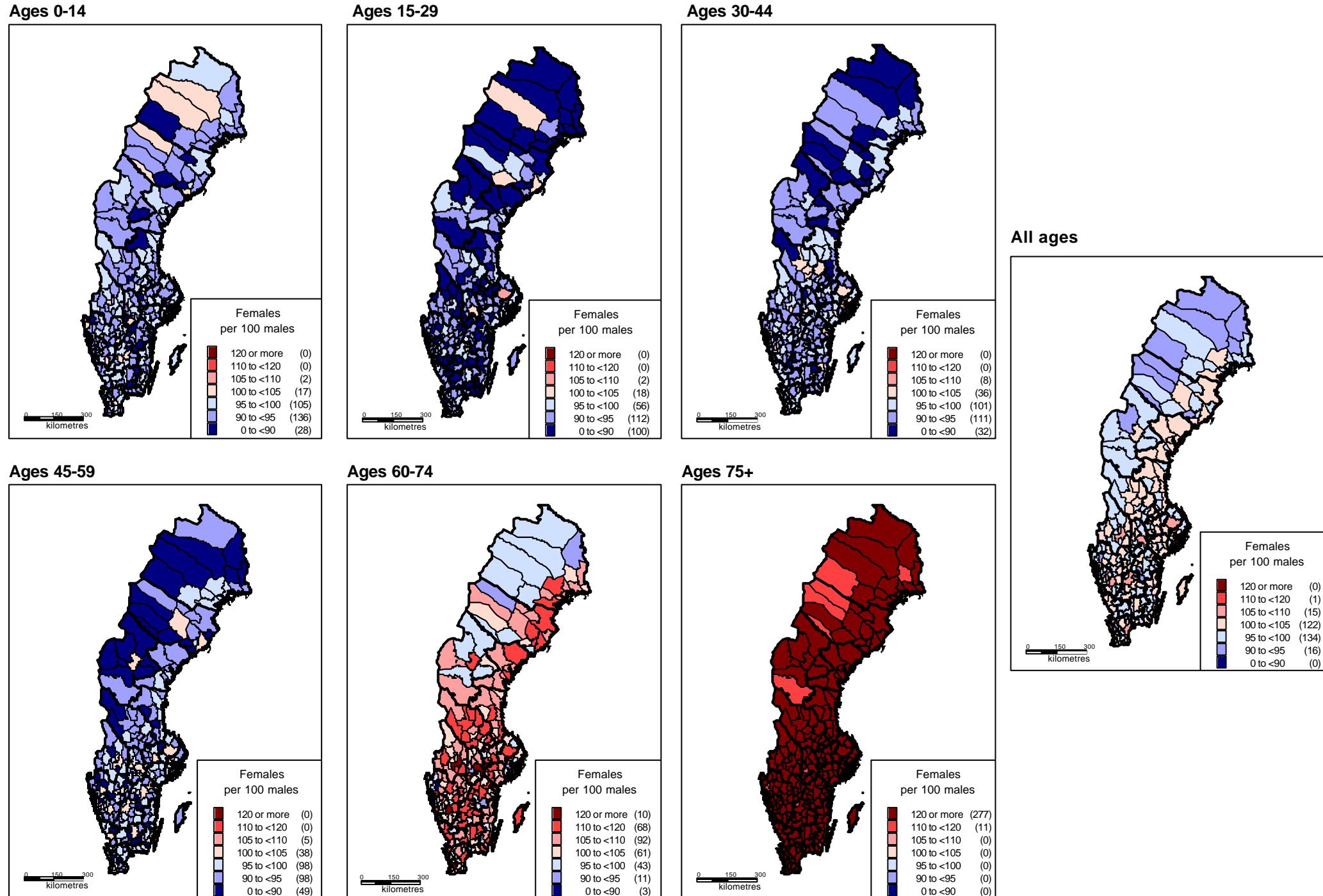
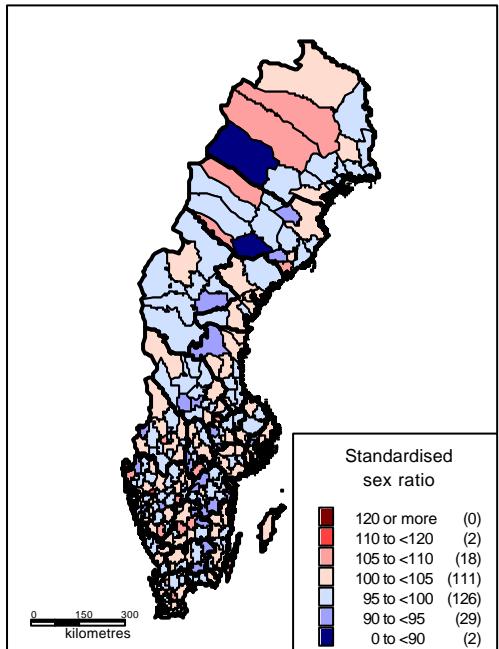
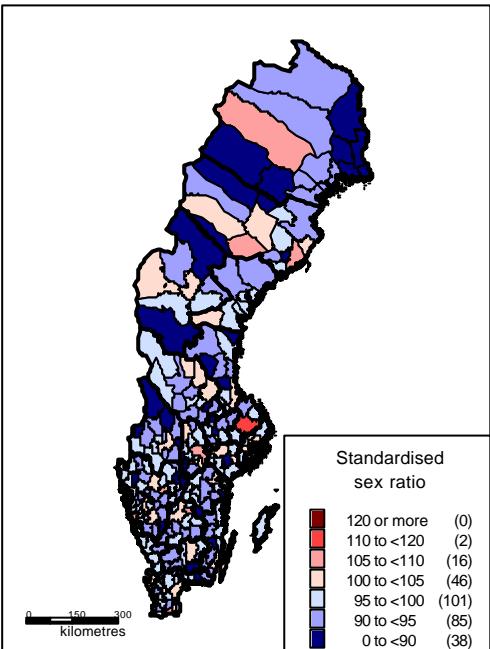


Figure 10: Standardised sex ratios by age, municipalities, Sweden, 1998

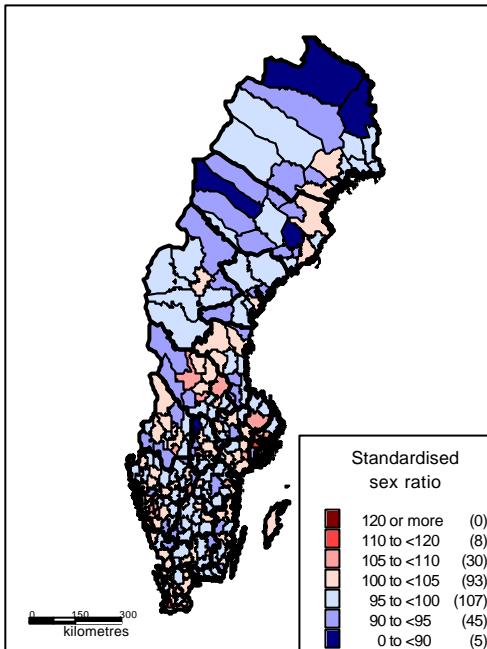
Ages 0-14



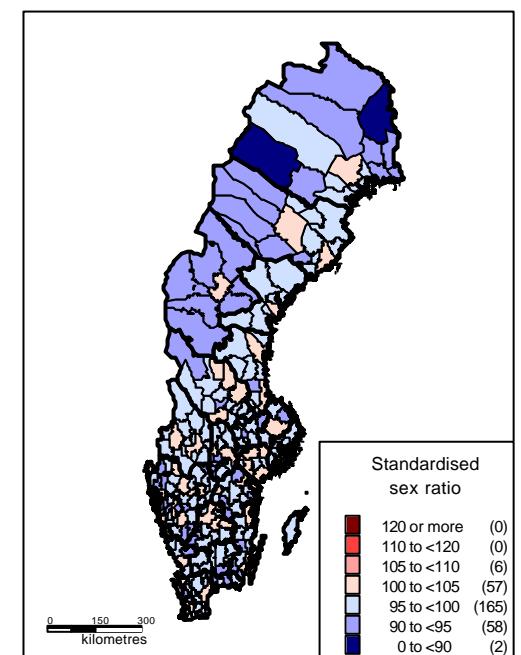
Ages 15-29



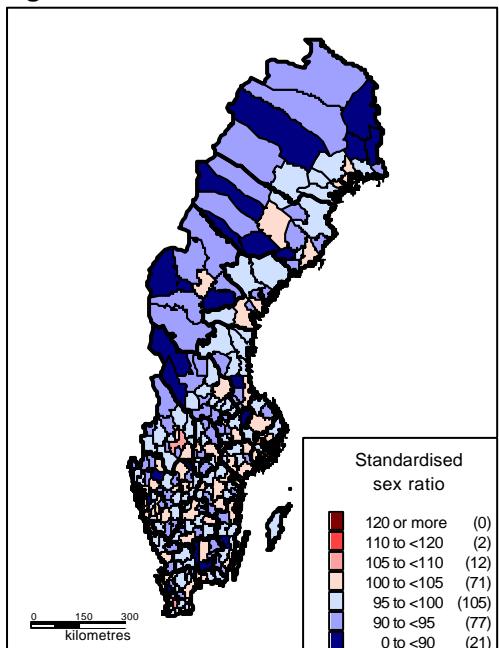
Ages 30-44



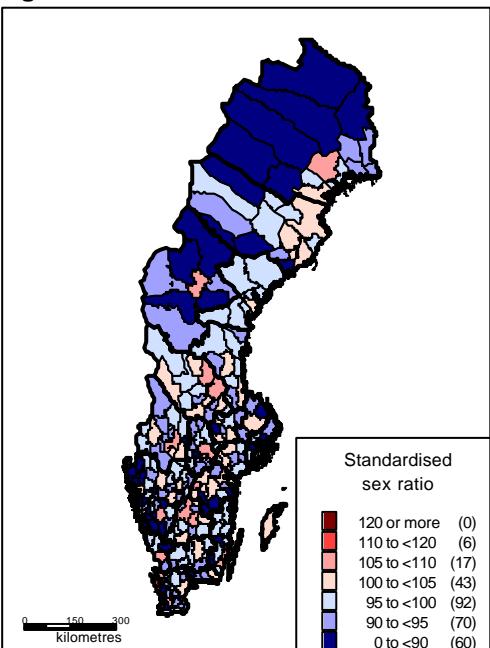
All ages



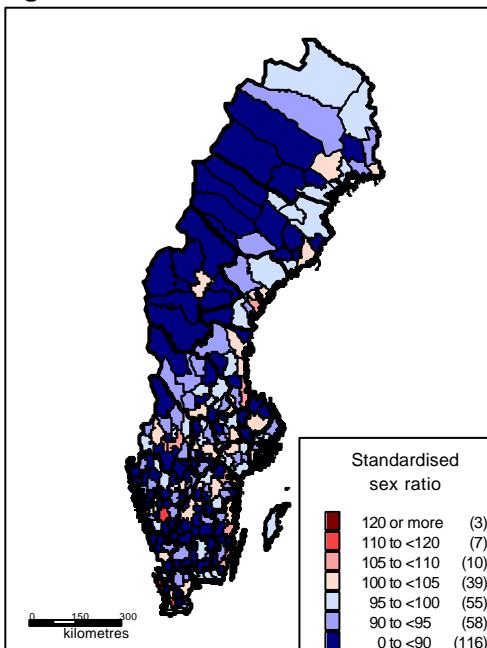
Ages 45-59



Ages 60-74



Ages 75+



relatively few spatial units. These units are usually located in the southern half of the country in predominantly university and university college municipalities, the centre of Stockholm, but not its suburban ring, and larger urban centres all over the country. There is no attraction of coastal municipalities for females, which was visible when non-standardised values were considered.

