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INTERNAL MIGRATION AND REGIONAL POPULATION DYNAMICS IN EUROPE: NORWAY CASE STUDY

Philip Rees[1]
Lars Østby[2]
Helen Durham[3]
Marek Kupiszewski[4]

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[1]School of Geography
University of Leeds
Leeds LS2 9JT
United Kingdom

[2]Division for Social and Demographic Research
Statistics Norway
P.O. Box 8131-Dep
0033 Oslo
Norway

[3]Willow Cottage
14 Thorpe Lane
Cawood
Selby YO8 0SG
United Kingdom

[4]School of Geography
University of Leeds
Leeds LS6 9JT
United Kingdom
and
Institute of Geography and Spatial Organisation
Polish Academy of Sciences
Twarda 51/55
Warsaw
Poland

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ABSTRACT

This paper reports on internal migration and regional population dynamics in Norway. It examines internal migration patterns and trends in two years, 1984 and 1994, and compares them.

Norway's population maintains relatively high population growth by European standards, fuelled by continuing natural increase and net migration from outside the country. About half of Norway's municipalities lost population in aggregate over the 1984 to 1994. These municipalities are concentrated in the Centre-North and interior of southern Norway. There is evidence that communities with the lowest densities and least centrality are losing population through internal migration.

Although the direction of migration is towards denser and more central places, this is a product mainly of the migration of young people when the migration streams are broken down by age, the resulting tales show that the largest urban areas are experiencing net losses from middle age and upwards. There is little direct evidence of net positive migration flows to rural remote areas for the population as a whole. Migration flows out of the Oslo region are to other municipalities within commuting range. This deconcentration should therefore be identified as extended suburanisation rather than counter-urbanisation.

Throughout the current report the role of life course stage in influencing the direction of migration has been stressed. Most often the overall pattern of population shifts conceal very different flow structures for family migrants, young adults, older workers, retirees and the elderly. In this respect internal migration dynamics in Norway strongly resemble those in other West European countries.

Economic factors have an important influence on migration patterns. Municipalities with an economic concentration in service industries attract internal migrants while those specialised in primary industry suffer migration outflows consequent on the decline of or productivity improvements in their economic activities. There is a strong gradient of increasing net outflows with increasing levels of unemployment.

FOREWORD

This study is one among ten case studies made within the project entitled "Internal Migration and Regional Population Dynamics in Europe". This project was initiated by the European Population Committee (CDPO) of the Council of Europe. In its meeting in October 1994, the CDPO decided to commission an investigation the feasibility of a comparative study of internal migration and regional population dynamics within European countries. The back ground to the project was twofold. Firstly, there had been for some time rather little interest on the part of both researchers and international organisations working in the field. Secondly, during recent decades, there has been a general improvement of population statistics across Europe, but this has not extended to statistics on internal migration, despite the introduction by Eurostat of their NUTS system of comparable regions.

Professor Phil Rees and Dr. Marek Kupiszewski of the School of Geography at the University of Leeds carried out such a feasibility study and presented it to the CDPO at its meeting in June 1995. Their study covered all (at that time 28) member states of the Council of Europe with more than 1 million inhabitants. Based on a questionnaire sent to all relevant countries, the conclusion was that, in spite of varying data systems, it would, by and large, be possible to perform a comparative analysis of this kind (Rees and Kupiszewski 1996).

The CDPO decided to ask Drs Rees and Kupiszewski to undertake a comparative study of internal migration and regional population dynamics. To guide this work, the CDPO also appointed a Group of Specialists with nine members (representing the Czech Republic, Estonia, Germany, Italy, the Netherlands, Norway, Poland, Portugal and Romania), chaired by Mr Lars Østby, CDPO member for Norway. The terms of reference of the study were defined by the CDPO as follows; (1) to investigate the extent of rural depopulation, (2) to analyse the degree to which the processes of urbanisation, counterurbanisation and suburbanisation are in train and (3) to describe the patterns of and trends in internal migration. For each aim comparison of the situation in the early/mid-1980s with that in the early/mid-1990s is to be carried out. For each aim, comparison of the situation in the early/mid-1980s with that in the early/mid-1990s is to be carried out.

The European Commission, represented in the CDPO by Ms Isabelle de Pourbaix at DG V, Unit E1, took a great interest in the project, and provided co-sponsorship of 30 000 ECU in the first year. Eurostat has followed the projects throughout its existence and has supplied some information on the digital boundaries of regions.

Due to limited finances and the time available, the study had to restrict itself to the nine countries represented in the Group of Specialists, in addition to the consultants' country, the United Kingdom. Even with this limited coverage, the Group of Specialists finds the studies very interesting, illustrating the usefulness of this kind of cross-national comparison. This country study is, like all the others, written by the consultants and co-authored by the national representative in the Group of Specialists.