When we examine patterns of feminisation by age the most evident concentration is seen in the 15-29 age group and in the two oldest age groups. In the first of the three age groups the largest concentration of females is in either urban agglomerations or in educational centres. There are between 100 and 120 females per 100 males in Stockholm and Uppsala. There are between 105 and 110 females per 100 males in large cities or medium size towns: Göteborg, Malmö, Ystad, Helsingborg, in municipalities surrounding Stockholm or in university centres, such as Umeå. Concentration of females in the two oldest age groups focuses in urban centres and mostly in the southern half of Sweden or, in northern coastal areas.

To conclude, migration, as in a number of other countries, results in the modification of sex structures: females are more keen to move to urban centres, with modern service centre economies, leaving behind males, who prevail in remote and less developed areas with traditional economies.

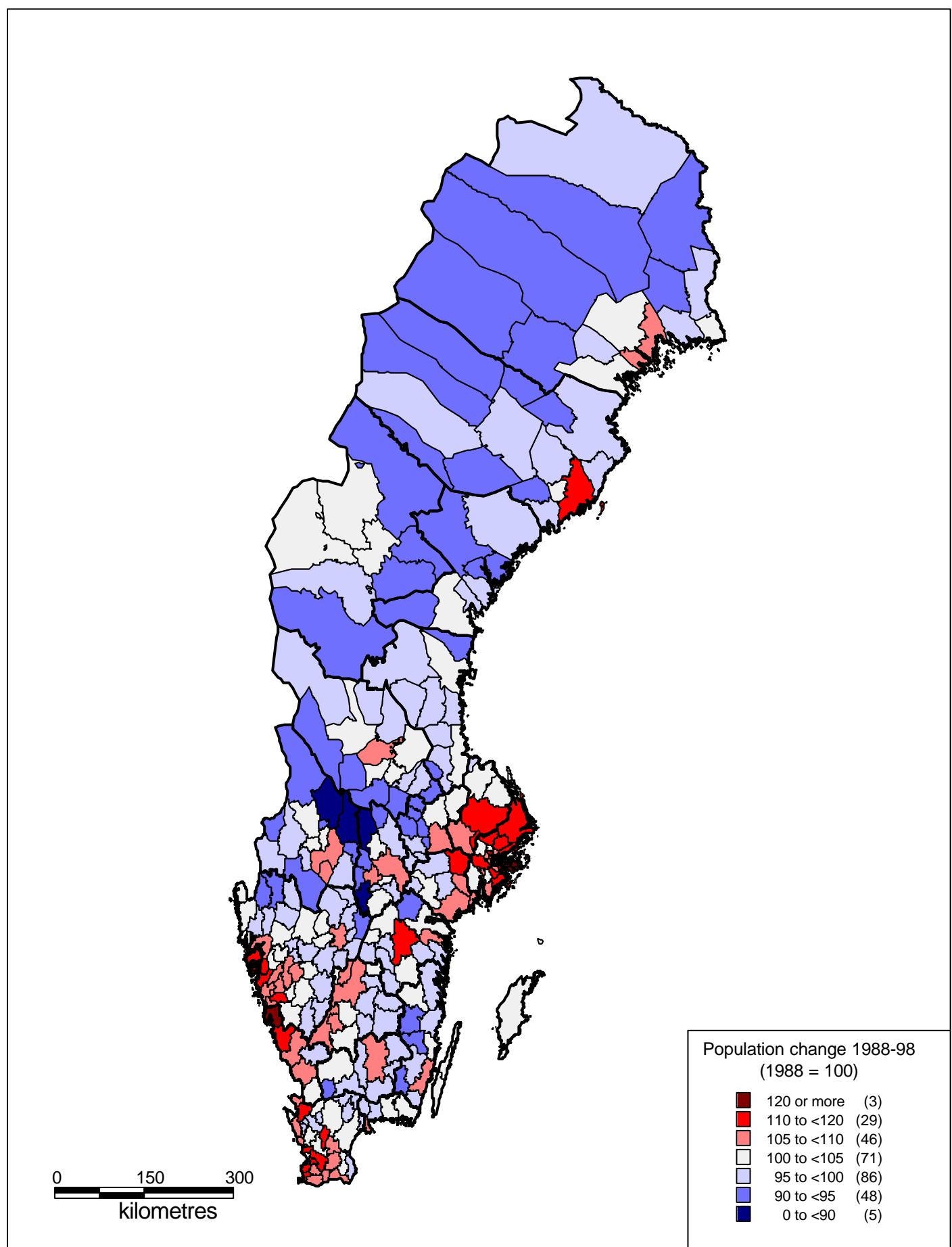
5. POPULATION CHANGE 1988-1998

Population change is a result of an interplay of births, deaths, internal in-migration and out-migration and international immigration and emigration. In the decade considered international migration played a very significant role in the population development of Sweden. At the national level in only two years over the decade was net migration less significant than natural change. Later in this section we assess the importance of net internal migration compared with natural change.

5.1 Population change by municipalities, 1988-1998

Between 1988 and 1998 the population of Sweden increased by 4.7%. Slightly more municipalities (149) increased their population, than suffered losses (139) (Figure 11). Two overlapping patterns of population change can be identified. The first is the south–north divide, with the south being characterised by a more pronounced concentration of municipalities with positive population change than the north. This divide is not a very clear one, as extensive areas in southern Sweden also lost population. The second divide is the more pronounced rural–urban contrast. All large urban agglomerations, Stockholm, Malmö and Göteborg, increased their populations as did their suburban rings. The zones of influence, measured as areas of continuous population increase around these agglomerations, extend around these three cities to 150, 100 and 60 kilometres respectively. Such circles of positive population growth are typical for large cities. Medium size towns, such as Uppsala, Örebro, Jönköping and Linköping, generate similar population increases. Some of these towns are under the influence of the large urban systems of three main cities. It is difficult to decide whether the metropolitan influence is decisive for the growth of suburban areas. In some cases even small towns like Luleå, Östersund or Börlange have some positive impact on the growth of neighbouring municipalities.

Figure 11: Population change, municipalities, Sweden, 1988-1998



We may look at the relationship between size of municipality and population growth from another point of view. Municipalities with between 200000 and 80000 inhabitants (Gävle, Sundsvall, Borås, Lund, Umeå, Jönköping, Helsingborg, Norrköping, Örebro, Västerås, Linköping, Uppsala) have all increased population. Among 27 municipalities in the size range from 50000 to 80000 only two experienced population decrease. A similar fate was shared by 5 out of 35 municipalities in the size range between 50000 and 30000 inhabitants. At the other end of the size range, of 69 small municipalities, with populations below 10000, only 12 gained population in the decade.

5.2 Population increase by type of municipality during the last four decades

There has been population growth in the metropolitan areas of Stockholm, Gothenburg, Malmö, in university municipalities and in the "other middle sized" municipalities (Table 2). All of them experienced the population growth above the average for the country, which means that there is a concentration of people in these municipality classes. The losers are the industrial municipalities and those of the inner Norrland.

Table 2: Annual population change in Sweden, 1970-1998 by functional types of municipality (*annual pro mille*)

Types of municipality	1970-81	1982-88	1989-92	1993-98	1970-98
Metropolitan regions	2.7	6.6	8.0	10.9	6.6
University municipalities	4.9	4.2	9.3	5.8	5.9
Other middle sized	2.6	2.7	6.9	2.7	3.4
Industry municipalities	0.1	-2.8	3.2	-4.1	-1.1
Inner Norrland	-3.2	-4.5	0.1	-8.8	-4.1
Rest of municipalities	5.9	1.1	8.8	-2.3	3.4

Source: Statistics Sweden and Institute of Housing Research

There are, however, variations over time. During the first period, the "rest of municipalities" type grew fastest, due to the decentralisation policy and counterurbanisation and suburbanisation processes taking place in Sweden at that time (the 'green wave' period), which is also indicated by a relatively weak growth of metropolitan regions. At the beginning

of the 1990s a big immigration of refugees (especially from Bosnia) changed the migration pattern quite substantially, due to the ‘whole of Sweden policy’ in which the government made contracts with almost all municipalities to host and accommodate refugees. This dispersion process had a temporary impact on the population growth on local level, which explains the positive growth of industry and Inner Norrland municipalities during the 1989-92 period.

Also shown in Table 2 is a regional shift of population away from industrial municipalities (apart from the 1989-92 period). The population redistribution seems to be a reflection of the shift from an employment structure based on industry to one dominated by services and the dispensing of information.

The changes studied during the 1970s came about because people altered their migration behaviour. Today it is argued that we are once again facing a concentration of the population. So far, the result does more or less point in this direction, but before making any such conclusions it seems prudent to show that the changing pattern of the 1970s has also come to an end. We must find out if the new pattern is due to changing migration patterns or if there are other explanations such as rising natural increase or in-migration, and what the internal variations within the municipality classes look like.

5.3 The demographic sources of population change

In this section the mechanisms underlying population change are examined. We will concentrate on the relationship between the natural growth and net internal migration using the Webb (1963) classification. Eight classes specified in Table 3 can be defined, based on the sign and relationships between absolute values of natural change and net migration. It is possible to establish, based on this classification, what is the direction of population change and identify in each municipality the driving force of the changes: either natural change or net migration.

Table 3: Types of population growth in Sweden in 1988 and 1998

Class code	Type of growth	Population change	Number of municipalities
A	natural increase exceeds migration loss	Positive	26 6
B	natural increase exceeds migration gain	Positive	23 18
C	migration gain exceeds natural increase	Positive	67 29
D	migration gain exceeds natural decrease	Positive	51 20
E	natural decrease exceeds migration gain	Negative	19 15
F	natural decrease exceeds migration loss	Negative	42 136
G	migration loss exceeds natural decrease	Negative	23 50
H	migration loss exceeds natural increase	Negative	37 14

Source: Webb 1963 and computed from data provided by Statistics Sweden.

Notes: natural increase = absolute value of positive natural change
natural decrease = absolute value of negative natural change
migration gain = absolute value of positive net migration
migration loss = absolute value of negative net migration
natural change = births minus deaths
net migration = in-migration minus out-migration

In 1988 a majority (167) of Swedish municipalities increased their population (Figure 12). This number dropped in 1998 to 73, only a quarter of all communes (Figure 13). In 1988 26 municipalities grew due to natural increase higher than migration loss (type A). Most of these municipalities are located in the southern part of Sweden, but do not form any particular spatial pattern. The number of this type of municipalities decreased in 1998 to 6. Municipalities in which migration gain offsets natural decrease (type D) numbered 51 in 1988 and 20 in 1998. They formed a large cluster covering the southern part of Jämtlands län (county), western Gävleborg län, Kopparberg län and western Värmlands län. Some of them are scattered all over southern Sweden. In 1998 they were much less numerous, located in various places in southern Sweden.

The municipalities, which have both natural increase and migration gains (types B and C), are most secure from demographic point of view. They do not suffer from age structure distortions generated by excessive out-migration and reproduce their populations. In 1988 there

Figure 12: A Webb classification of municipalities, Sweden, 1988

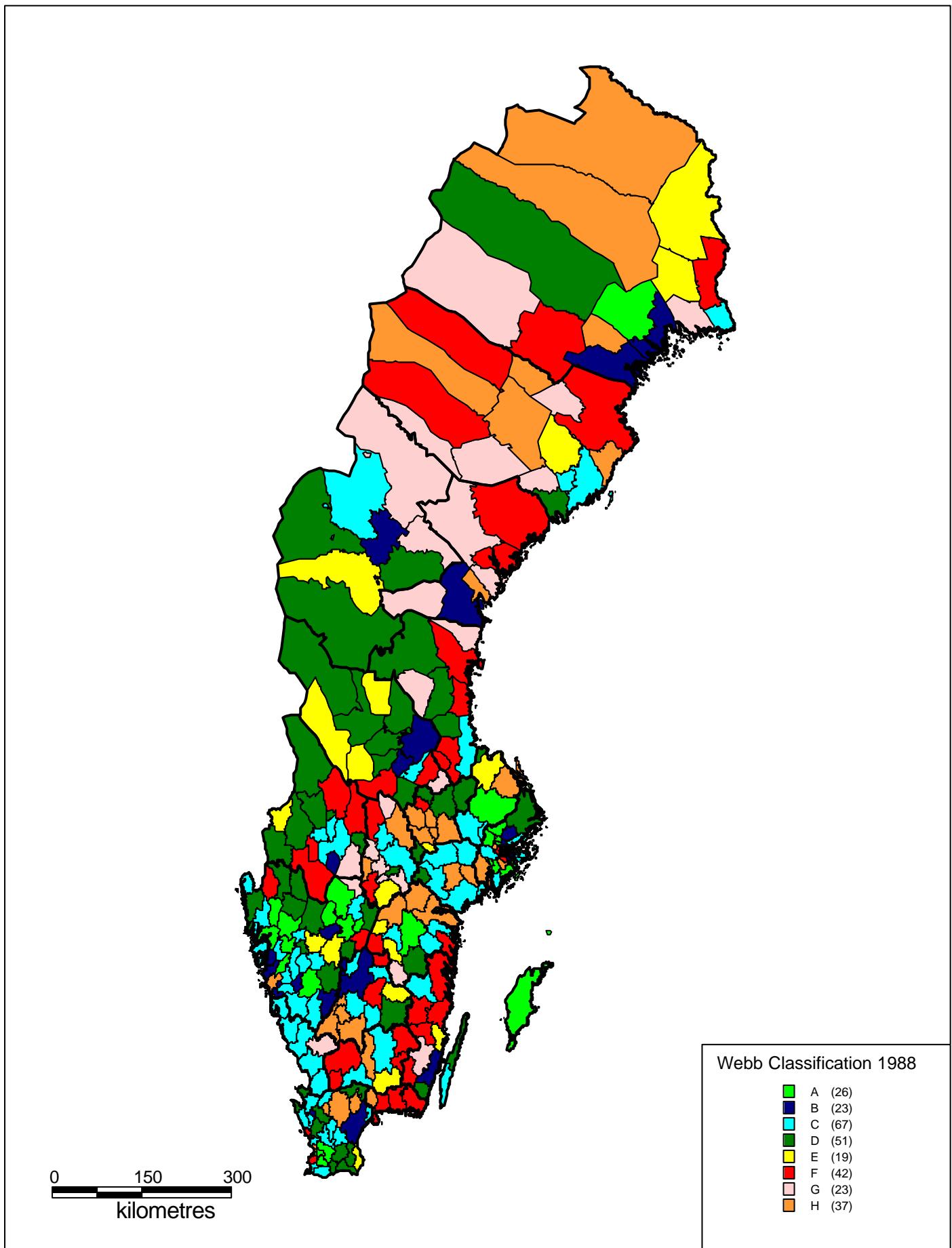
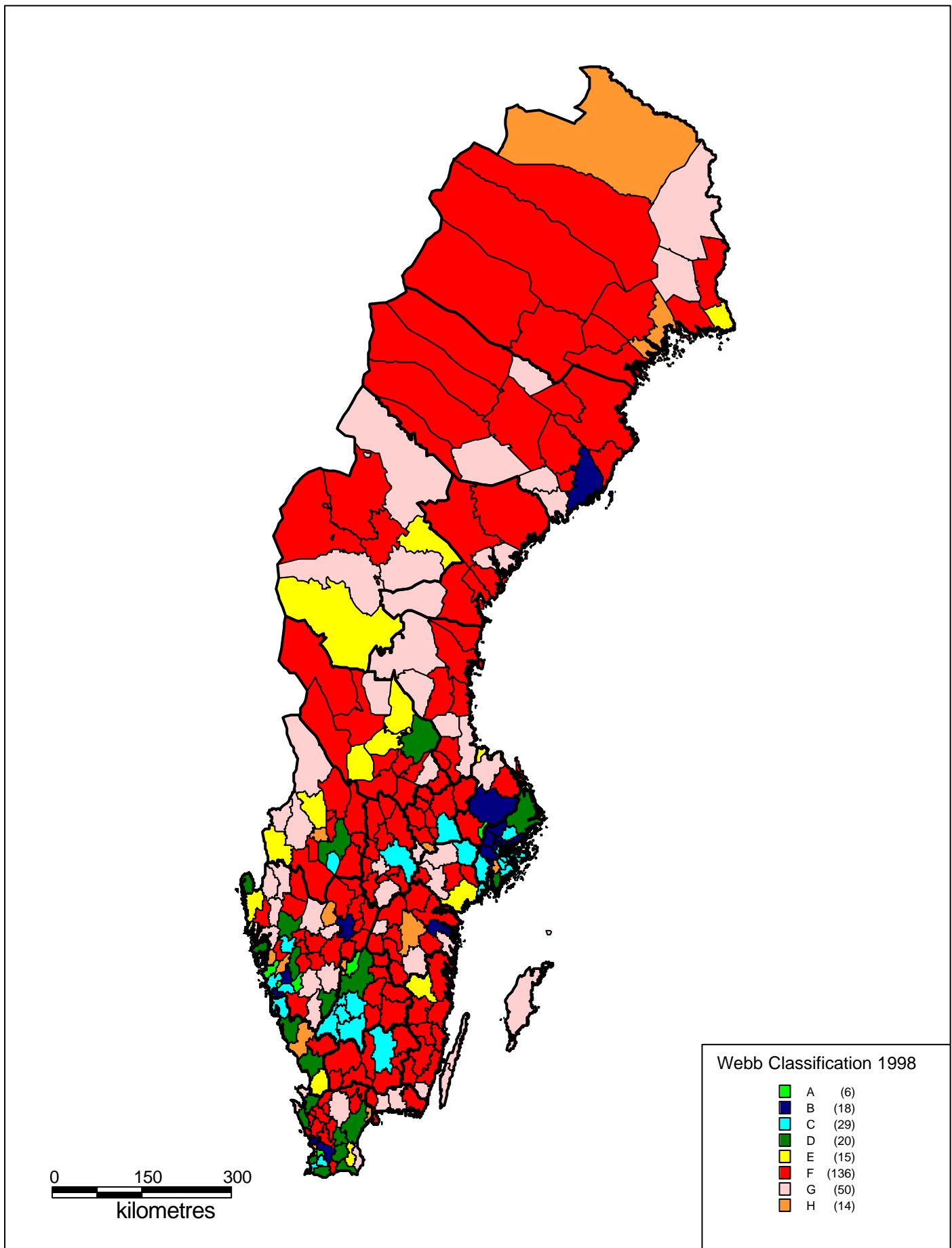


Figure 13: A Webb classification of municipalities, Sweden, 1998



were 90 municipalities in these two classes. Type B municipalities, dominated by natural growth, can be found in some urban municipalities in the north: Luleå, Östersund or Sundsvall and, in larger numbers in central and southern Sweden. Type C municipalities, with growth dominated by migration, are located mostly in the south, and in particular formed a band on the west coast in 1988. In the North, Umeå and Haparanda belong to this category. Ten years later the number of municipalities belonged to class C had decreased by more than half. Municipalities belonging to class B and C were located around Stockholm and in southern Sweden.