ACKNOWLEDGEMENTS

Our thanks are due to Franco Millich of the Council of Europe for his care and attention in guiding the project and to Isabelle de Pourbaix of the Commission (DGV) for arranging additional funds for the work (which funded research assistant Helen Durham to procure and prepare the digital cartography that underpins the maps that appear in the report). We are grateful to the staff at Statistics Norway for supplying the data requested, which in the case of Norway were detailed and comprehensive. Lars Østby provided a complete set of Statistics Norway publications on local population and migration, which proved invaluable in checking the handling of the computer data files. They were particularly helpful when massaging the data into a common geography which matched the digital polygon data for municipalities circa 1990 which we used. These data were kindly provided by Sindre Langasas of the Department of Systems Ecology, Stockholm University, Manager of the Baltic/Nordic Region of the UNEP/GRID-Arendal project, which has constructed a variety of digital maps for Northern Europe.

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1. CONTEXT

This paper reports on migration patterns and population change in Norway as part of a project on *Internal Migration and Regional Population Dynamics in Europe* sponsored by the Council of Europe and the European Commission. This project aims to build up a comparable picture of internal migration across the countries of Europe.

In the 1990s the countries of Europe are collectively engaged in what the German Chancellor, Helmut Kohl, has called "the European Project". This involves the closer integration of countries in international organisations (such as the Council of Europe) or in multi-country institutions (such as the European Union or the European Economic Area to which Norway belongs). Collective projects require an agreed and comparable database of information about countries and their constituent regions. The Directorate of Social and Economic Affairs of the Council of Europe has been active in collating national statistics for over 30 countries (Council of Europe 1997). The Statistical Office of the European Communities (EUROSTAT 1995a, 1995b) has been pursuing harmonisation of national and regional statistics for the member states of the European Union.

However, there is a major gap in these statistics with respect to internal migration and its role in regional population change. Considerable progress has been made by the European Commission and EUROSTAT in developing regional population projections for the European Union (see Rees 1996 and van der Gaag *et al.* 1997). The primary aim of this work has been to incorporate internal migration data into multi-country, multi-regional population projection (see Van Imhoff *et al.* 1997 for a methodological report). The EU regional projections are carried out for second level regions in the EUROSTAT statistical system, regions with average populations of 1.86 million people. Such regions are large spatial filters for understanding processes of population change within countries. Kupiszewski (1996) established for Poland that the surface of population change was virtually flat at *Voivodship* scale (49 units) while that at commune scale (4000 units) had lots of peaks and valleys. In a feasibility study for the Council of Europe, Rees and Kupiszewski (1996) concluded that reliable information was available from European National Statistical Offices to study population dynamics at fine spatial scales. Building on that knowledge this study describes population change and internal migration trends for Norway at municipality, municipality type, and various regional scales.

The report is divided into the following sections. Section 2 reviews knowledge about regional population change and internal migration in Norway. Section 3 describes the data available for analysing regional population dynamics in Norway and the classifications of municipalities, the territorial units used,. Section 4 discusses patterns of population change and net internal migration at municipal scale, while section 5 analyses both net internal migration for regions and for counties and using different official municipality classifications. Two themes run through these analyses: the importance of life course stage in determining migration directions and the changes in these directions that are taking place over the 1984-94 decade. Section 6 examines flow patterns between regions, counties and between different settlement types. Section 7 provides a synthesis of findings.

2. INTERNAL MIGRATION AND POPULATION CHANGE REVIEWED

Norway has one of Europe's smaller populations, 4.393 millions in 1996, although in area it both large (324,250 sq.km.) and extensive stretching over 1600 kilometres from Lindesnes in the south west to Nordkapp in the north. The north-eastern part of the country has a common border with Russia, of almost 200 km. The easternmost town, Vardø, is well east of Istanbul. Its territory is rugged with mountains making up the interior of the country throughout and the coastline characterised by fjords and island clusters. It is also a recent creation, having gained its independence from Sweden in 1905. Natural resources (ore, timber, water power, fish) have been the backbone of the economy in the past, although today these industries employ only a small proportion of the workforce and service industries and occupations are dominant. The settlement pattern is more dispersed than in any other main-land European country. This pattern is strongly supported by the majority of the political parties and the various governments, by emphasising the values of small place living, by subsidies to remote districts, and by the election system. A significant proportion of the population, also in the urban areas, recognise this settlement pattern as something that needs to be protected.

Recent decades have seen considerable prosperity for Norway as a result of the exploitation of oil and natural gas resources in its sector of the North Sea and Atlantic. The exploitation of these petroleum resources have led to the development of an onshore support industry in south west Norway, centred on Stavanger, including oil rig construction. The Norwegians have always been a seafaring nation and shipbuilding and shipping are important industries and ones that take Norwegians out of the country with later returns. Against this background, the Norwegian people have twice rejected in referenda the opportunity to join the European Union. They have clearly been sceptical about the transfer of authority to a European bureaucracy, even more distant than the national one in Oslo. At the last referendum they were also sceptical about the benefits to a rich country on the periphery of Europe, feeling perhaps that they would lose more than they would gain.

Despite these individualities, recent demographic developments have followed the same path as in much of northern and western Europe. Mortality is low and life expectancy high: 75.4 years for men and 81.1 for women in 1996 (Council of Europe 1997). However, fertility is comparatively high, even though the total fertility rate has

been below one since 1975, and close to 1.9 for one decade. Demographic momentum (large relative numbers in the 25 to 35 age range) has, however, kept natural increase positive and has been helped by net immigration from outside Norway since the late-1960s.

The spatial distribution of the country's population is profoundly affected by its geography. Hansen (1989) refers to this as "one of vast peripheral or marginal regions", with 90 per cent of its territory being eligible for regional aid from the national government. Norway has been late, in European terms in urbanising, and its rural population peaked around 1950. This review of the evolution of the recent re-distribution of Norway's population relies heavily on Hansen (1989) account, which provides a comprehensive and accessible thesis. This suggests that the long run trend towards greater population concentration through movement from rural areas to town and cities has dominated the post-war period and that the de-concentration of the 1970s was both less marked than in other West European and North American countries with the 1980s seeing a recession away from this de-concentration.

In the 1950s, 1960s and 1970s rural population change was negative and urban positive (Hansen 1989, Table 6.1). The proportion urban grew from 52% in 1950 to 71% in 1980. There was in the 1960s a strong positive relationship between centrality, as measured by the size of the largest urban centre that can be reached within a given travel time, and population change. However, in the following decade the relationship was negative though moderate. In particular, the capital region centred on Oslo, which had experienced around one third of national population growth in the 1950s and 1960s saw its share fall to barely 10 per cent by 1975. By the end of the decade the population of the Oslo urban region had almost ceased growing. However, these counter-urbanising tendencies must be contrasted with those in countries such as the United Kingdom in the same period. Cities in Norway did not actually lose population; rural areas in the periphery continued to do so; counter-urbanisation was muted in form with population growth concentrated on intermediate size urban settlements of under 10,000 people.

The 1980s ushered in a partial reversal of this pattern with net in-migration to the East region (containing the capital) increasing rapidly and net out-migration from the peripheral regions increasing in size as well (Hansen 1989, Figure 6.1). The 1970s, suggests Hansen, were a decade of exception to the long run concentration of

population at regional and local levels. Population concentrated in the capital region, the interior East and the coastal East. The peripheral regions of the West, Trøndelag and the North returned to heavy losses. The South remaining a gaining region because of the employment opportunities afforded by the oil industry centred on Stavanger and along the coast. This redistribution was effected both by internal migration and by external. External migration gains were highest in the capital region and the South but also compensated a little for internal migration losses in the peripheral regions.

Hansen (1989, Figure 6.3) also examines the pattern of inter-regional migration flows in four five year periods: 1966-70, 1971-75, 1976-80, 1980-85. The directions of net flow were from periphery to the East throughout the five year periods. What differed between them was the volume of flows: high the later 1960s and the first half of the 1980s, but lower in between in the 1970s. The picture in the early and middle 1980s is of increasing growth of urbanisation in Norway, stagnation of middle rank towns away from the East core of the country and severe decline in peripheral rural areas. The diminution of natural increase means that this component can no longer compensate for rural population losses through migration. In more confident times (the 1960s and 1970s), public investment in schools, health, community and transport infrastructure was use to counterbalance the concentration tendency but Hansen anticipates a gloomy outlook for the periphery in demographic terms in the 1990s. This report picks the story where he left off and compares the situation of the mid-1980s (1984) with that in the mid-1990s (1994).

During the last decade, after Hansen's report was completed, there have been two important shifts. In the late 1980s the country experienced significant unemployment for the first time since World War II. Net migration from remote to central regions came almost to a halt. The unemployment rate was as pronounced in the central as in the remote areas; those living in remote areas had on average rather cheap houses, and could supply themselves with products from agriculture and fishing. In the late 1980s, a number of transfers were made to increase the attractiveness of living in remote regions, especially in the North.

The labour market started to improve in 1992-1993, and net migration to the capital region increased again. The losses from the Northern periphery have never been as high as in 1996-97, and there is no longer a big birth surplus to protect the population numbers from declining. The population redistribution of 1994, which will

be described later in the paper, has been increasing since then. Thus, conclusions drawn on the basis of migration pattern in two single years, will be very much dependent upon where these two years are positioned on the "migration cycles" of the country. The three-four years following 1994 would all have shown even stronger centralisation.

The overall internal mobility (migrants per 1000 population) has not changed much in the port-war period, and has had a declining trend in the last decade. This figure is influenced by the ageing of the population, and by the reduced number of municipalities. Statistics Norway has tried to estimate the mobility net of these effects. The age-specific mobility pattern in the early 1950s gave an expected number of moves across municipality boundaries of 4 for women and 3 for men. In 1996 it was around 2.5 for both sexes. This reduction is to a smaller degree influenced by the reduced number of municipalities, but the main effect is due to decline in intrinsic mobility.