There were two classes in which population losses occurred because one of the two components considered was negative and its absolute value was larger than the value of the other, positive, component. Class E municipalities, in which natural decrease exceeds migration gain were very few both in 1988 and 1998 and did not form any specific geographic patterns. Class H municipalities, in which migration loss exceeded natural increase reduced in number substantially between 1988 and 1998.

From demographic point of view, most problematic are those municipalities, where both components, net migration and natural growth, are negative: types F and G. Municipalities of type F, in which decline is driven by natural decrease, were in 1988 located in northern Sweden, especially in the Västerbottens region and south-eastern Sweden, mainly in Kalmar. Type G municipalities, where population decline is more dependent on net migration loss, were quite frequent in the North of the country, but without forming any continuous pattern. Ten years later the picture was totally different: the number of municipalities in these two classes increased from 65 to 186, slightly less than two third of all municipalities. It is therefore easier to identify those areas where none of these classes is frequent. Large cities and their suburban and periurban rings are immune as are several smaller towns. Rural municipalities only

exceptionally do not belong to either class F or class G, especially in the south of the country.

Depopulation driven by the natural decrease class of municipalities is by far the most common.

In short, the picture is that the southern part of Sweden had in 1988 a much more advantageous demographic situation than northern part. Migration gains resulted in a rejuvenation of the age structures of the receiving populations. This was enforced by natural increase higher than in the north, arising partly from lower mortality in younger populations, partly from higher fertility. In 1998 more evident was rural-urban dichotomy with the latter being more advantaged at the expense of the former. Should this pattern persist the distortion of population structures may become quite significant.

6. RELATIONSHIP OF MIGRATION TO THE URBAN SYSTEM

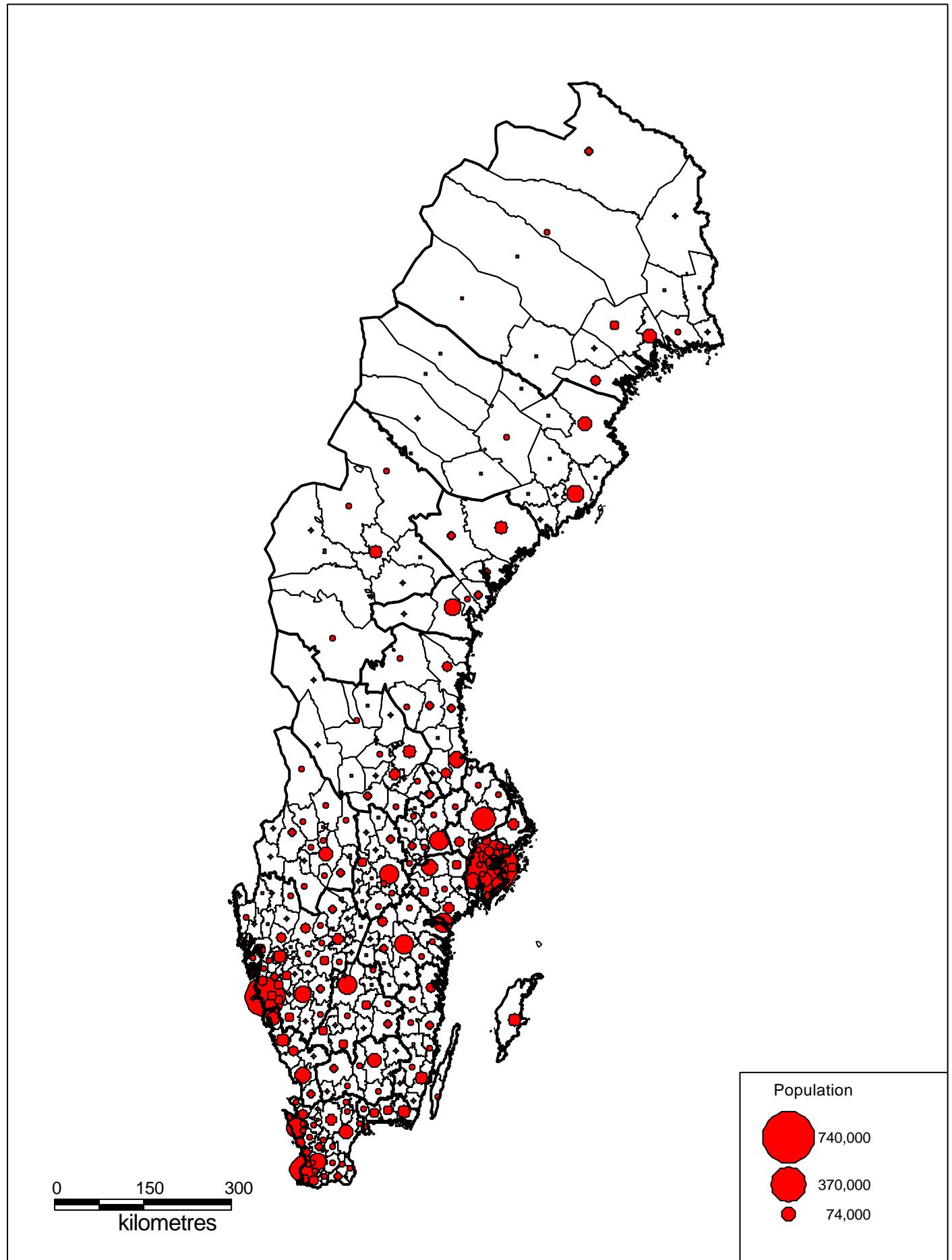
It is difficult to measure the position of a municipality on the rural–urban continuum. We assumed in this study that two proxy variables, population size and population density, are reasonable approximations of the position of the community on the continuum scale. The larger and the more densely inhabited the municipality the more urban it is. The flows of migrants between bands of municipalities within predefined brackets of population density and size of municipalities are discussed below.

6.1 Relationship of migration to settlement size

The distribution of municipalities by size of population is shown in Figure 14. There are two features of the distribution of settlements in Sweden. The first is a very strong concentration of the largest and medium size municipalities along the coast. The second is the south-north division of the population distribution: there are very few medium size municipalities and a complete lack of large municipalities north of the Gävle – Göteborg line. Inner Norrland lacks larger urban centres. Öberg and Sprigfeldt (1991) show that 80% of Swedish population live south of Uppsala; 90% south of Sundsvall.

Table 4 shows aggregated net internal migration and migration effectiveness ratios by size of municipality bands in 1998. Clearly the migration gains were related to the size of municipalities. All size bands below 50000 lost migrants; the smaller the population of municipalities, the larger were migration losses measured by the net internal migration rate. For the bands of municipalities below 5000 population, the net internal out-migration was close to -1%. Municipalities with populations between 50000 and 100000 gained population very moderately, with the net internal migration rate only slightly exceeding 1%. Large units, exceeding 100000 inhabitants were clear winners with net internal migration rate above 5%.

Figure 14: Municipalities by size of population, Sweden, 1998



The hierarchy of migration flows is very strict. Each band gained population from all bands with smaller units and lost population to all bands with larger units.

Table 4: Net internal migration and migration effectiveness ratios by size band, Sweden, 1998

Origin size band	Destination population size band					
	<5000	5000 - <10000	10000 – <25000	25000 – <50000	50000 – <100000	100000+
<5000		3	7	12	14	18
5000 – <10000	-6		3	9	11	15
10000 – <25000	-47	-240		5	7	12
25000 – <50000	-89	-654	-1653		2	7
50000 – <100000	-133	-1029	-2899	-814		5
100000+	-200	-1651	-5264	-2985	-2641	
Net total	-475	-3568	-9530	-1403	2235	12741
Net rate	-9.86	-8.02	-5.24	-0.73	1.04	5.15

Note: Net migrant numbers are displayed below the diagonal in each table. Above the diagonal is shown effectiveness of migration calculated as an absolute value of net internal migration divided by gross migration and expressed as a percentage.

Source: Calculated from data supplied by Statistics Sweden.

It should also be noted that the migration flows were very effective and that the effectiveness of migration increased with the difference in the size between bands. Effectiveness of migration between neighbouring bands did not exceed 5%. However the effectiveness of migration between the band of largest and the band of smallest municipalities equalled 18%.

The migration pattern is mirrored by the total population change over the period 1988 – 1998 (Table 5). The band of small municipalities, below 5000 inhabitants, lost over 7% of their 1988 populations. The 10000 to 25000 band has stood still with a 0.2% increase. The largest cities, with over 100000 inhabitants, gained over 9% of their initial population. It would be difficult to find a clearer example of urbanisation. The strength and speed of the process may be compared to the urbanisation of 1960s and 1970s in Eastern Europe, where forced industrialisation resulted in massive migration up the urban hierarchy.

Table 5: Population change by population size band, Sweden, 1988 - 1998

Population size band	Population 1988	Population 1998	Growth (%)
<5000	51984	48198	-7.28
5000 – <10000	456373	444619	-2.58
10000 – <25000	1814874	1818997	0.23
25000 – <50000	1842099	1912793	3.84
50000 – <100000	2024274	2154268	6.42
100000+	2269283	2475447	9.09

Source: Calculated from data supplied by Statistics Sweden.

6.2 Relationship of migration to population density

The population density map (Figure 15) reproduces the pattern of the distribution of municipalities by size of population discussed earlier, but is strengthened by the large size of municipalities in north-eastern Sweden. The pattern of migration between population density bands is strictly hierarchical with all lower density bands losing population to all higher density bands (Table 6). The only exception to this pattern is the 25 to 50 persons per square kilometre band, which gained population from the 50 to 100 persons per square kilometre band. The net internal migration balance increases with the increase of population density from *-2.6 pro mille* for the lowest density band, below 10 persons per square kilometre, to *6.6 pro mille* for the highest density band, 500 or over persons per square kilometre. Effectiveness of migration is highest for interactions between the highest density band and other bands.