3. DATA AND METHODS USED

Norway is a country which has one of the most advanced demographic data collection systems in Europe, to which methodological researchers often turn for detailed life and migration history information (Courgeau and Baccaïni 1997). The first part of this section describes the key features of the population registration system from which the data used in this study are drawn. The second part then describes the nature of population and migration information available for municipalities and the particular variables selected for use in this study. The third part discusses the geographies used in the study and methods employed to construct a geographically consistent data series for municipalities for two years, 1984 and 1994, separated by ten years of considerable geographical reorganisation. Because there are so many spatial units involved it is necessary to develop and use various classification schemes which group municipalities into classes. The fourth part of this report section reviews the classifications adopted. The final part briefly describes the source for the cartography employed in the study and the mapping strategies employed.

3.1 The population registration system

Norway maintains a population register through the requirement that all persons must register changes of address with their local *kommune* (municipality) office. The records are collated nationally in a Central Population Register (CPR), and maintained in electronic form. The register is established for administrative purposes, local and national, with the tax authorities as administrators, on local as well as on central level. High quality registers can be maintained only through frequent and comprehensive use. It is difficult for purely statistical registers to retain good quality for a longer period. As almost every contact with municipal and governmental administration involves your register status, the quality of the register is supposed to be very high for statistical purposes (Statistics Norway 1994b). The 1989 Statistical Act gives Statistics Norway the right to exploit all administrative registers for purely statistical purposes, and they have also the right to be consulted before any substantial changes are made in these registers.

The registration is based on the use of a unique personal identification number (PIN). Such a number is allocated to every person registered in the CPR. It is kept

unchanged throughout a person's lifetime, and it is not "re-circulated". This central registration system with the PIN was introduced nationally in 1964, based on local registers from 1946 or earlier. Although everyone has to inform the register about any change of residence, the data quality on within-municipal migrations are considered to be inferior, and such statistics are not produced on a regular basis. The registration system provides a wide range of up to date statistics on migration, both within the country (inter-municipality) and for external movement. All other aspects of population statistics are produced from the same system, and the PIN code is used in all kinds of individual statistics on persons. Subject to the consent of the Data Inspectorate, a wide range of record linkages can be produced for statistical and analytical purposes. For the analysis of internal migration, individual migration biographies are constructed from 1964. All biographies are linked to Census information 1960-1990, and to registers showing income, education and labour force participation (as discussed in Courgeau and Baccaïni 1996).

Some minor problems affect the data, which are common to many countries. The main principle in defining place of residence is where "daily night rest" takes place, that is, your place of residence where you spend most of the nights in the week. When changing residence for more than six months, you will be registered as a migrant. Certain groups register, in accordance with exceptions in the registration rules, as living in locations where they do not spend most of their nights: unmarried students, for example, will normally remain registered in their parental household even though they may reside elsewhere. The same goes for weekly commuters between place of work and the residence of their family. Between the two years we will be studying, the status of the growing number of asylum seekers has changed. Since March 1987 they have been viewed as in-migrants to Norway and hence as residents, while their applications for permanent stay are considered. In 1984, however, the number of asylum applicants was negligible. The consequence is a major increase in the number of inhabitants (partially real, partially apparent) for some municipalities that house reception centres for asylum seekers. In 1994, a decision was made *not* to include asylum seekers before they were granted permit to stay, or had special needs for a PIN, such as, for instance, health care or when they required an early permit for work. There is also the problem of failure of emigrants to de-register properly on embarkation for foreign countries. Statistics Norway (1994b) suggests that at least 10

thousand immigrants are still on the register even though they have left the country, the majority from Western countries. These numbers are to some extent balanced, however, by equivalent numbers of undocumented immigrants, estimated to number 4 to 5 thousand by the police. Most of these illegal immigrants come from Third World countries, and are resident in Oslo.

3.2 Variables used

The report concentrates on analysis of population change and change due to migration. Both types of data were supplied to the Council of Europe project by Statistics Norway at no cost; for which service we are very grateful.

3.2.1 Population data

The population data used are for the 1st January in 1984 and the 1st January in 1994 for 454 and 435 *kommuner* respectively. We describe in section 3.3 what we did to convert these data to a comparable set of spatial units. The population counts for each municipality were broken down into five-year ages from 0-4 to 90-94 with a final age group of 95+. Information was provided for both sexes. All of the figures for aggregations of municipalities are built up from this base, and agree with the counts published in the official handbooks (e.g. Statistics Norway 1994b), except where some minor interpolation was used to disaggregate one 1994 municipality population back to its constituent municipal parts in 1990 for purpose of comparison and mapping. In general, we do not examine the variation in populations and migrations by sex, to keep the analysis within reasonable bounds. However, all analyses were prepared for males and females as well as persons, and a future report could examine gender differences.

3.2.2 Migration data

Migration available from the population registration system come in three forms: *intra-municipal migration*, which is a change of residence within a municipality; *internal migration*, which is change of residence across a municipal boundary; and *external migration*, which between a municipality and a foreign country. The focus in this report is on internal migration though we do use some external migration data (in all age aggregations). The ability of the system to register intra-municipal moves is probably improving, but data on such moves are not included in this report.