Figure 15: Municipalities by density of population, Sweden, 1998

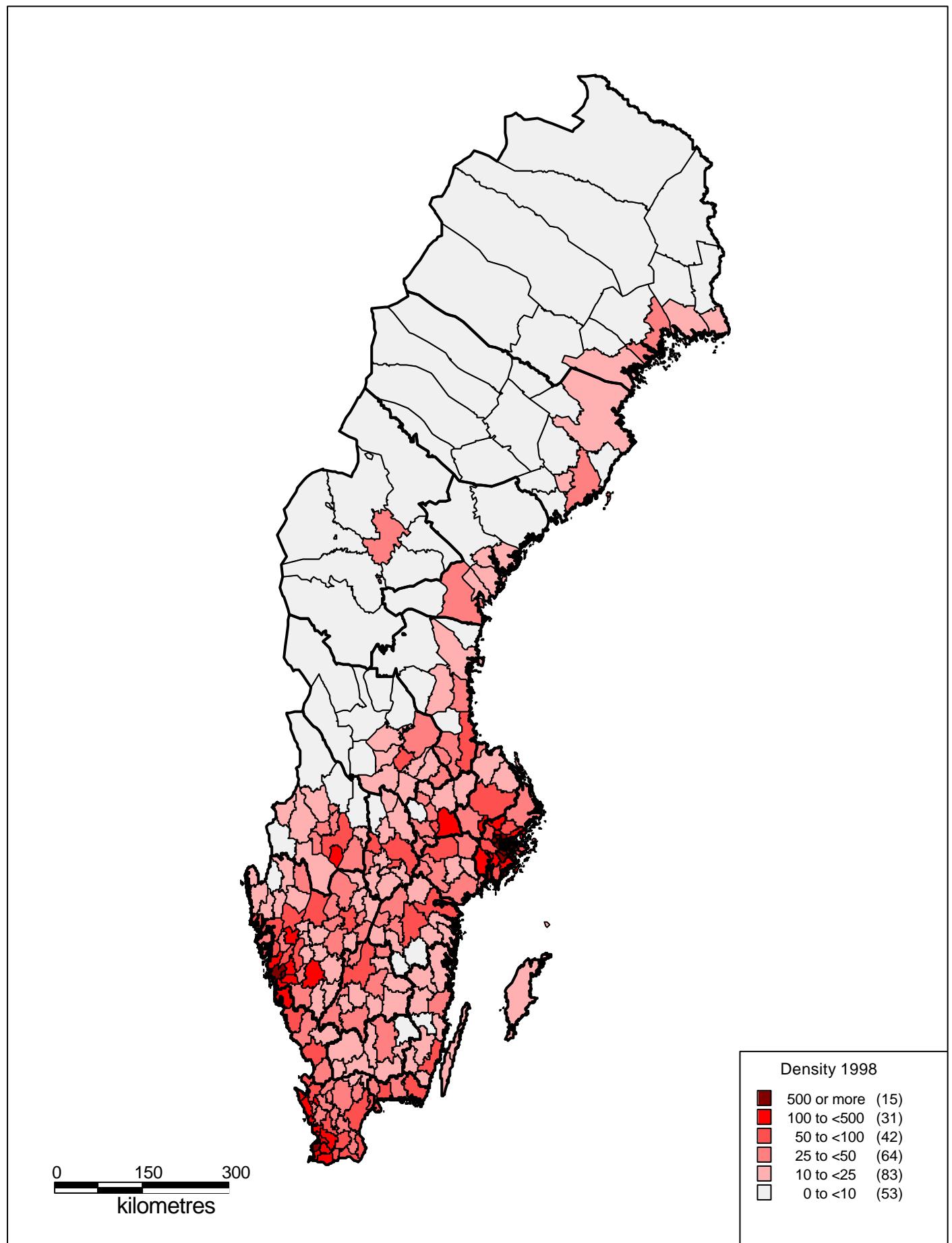


Table 6: Net internal migration and migration effectiveness by population density band, Sweden 1998

Origin by population density band	Destination by population density band					
	<10	10 - <25	25 - <50	50 - <100	100 - <500	500+
<10		2	3	3	5	10
10 - <25	-602		1	1	3	8
25 - <50	-599	-652		1	1	7
50 - <100	-226	-139	107		2	7
100 - <500	-387	-590	-168	-132		5
500+	-1657	-3627	-1816	-980	-706	
Net total	-3470	-4406	-627	-855	571	8787
Net rate	-2.83	-1.48	-0.36	-1.02	0.77	6.55

Note: Net migrant numbers are displayed below the diagonal in each table. Above the diagonal is shown effectiveness of migration calculated as an absolute value of net internal migration divided by gross migration and expressed as a percentage.

Source: Calculated from data supplied by Statistics Sweden.

All density bands increased their populations between 1988 and 1998, but the speed of increase was larger for higher density bands (Table 7). The differences are considerable: the lowest density band increased by 1.2% over a decade, whereas the highest density band with over 500 persons per square kilometre grew by 9.7%.

Table 7: Population change by population density band, Sweden 1988 – 1998

	Population 1988	Population 1998	% Growth
<10	1209890	1224156	1.18
10 - <25	2875355	2978188	3.58
25 - <50	1659300	1738041	4.75
50 - <100	796609	835107	4.83
100 - <500	694979	736995	6.05
500+	1222754	1341835	9.74

Source: Calculated from data supplied by Statistics Sweden.

7. RELATIONSHIP OF MIGRATION TO FUNCTIONAL TYPE

Spatial pattern of the distribution of municipalities by functional type is shown in Figure 16.

A table of migration between functional types of municipalities shows that metropolitan areas gained substantially from all other types (Table 8). The band of university municipalities gained from all types but large metropolitan areas. Inner Norrland and industrial municipalities are the biggest losers in the migration system. There is a high effectiveness for migration between Inner Norrland and both large metropolitan areas and university municipalities, suggesting substantial transfers of population from the former to the two latter types.

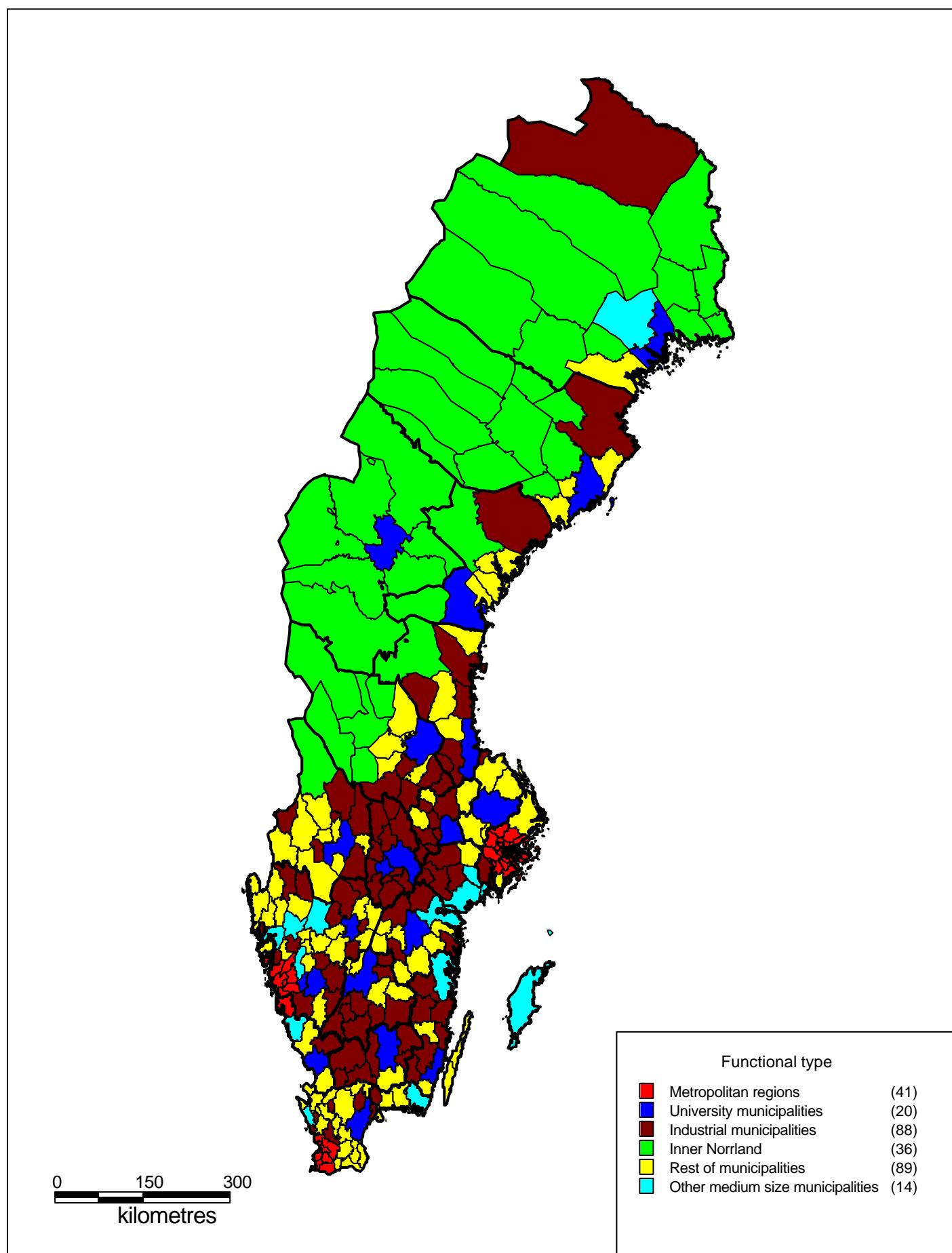
Table 8: Net internal migration and migration effectiveness by functional type, municipalities, Sweden, 1998

Category	Destination	Metropolitan regions	University municipalities	Industrial municipalities	Inner Norrland	Rest of municipalities	Other medium size municipalities
Origin							
Metropolitan regions			4	14	17	9	5
University municipalities	2551			10	12	5	1
Industrial municipalities	7089	2266			3	5	9
Inner Norrland	1620	557	109			8	12
Rest of municipalities	4194	1014	-907	-272			4
Other medium size municipalities	1017	72	-704	-177		-286	
Net total	16472	1357	-10856	-2735	-4316		78
Net rate	5.67	0.8	-6.06	-7.88	-3.03		0.11

Note: Net migrant numbers are displayed below the diagonal in each table. Above the diagonal is shown effectiveness of migration calculated as an absolute value of net internal migration divided by gross migration and expressed as a percentage.

Source: Calculated from data supplied by Statistics Sweden.

Figure 16: Municipalities by functional type, Sweden, 1998



This is confirmed by the population changes between 1988 and 1998 (Table 9). The only two functional types losing population over this period were Industrial municipalities and Inner Norrland. All other types gained population, in particular university municipalities and metropolitan regions. The findings of this section show the increasing importance of the knowledge economy and educational services as driving forces of the population development in Sweden. Most likely there is little or no direct transmission between the educational function of municipalities and population increase. We may propose a hypothesis that the transmission occurs via the development of jobs within the educational institutions and within a variety of knowledge based companies, IT and telecom startups and established companies and consultancy services. The examination of this hypothesis is outside the scope of this paper, but a closer look at the mechanism linking education and educational institutions with population dynamics should be added to the research agenda of population geographers and social demographers.

Table 9: Population change by functional type, municipalities, Sweden, 1988 –1998

Type	Population	Population	%Growth
	1988	1998	
Metropolitan regions	2640060	2903139	9.97
University municipalities	1570699	1685803	7.33
Industrial municipalities	1812921	1790231	-1.25
Inner Norrland	366117	346894	-5.25
Rest of municipalities	1396064	1425546	2.11
Other medium size municipalities	673026	702709	4.41

Source: Calculated from data supplied by Statistics Sweden.

8. RELATIONSHIP OF MIGRATION TO UNEMPLOYMENT

The unemployment rate for Sweden in the end of the year 1999 was 6.7 per cent of the population between 16 and 64 years of age. About half of all municipalities have an unemployment rate close to the average for the country. Just a few of the municipalities have very high unemployment rates (Table 10).

Table 10: Number of municipalities by unemployment rate classes

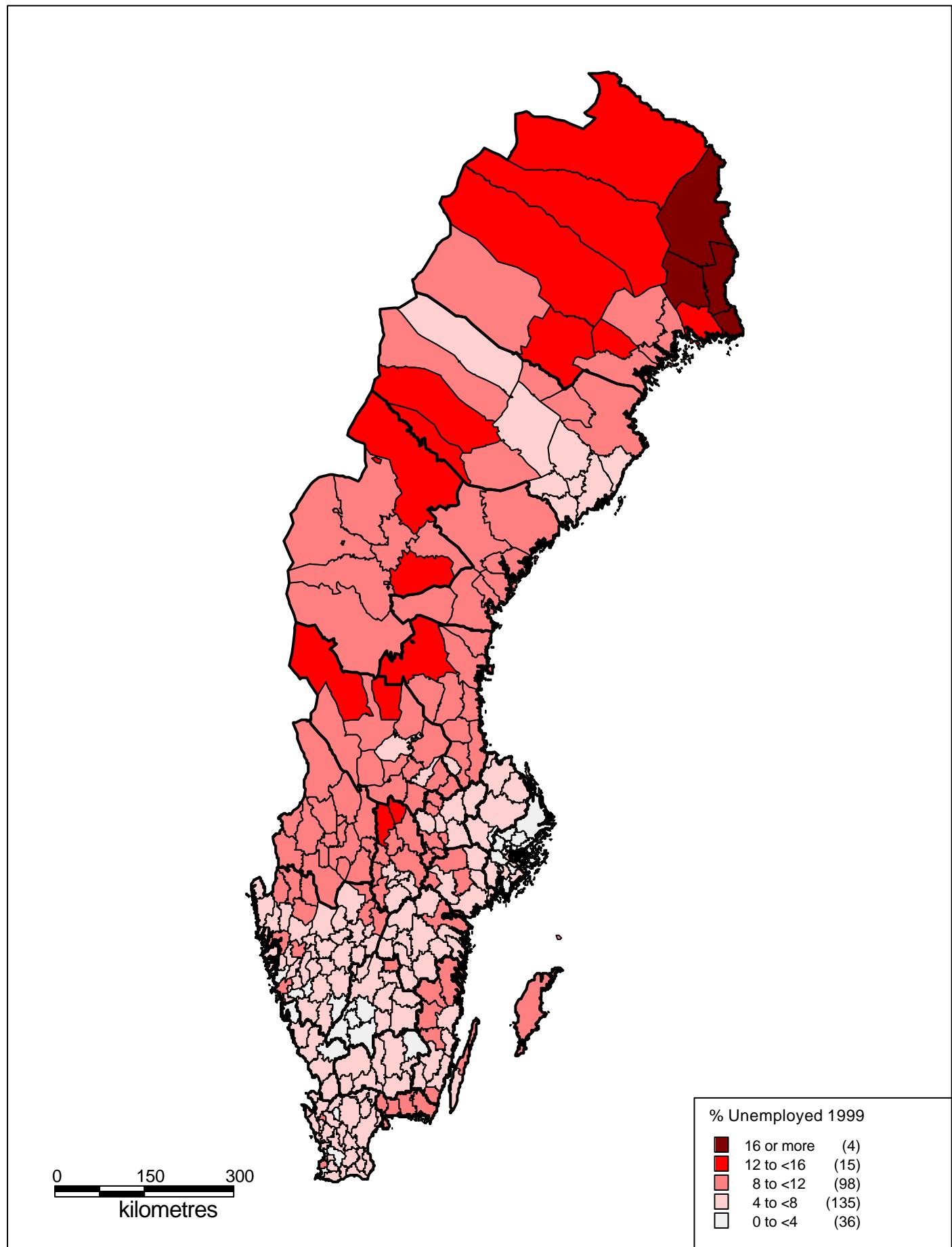
Unemployment rate	Number of municipalities	Percent
0-<4	67	23.3
4-<8	135	46.9
8-<12	74	25.7
12-<16	9	3.1
16+	3	1.0
Total	288	100.0

Source: National Labour Market Board

The unemployment rate is not equally distributed across the country (Figure 17). It varies substantially from the southern to the northern part of Sweden. With a few exceptions the lowest unemployment rate is found in the Stockholm region. The net internal migration is positive in most of those municipalities. This relationship between unemployment rate and net internal migration is also found to certain extent in the Göteborg region as well as in Malmö region. The unemployment rate is also low in some municipalities in southern part of Sweden, known for their entrepreneurial skill, such as Gnosjö and Gislaved. The net internal migration is positive in this area as well.

On the other hand the unemployment rate is high in the northern part of the country. This is especially the case in the forest counties in north west of Sweden. This is a part of the country that is very sparsely populated. The unemployment rate figures are always higher in the forest counties than the national figures regardless of the situation in the rest of the country. Unemployment in these municipalities seems to be of structural nature (Borgegård,

Figure 17: Unemployment rates, municipalities, Sweden, 1999



Fransson and Lundin 1993). The net internal migration in these municipalities is negative, but migration losses are not as high as might be expected due to the high unemployment rate. In this part of Sweden the average age is higher than in the rest of the country. The share of pensioners is very high. In some areas every fourth inhabitant is a pensioner (Öberg and Springfieldt, 1991). The migration rate amongst elderly people is very low. This means that the out-migration from this area is expected to be low and with a low in-migration the net internal out-migration rate will be modest.

Table 11 shows the flows of migrants between unemployment bands of municipalities. There is a strict hierarchy of flows from high to low unemployment, with the lowest unemployment band having the highest net gain rate and high unemployment band having highest net losses. This does not apply strictly to the top unemployment band, but this exception is not significant due to the very small size of this band (4 municipalities and less than 30 thousand population). Migration effectiveness is very high, especially for the exchanges with the 12 to 16% of unemployed band. This means that migration contributes significantly to the redistribution of population between unemployment bands.

Table 11: Net internal migration and migration effectiveness by unemployment band, municipalities, Sweden, 1999

Origin band	Destination unemployment band (%)				
	<4	4 - <8	8 - <12	12 - <16	16+
<4		4	7	20	9
4 - <8	2614		3	16	5
8 - <12	2816	3588		13	2
12 - <16	358	875	451		11
16+	29	49	14	-3	
Net total	5817	1898	-5939	-1687	-89
Net rate	4.96	0.44	-1.89	-9.88	-3.11

Source: Calculation based on data from National Labour Market Board and Statistics Sweden

Over a longer period of time, 1988–1998, we can see that municipalities with a very low unemployment, below 4% in late 1990s, grew very fast, by nearly 1% per year (Table 12). Also the population of municipalities belonging to the next two bands increased their populations. Decrease of population was noted for bands in which unemployment exceeded 12% and stood at approximately half percent per year.

Table 12: Population change by unemployment bands, municipalities, Sweden, 1988–1998

Unemployment rate (%)	Population 1988	Population 1998	Change
<4	1049966	1172812	11.70
4 – <8	4102870	4342439	5.84
8 – <12	3094614	3139763	1.46
12 – <16	181856	170715	-6.13
16+	29581	28593	-3.34

Source: Calculation based on data from National Labour Market Board and Statistics Sweden

There is no doubt that the level of unemployment has a significant impact on the migration of Swedish population. The lower the unemployment the more attractive the area for migrants.

9. RELATIONSHIP OF MIGRATION TO EDUCATIONAL ATTAINMENT

One characteristic feature of Swedish society has been a general increase of education for the whole population and in all municipalities during recent decades. However, this trend has not been spatially uniform. Even if the general level of higher education has increased, the gap between municipalities with a high level of education and those with a lower level has increased. This polarisation has a spatial structure: there is a centre–periphery dimension, and a hierarchical dimension as well. Using the division of municipalities into functional types, the Metropolitan region and University municipalities are seen to have a strong representation of the highly educated, while the Industrial and Norrland municipalities have much lower proportions of the highly educated.

There is a well established correlation between education level and migration. In a classic study Dahl (1950) measured the recruitment of workers at ASEA (now ASEA Brown Boveri) in Västerås, finding a large catchment area for well educated engineers, a smaller recruitment area for middle level engineers and a much more local in-migration area for service workers. These findings have also been confirmed by Jacobsson (1969) and by Borgegård *et al.* (1994). In the latter study, the migration rate for high school students from the region of Hälsingland was related to gender, socio-economic status of parents, age and type of educational programme (theoretical or practical). The findings confirmed a high propensity to move for young girls following theoretical curricula with middle class parents, and a low propensity to move for older boys on practical programmes with working class parents. The small industrial towns and municipalities have quite a low migration rate. For example, the Hofors municipality in Gävleborg county shows two different pattern of migration – a low migration rate for male dominated manual workers and a high in- and out-migration rate for highly educated engineers and staff. The municipality serves as a stable economic base for manual workers and a step in the career for those with higher education.