Internal migration data are analysed in two forms: (1) as total arrivals and departures by age and sex, and (2) as flows of persons between origin municipality and destination municipality. However, the migration data were conveniently supplied as records in a very large multidimensional table. Each record in the data file supplied (1) the code for the origin municipality, (2) the code for the destination municipality, (3) a sex code, (4) a five year age code and (5) a count of the number of migrations (events) from origin and destination. FORTRAN programs were written to transform the data to a common geography and to aggregate to the standard set of six fifteen year age groups used in this analysis and that in other case studies: (1) 0-14 years, (2) 15-29 years, (3) 30-44 years, (4) 45-59 years, (5) 60-74 years and (6) 75 and over. These data were then used to produce total in- and outflows by age for municipalities and higher aggregations, and tables of flows between areas or municipality types. The outputs from the FORTRAN programs were used with the SPSS statistical package for further analysis. None of the problems of aggregation arising from having only knowledge of total inflows and outflows at the smallest spatial scale therefore arose (see Rees, Van Imhoff, Durham and Kupiszewski 1997 for a discussion). As the data do not contain any other information than sex, age and place of origin and destination, they were not subject to any confidentiality protection device and so could be easily and directly compared with published counts. With respect to data processing strategy, in retrospect, it would have been more efficient to have written a simple computer program to expand the data set to a set of individual records and to have used these directly in a statistical package.

There are a couple of features of these migration and associated population data for municipalities, which must be borne in mind which affect and restrict analysis. These features are (1) the treatment of age when using populations at risk to compute migration rates and (2) the effect of changes in municipal boundaries on derived migration indicators. These features are discussed in turn.

Age definitions in the computation of migration rates. Age is measured at the time of migration and so refers to the period-age Lexis diagram (age-time) plan suitable for occurrence-exposure rate calculation. To compute migration rates we need to adopt a computation method for the population at risk. In the analysis of this report we use the start of the year start populations. Strictly speaking, the population at risk should

be defined as the average of start and end of year populations. So a small upward bias may occur when the municipal population is increasing and the reverse when it is declining. However, given the wide range of net migration rates we report later in the paper, this should not be a major bias.

The effect of changes in municipal boundaries on migration indicators. As explained in section 3.3 below it is necessary to aggregate migration data for 1984 and 1994 to a common set of 1990 boundaries for mapping and temporal comparison. When municipalities are subject to perfect aggregation (two or more areas are merged to form a new aggregate area) then no bias in the resulting statistics occurs. However, where imperfect aggregation (a fraction of an area is added to another) is involved, estimation bias occurs. Fortunately, this problem was confined to five municipalities in Østfold, which existed in 1990 but had been amalgamated by 1994.

3.3 Geographic units adopted

To identify the processes of spatial redistribution, it was necessary to study population change and internal migration on as fine a spatial scale as possible. The only practical candidate for geographic unit was the *kommune* or municipality, which is the smallest unit of local government in Norway. This unit varies considerably in population size ranging from a maximum of 477781 residents in 1994 in the municipality of Oslo (and was over 500 000 in mid-November 1997) to a minimum of 217 in the municipality of Utsira in the *fylke* (county) of Rogaland. Information exists at sub-municipality level for total population by age and sex, but is not easily available, or with good enough quality for migration analyses.

Because of the ongoing process of municipal restructuring, the total number of municipalities and/or the municipal borders change from year to year. On the whole, there is a trend towards reducing the number of municipalities, especially those surrounding cities with narrow borders: several small municipalities are merged with the central city into one large municipality. Between 1984 and 1994 the total number of municipalities fell from 454 to 435.

In order to compare population redistribution processes in one year with another, it is necessary to adopt common spatial units. Because the digital boundaries available (see section 3.5) referred to the 439 municipalities in existence in 1990, it was

decided to standardise on this geography and to convert the municipality statistics for 1984 and 1994 to 1990 boundaries. To effect this conversion two look up tables were constructed: a 1984 to 1990 table and a 1994 to 1990 table, using Statistics Norway (1997a), which provided details of the amalgamation of municipalities. This publication contains dates of birth and death of municipalities and of boundary changes. In the case of boundary changes where the municipality was "split up", information on the population contained in the split sections is provided. This information was used to assign an old municipality that had "died" to the new municipality that had been "born" which gained the largest share of the old municipality's population. The resulting assignments in the look up table are therefore "best fit" matches.

The 1984 to 1990 table lists the 454 municipalities and provides codes and names for the corresponding 1990 municipality. A majority of municipalities did not change. A larger set of municipalities was amalgamated to form larger units. Table 1 provides selections of municipalities in the county of Østfold from the look up table showing the different kind of changes that occurred. The municipality of Halden, code number 0101, is an example of a municipality which does not change. Its neighbouring municipality of Sarpsborg, code 0105, is in 1990 an amalgamation of 0102 Sarpsborg in 1984, 0114 Varteig, 0115 Skjeberg and 0130 Tune. A small FORTRAN program was written that reads in the look up tables codes and then the 1984 population and migration variables for 1984 municipalities and uses the former to aggregate the latter.