Gaining educational qualifications is one route for upward social mobility, which is often related to a geographical move. To seek education is also a life style choice, which involves a break from the small community of origin and a move to something challenging and thrilling. It could also mean more options when trying to find a partner. A couple of decades ago labour market migration was carefully researched (see Åberg 1970), but the educational component has more and more subsumed this factor. Parents are likely to move to the university towns or close by sites to gain the benefit of higher education for their children. In total we could expect a high propensity especially among the mobile young people to move from peripheral and small municipalities to metropolitan and university areas where jobs and education are to be found. Later on in life there will be an out-migration of young people with families to areas where they can find jobs for both parents. This circular migration is a very characteristic feature in the Swedish migration pattern.

In 1988 15.1% of Swedish population had tertiary or doctoral education. This share increased to 23.6% ten years later. The geographic distribution of people with tertiary education is shown in Figure 18 for 1988 and in Figure 19 for 1998. The 1988 pattern shows the better educated population concentrated in the south and along the coast. Two municipalities with old universities, Lund and Uppsala, as well as four municipalities in the Stockholm agglomeration, had a dominant position with over 25% of population educated at the tertiary level. Altogether population in only 6 municipalities exceeded the threshold of a quarter of population with tertiary education. Other university and university college municipalities stood out with over 20% of population having tertiary education. In 1998 we observe a similar pattern of distribution of municipalities by the level of educational

Figure 18: Percentage of the adult population with university qualifications, 1988

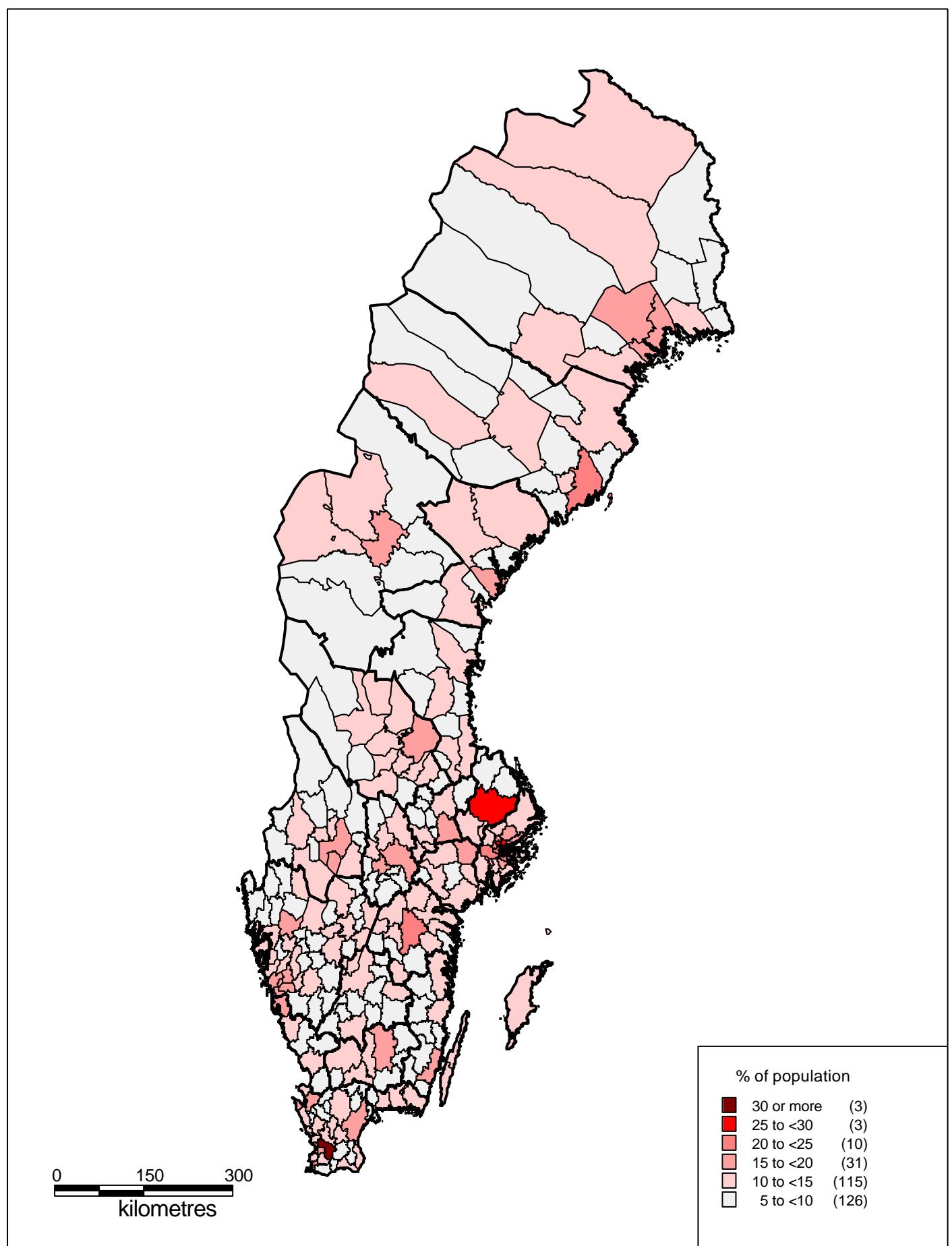
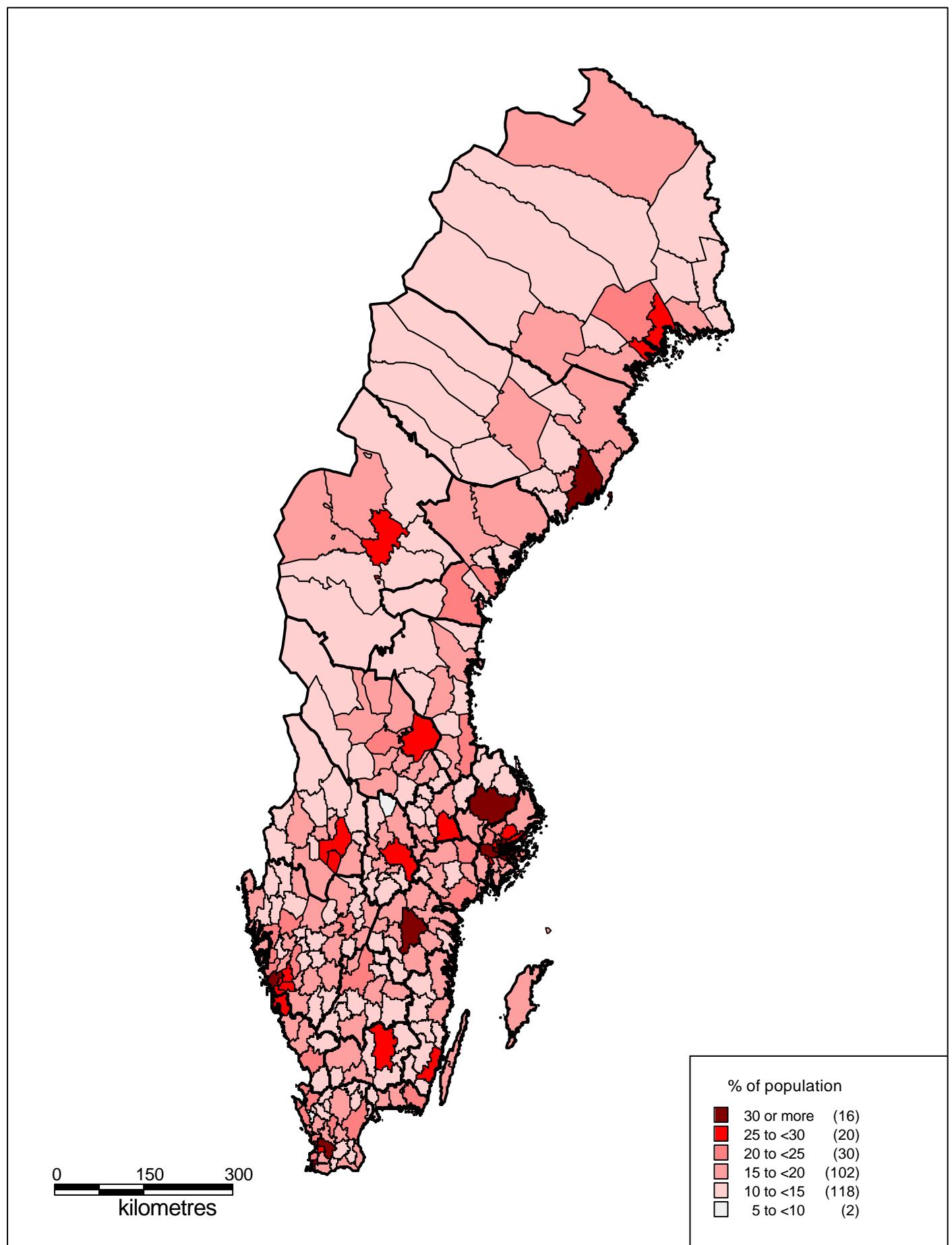


Figure 19: Percentage of the adult population with university qualifications, 1998



attainment, but on a remarkably higher level. There are 16 municipalities with 30% or more of population with tertiary education, mostly university and university college municipalities or municipalities within the urban agglomeration of Stockholm and to a lesser extent the Göteborg and Malmö agglomerations. The lowest level of education can be seen in Inner Norrland and central-eastern Sweden. In the south municipalities of this class form a patchy pattern, partly centred between Växjö and Kalmar.

Table 13: Net internal migration and migration effectiveness by educational level, municipalities, Sweden, 1998

Origin band % of population with tertiary education	Destination band % of population with tertiary education				
	<15	15 – <20	20 - <25	25 – <30	30+
<15		2	5	6	8
15 – <20	-1507		3	4	6
20 – <25	-1206	-493		2	4
25 – <30	-1869	-912	-119		2
30+	-4101	-2209	-428	-257	
Net total	-8683	-2107	1152	2644	6994
Net rate	-2.38	-0.9	1.53	3.27	5.33

Source: Calculated from data supplied by Statistics Sweden.