The 1990 to 1994 look up tables lists the 439 municipalities in 1990 and provides codes and names for the corresponding 1994 municipality. However, in this case a weight is added to the file to indicate the fraction of the 1994 municipality population that corresponds to the 1990 unit when several units have been joined together. Table 2 shows the only entries from this look-up table which were not unity. The weights, based on 1993 populations of the municipalities, are used to break down the 1994 populations into their 1990 municipality components. For example, 18.52% of the 1994 population of Fredrikstad, a municipality in Østfold, is decomposed into the Borge municipality while other shares are assigned to Fredrikstad (1990), Kråkeroey, Onsøy and Rolvsøy municipalities. Another FORTRAN program was used to carry out the disaggregation.

Table 1: Part of a look up table for converting 1984 municipality information to 1990 areas

1984 code number	1984 name	1990 code number	1990 name
0101	Halden	0101	Halden
0102	Sarpsborg	0105	Sarpsborg
0103	Fredrikstad	0106	Fredrikstad
0104	Moss	0104	Moss
0111	Hvaler	0111	Hvaler
0113	Borge	0113	Borge
0114	Varteig	0105	Sarpsborg
0115	Skjeberg	0105	Sarpsborg
0118	Aremark	0118	Aremark
0119	Marker	0119	Marker
0121	Rømskog	0121	Rømskog
0122	Trøgstad	0122	Trøgstad
0123	Spydeberg	0123	Spydeberg
0124	Askim	0124	Askim
0125	Eidsberg	0125	Eidsberg
0127	Skiptvet	0127	Skiptvet
0128	Rakkestad	0128	Rakkestad
0130	Tune	0105	Sarpsborg

Table 2: A look up table for disaggregating the 1994 Fredrikstad municipality to the 1990 areas

1994 code	1994 name	Weight	1990 code	1990 name
0106	Fredrikstad	0.1852	0113	Borge
0106	Fredrikstad	0.4090	0106	Fredrikstad
0106	Fredrikstad	0.1142	0133	Kråkeroey
0106	Fredrikstad	0.2006	0134	Onsøy
0106	Fredrikstad	0.0910	0131	Rolvsøy

Notes: The weight is based on the 1993 population (to the nearest 100).

3.4 Classifications

Section 4 of the report presents the municipality patterns of population change and migration in detail. However, to interpret these patterns we make sense of the information by classifying municipalities in various ways. The regional and county hierarchies employed in Norway to analyse population dynamics are discussed first. Then the official classifications developed over several decades by Statistics Norway are discussed.

3.4.1 The regional hierarchy

Figure 1 shows the organisation of Norwegian regions as used by Courgeau and Baccaïni (1997). Official statistics are normally provided by Statistics Norway for

counties and regional classifications differ depending on the analysis undertaken. Hansen (1989) also uses a five-region division but groups the capital region with East in many analyses and distinguishes Trøndelag from the rest of the Centre-North region used in this report.

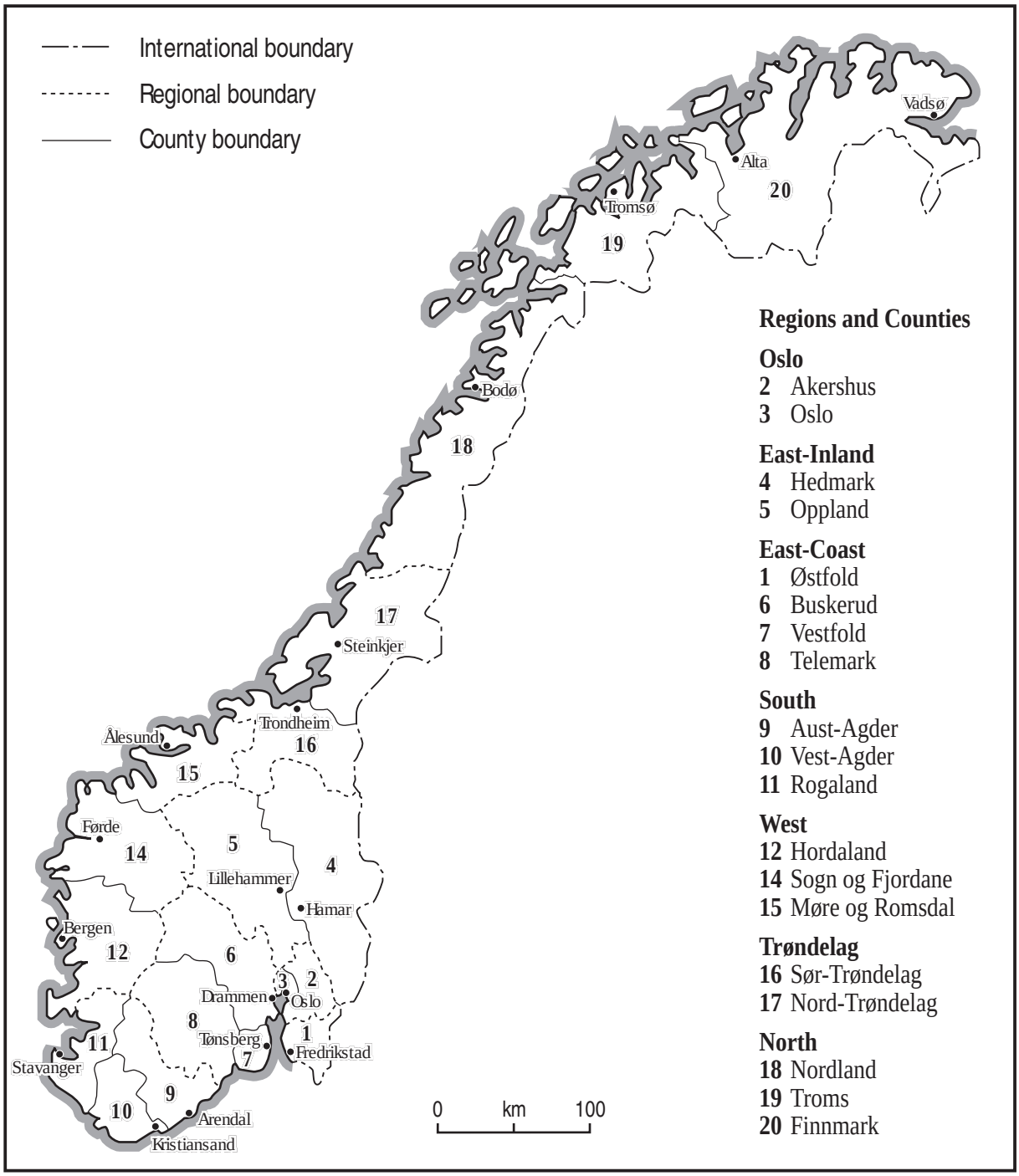
The main intermediate spatial unit in Norway is the *fylke* or county, of which there are nineteen. Each county is assigned a code shown in Figure 1. The numbers range up to 20, because the number 13 is avoided.