The pattern of migration between level of education of population bands is strictly hierarchical with no single exception (Table 13). Municipalities with less than 20% of population with tertiary education have been losing population; those with more than that were gaining. The net internal migration rate increases sharply as the level of education rises. For the band of municipalities with 30% or more of their population with tertiary education the net internal migration gain reaches *5.3 pro mille*. The effectiveness of migration increases with the differences between levels of education bands, reaching 8% for migration between the band with the lowest and the highest level of education.

Table 14: Population change by educational level, municipalities, Sweden, 1988–1998

% of population with tertiary education	Population 1988	Population 1998	Growth
<15	3541266	3650574	3.09
15 - <20	2264117	2330500	2.93
20 - <25	708548	752396	6.19
25 - <30	749943	809684	7.97
30+	1195013	1311168	9.72

Source: Calculated from data supplied by Statistics Sweden.

In the decade 1988-1998 population growth was in general higher for bands with better educated population (Table 14). The only marginal exception was slightly lower population growth in the 15-20% of population with tertiary education band than that of less than 15% of population with tertiary education band. The population of the band with the highest educational attainment grew by 9.7%, nearly 1% per year. Apparently the level of education of population is a very strong positive determinant of migration. This may be linked to the impact education of population has on the development of post-industrial economy.

10. SUMMARY AND CONCLUSIONS

The results of this case study of internal migration and population change in Sweden are summarised with respect to six important issues affecting the spatial dynamics of the population.

10.1 The roles of natural change, international and internal migration

Up to the 1970s and in the early 1990s natural increase played important role in the regional dynamics of population. Growing international migration, decreasing fertility and strong migration-induced concentration of population in the late 1990s increased the importance of migration in the population dynamics of areas. Natural decrease in the most recent years made the migration component of population change even more important.

10.2 Urban concentration or deconcentration?

In 1988 the pattern of migration contributed to a relatively even redistribution and deconcentration of population. Urban centres and communities surrounding them experienced mixed patterns of growth. The pattern observed in 1998 was entirely different. It showed a very hierarchical and strict reurbanisation, with increases in all but two municipalities exceeding 50000 inhabitants. Large and medium sized towns also experienced increases in population in their suburban rings and often in much more extensive urban regions. Rural and remote areas, especially those of Norrland, experienced depopulation.

10.3 Relationship of population change and internal migration with population density

In 1998 migrants moved from low density to high density areas. This pattern is quite consistent with only one exception. In parallel with a short term snapshot of population dynamics in 1998, high density areas showed over a longer period 1988 – 1998 much higher

increase than low density areas. This supports the evidence of strong concentration of population identified earlier.

10.4 Regional patterns of internal migration

There is a difference in migration pattern between the north of the country, which mostly lose population and the central and southern part, mostly gaining population. However, these patterns are modified by population gains in some coastal municipalities in the north and negative migration in numerous municipalities, in particular rural ones, in central and southern Sweden.

10.5 Relationship of population change and internal migration to unemployment

The pattern of migration of the Swedish population is, to large extent, dependent on the level of unemployment. Low unemployment attract migrants, high unemployment areas lose them. The level of gains and losses depend on degree of unemployment, following the neoclassical theory of migration.

One must, however, take into consideration that the level of unemployment is not a factor separated from all other factors determining the direction of flows. For example, the level of unemployment is correlated with the level of urbanisation (unemployment is low in highly urbanised areas and high in remote, forested areas); or regional location (higher unemployment is observed in the north whereas central and southern part of the country has lower unemployment).

10.6 Relationship of population change and educational attainment

An educated population is a very strong attraction for migrants. A high level of education is indispensable in advanced service industries, including tertiary education, and in a high

technology orientated economy. Quite likely Sweden is pioneering this pattern, which is present in other countries but has not yet been detected.

10.7 Relationship of internal migration to the life course

Very clearly young people migrate to metropolitan areas and university regions at the expense of all other types of municipalities. Medium sized municipalities, except university municipalities, attract families. Outflows from industrial regions and Inner Norrland municipalities are visible in all age groups. Recently a delicate shift could be seen in metropolitan areas, which are gaining popularity among families. The elderly population chooses university and medium size municipalities.

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**APPENDIX: FERTILITY, MORTALITY AND INTERNATIONAL MIGRATION
SWEDEN, 1960-1998**

Year	Mean population	Births	Extra-marital births	% extra-marital births	TFR	NRR	Birth rate	Mean age at child-birth	Mean age at first child-birth	Deaths	Death rate	Infant mortality rate	Net migration	Population change	Natural change rate	Total rate
1960	7484656	102219	11535	11.3	2.20	1.04	13.7	27.5	25.5	75093	10.0	16.6	-504	26622	3.6	3.6
1961	7519998	104501	12215	11.7	2.23	1.06	13.9	27.4	25.5	73555	9.8	15.8	13115	44061	4.1	5.9
1962	7561588	107284	13297	12.4	2.26	1.07	14.2	27.3	25.4	76791	10.2	15.5	8627	39120	4.0	5.2
1963	7604328	112903	14172	12.6	2.34	1.11	14.8	27.3	25.4	76460	10.1	15.4	9916	46359	4.8	6.1
1964	7661354	122664	16117	13.1	2.48	1.18	16.0	27.2	25.3	76661	10.0	14.3	21690	67693	6.0	8.8
1965	7733853	122806	16950	13.8	2.42	1.15	15.9	27.2	25.2	78194	10.1	13.3	32694	77306	5.8	10.0
1966	7807797	123354	17962	14.6	2.36	1.13	15.8	27.1	25.3	78440	10.0	12.5	25668	70582	5.8	9.0
1967	7867931	121360	18323	15.1	2.27	1.08	15.4	27.0	25.3	79783	10.1	12.8	8109	49686	5.3	6.3
1968	7912736	113087	18972	16.8	2.07	0.99	14.3	27.0	25.6	82476	10.4	13.0	9312	39923	3.9	5.0
1969	7968508	107622	18208	16.9	1.93	0.92	13.5	27.1	25.8	83352	10.5	11.7	47351	71621	3.0	9.0
1970	8420702	110150	20753	18.8	1.92	0.92	13.1	27.0	25.9	80026	9.5	11.0	46644	76768	3.6	9.1
1971	8098191	114484	25241	22.0	1.96	0.94	14.1	26.9	25.9	82717	10.2	11.1	2443	34210	3.9	4.2
1972	8122220	112273	28142	25.1	1.91	0.91	13.8	26.8	26.0	84056	10.3	10.8	-14369	13848	3.5	1.7
1973	8136786	109663	31114	28.4	1.87	0.89	13.5	26.8	25.6	85640	10.5	9.8	-8739	15284	3.0	1.9
1974	8160560	109874	34451	31.4	1.87	0.90	13.5	26.7	24.2	86316	10.6	9.6	8705	32263	2.9	4.0
1975	8192567	103632	33543	32.4	1.77	0.85	12.6	26.7	24.4	88208	10.8	8.6	16327	31751	1.9	3.9
1976	8222311	98345	32656	33.2	1.68	0.81	12.0	26.9	24.6	90677	11.0	8.3	20069	27737	0.9	3.4
1977	8251648	96057	33300	34.7	1.64	0.79	11.6	27.0	24.7	88202	10.7	8.0	23082	30937	1.0	3.7
1978	8275777	93248	33499	35.9	1.60	0.77	11.3	27.2	24.9	89681	10.8	7.8	13754	17321	0.4	2.1
1979	8293724	96255	36124	37.5	1.66	0.80	11.6	27.5	25.1	91074	11.0	7.5	13392	18573	0.6	2.2
1980	8310474	97064	38558	39.7	1.68	0.81	11.7	27.6	25.3	91800	11.0	6.9	9663	14927	0.6	1.8
1981	8320485	94065	38742	41.2	1.63	0.79	11.3	27.7	25.4	92034	11.1	6.9	3065	5096	0.2	0.6
1982	8325259	92748	38915	42.0	1.62	0.78	11.1	27.9	25.6	90671	10.9	6.8	2374	4451	0.2	0.5
1983	8329029	91780	40059	43.6	1.61	0.78	11.0	28.1	25.8	90791	10.9	7.0	2100	3089	0.1	0.4
1984	8336597	93889	41877	44.6	1.66	0.80	11.3	28.3	26.0	90483	10.9	6.4	8642	12048	0.4	1.4
1985	8350380	98463	45640	46.4	1.74	0.84	11.8	28.4	26.1	94032	11.3	6.8	11087	15518	0.5	1.9
1986	8369827	101950	49324	48.4	1.80	0.87	12.2	28.4	26.1	93295	11.1	6.0	14721	23376	1.0	2.8
1987	8397799	104699	52218	49.9	1.84	0.89	12.5	28.5	26.3	93307	11.1	6.1	21176	32568	1.4	3.9
1988	8436486	112080	57090	50.9	1.96	0.94	13.3	28.5	26.3	96743	11.5	5.9	29468	44805	1.8	5.3
1989	8492962	116023	60077	51.8	2.01	0.97	13.7	28.6	26.3	92110	10.8	5.8	44235	68148	2.8	8.0
1990	8558833	123938	58248	47.0	2.13	1.03	14.5	28.6	26.3	95161	11.1	6.0	34817	63594	3.4	7.4
1991	8617375	123737	59628	48.2	2.11	1.02	14.4	28.7	26.5	95202	11.0	6.1	24954	53489	3.3	6.2
1992	8668066	122848	60771	49.5	2.09	1.01	14.2	28.9	26.7	94710	10.9	5.3	19756	47894	3.2	5.5
1993	8718561	117998	59489	50.4	1.99	0.96	13.5	29.0	27.0	97008	11.1	4.8	32106	53096	2.4	6.1
1994	8780745	112257	57927	51.6	1.88	0.91	12.8	29.1	27.1	91844	10.5	4.4	50859	71272	2.3	8.1
1995	8826939	103422	54769	53.0	1.73	0.84	11.7	29.2	27.2	93955	10.6	4.1	11648	21115	1.1	2.4
1996	8840998	95297	51348	53.9	1.60	0.77	10.8	29.4	27.4	94133	10.6	3.9	5839	7003	0.1	0.8
1997	8846062	90502	48945	54.1	1.52	0.74	10.2	29.5		93326	10.6	3.6	5950	3126	-0.3	0.4
1998	8850974	89028	45940	51.6	1.51		10.1			93271	10.5		10940	6697	-0.5	0.8

Source: Council of Europe 1999.