The principal units of local government in Norway are the *Kommuner* or municipalities (also referred to as communes). As mentioned previously, these units vary enormously in size and have been undergoing a continuous process of consolidation, driven by the need to make local government more efficient. The average population of a municipality has increased from about 9.1 thousand inhabitants in 1984 to 9.7 thousand residents in 1994. The median size is around 5 000 residents, 100 have less than 2 000 and 100 more than 10 000. By way of comparison, we note that the average population of the smallest units (wards/postal sectors) used in the United Kingdom case study were around 5 thousand people in 1991 and the equivalent average for Italian communes in 1994 was around 7 thousand. Norwegian municipalities resemble Dutch and Italian communes in function and range of sizes while UK wards/postal sectors were more uniform in size and subdivisions of larger local government units.

3.4.2 Municipality classifications

We use 439 municipalities as the basic study unit in this report. However, it is difficult to absorb information, even when plotted on maps (as in section 4), for so many units. To make sense of population redistribution and internal migration, it is necessary to group municipalities into significant classes. One of the most significant processes affecting population distribution over the century has been urbanisation, the concentration of people into towns and cities particularly the largest, followed in some countries by significant de-concentration both locally (suburbanisation) and down the urban hierarchy (counterurbanisation). Crosscutting such size/density classifications are those based on the economic functions of areas, reflecting how they earn their living.

Figure 1: The regions and counties of Norway



Norway is fortunate in having available several classifications of its municipalities, which has been developed over several decades and draws heavily on census data. The classifications we use in this report are as follows. Statistics Norway (1994a) uses three specialist classifications: (1) Industry Link, (2) Density and (3) Centrality. Each municipality is assigned three corresponding codes. These are then synthesised into one overall, general classification.

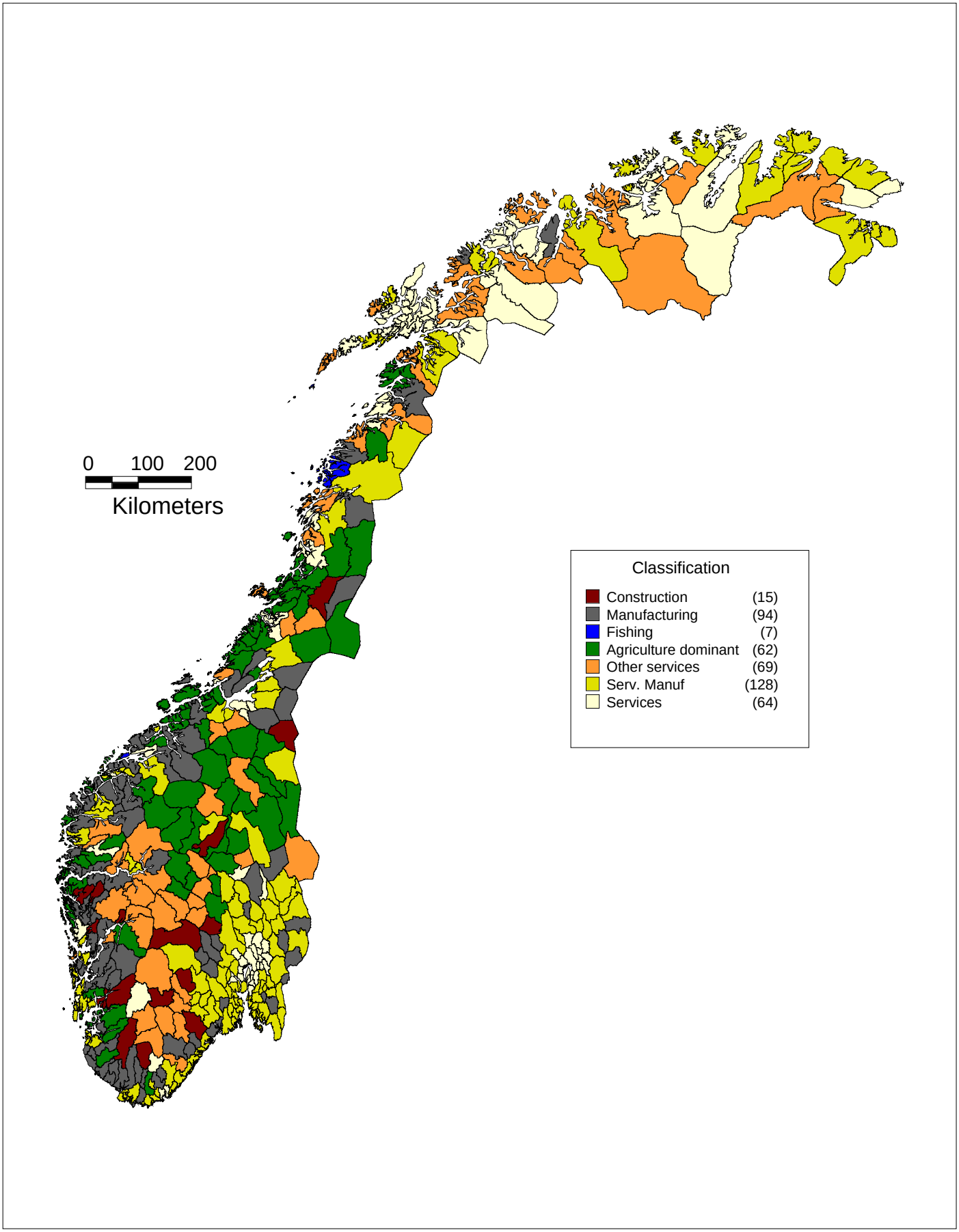
Industry Link. All information is based on the resident population, so this link shows the industrial structure of those living in the municipality, not of those working here, or of the enterprises registered there with their main office or with their production. Table 3 lists the 22 categories which are set out in the 1994 classification adopted for analysis in this report; Figure 2 maps out the classification. They reflect the economic base of each municipality: only a few examples exist of the most specialised categories (single letters L Agriculture, I Industry, A Construction). In fact, just nine of the 22 types have more than 10 members and cover 94% of Norway's population (see Table 13). Oslo and its surrounding municipalities stand out as dominated by services. There are also examples of this category in northern Norway.

Table 3. Statistics Norway industry link classification of municipalities

Code	Full label	Abbreviation	Index
L	Agriculture	Agriculture	1
LF	Agriculture, Fishing, sealing, & whaling	Agric, Fishing	2
LI	Agriculture, Manufacturing	Agric, Manuf	3
LA	Agriculture, Construction	Agric, Constr	4
F	Fishing, sealing & whaling	Fishing	5
FL	Fishing, sealing & whaling, Agriculture	Fishing, Agric	6
FI	Fishing, sealing & whaling, Manufacturing	Fishing, Manuf	7
FA	Fishing, sealing & whaling, Construction	Fishing, Const	8
I	Manufacturing	Manufacturing	9
IL	Manufacturing, Agriculture	Manuf, Agric	10
IF	Manufacturing, Fishing, sealing & whaling	Manuf, Fishing	11
IA	Manufacturing, Construction	Manuf, Const	12
A	Construction	Construction	13
AL	Construction, Agriculture	Const, Agric	14
AF	Construction, Fishing, sealing & whaling	Const, Fishing	15
AI	Construction, Manufacturing	Const, Manuf	16
TL	Services, Agriculture	Serv, Agric	17
TF	Services, Fishing, sealing & whaling	Serv, Fishing	18
TI	Services, Manufacturing	Serv, Manuf	19
TA	Services, Construction	Serv, Const	20
TT	Services	Services	21
IE	Manufacturing unilateral	Manuf unilateral	22

Source: Statistics Norway (1994a).
Notes: 1. Code = official Statistics Norway code.
2. Description: full details in Statistics Norway (1994a).

Figure 2: The industry link classification of Norwegian municipalities



Municipalities with a mixture of service and manufacturing functions surround the principal service centres. Manufacturing dominated municipalities are found around the coast and in the outer parts of the Oslo region. Municipalities where farming is dominant generally occupy the interior of the country (northern Hedmark and Oppland) and the Centre-North (Sør-Trøndelag and Nord- Trøndelag).

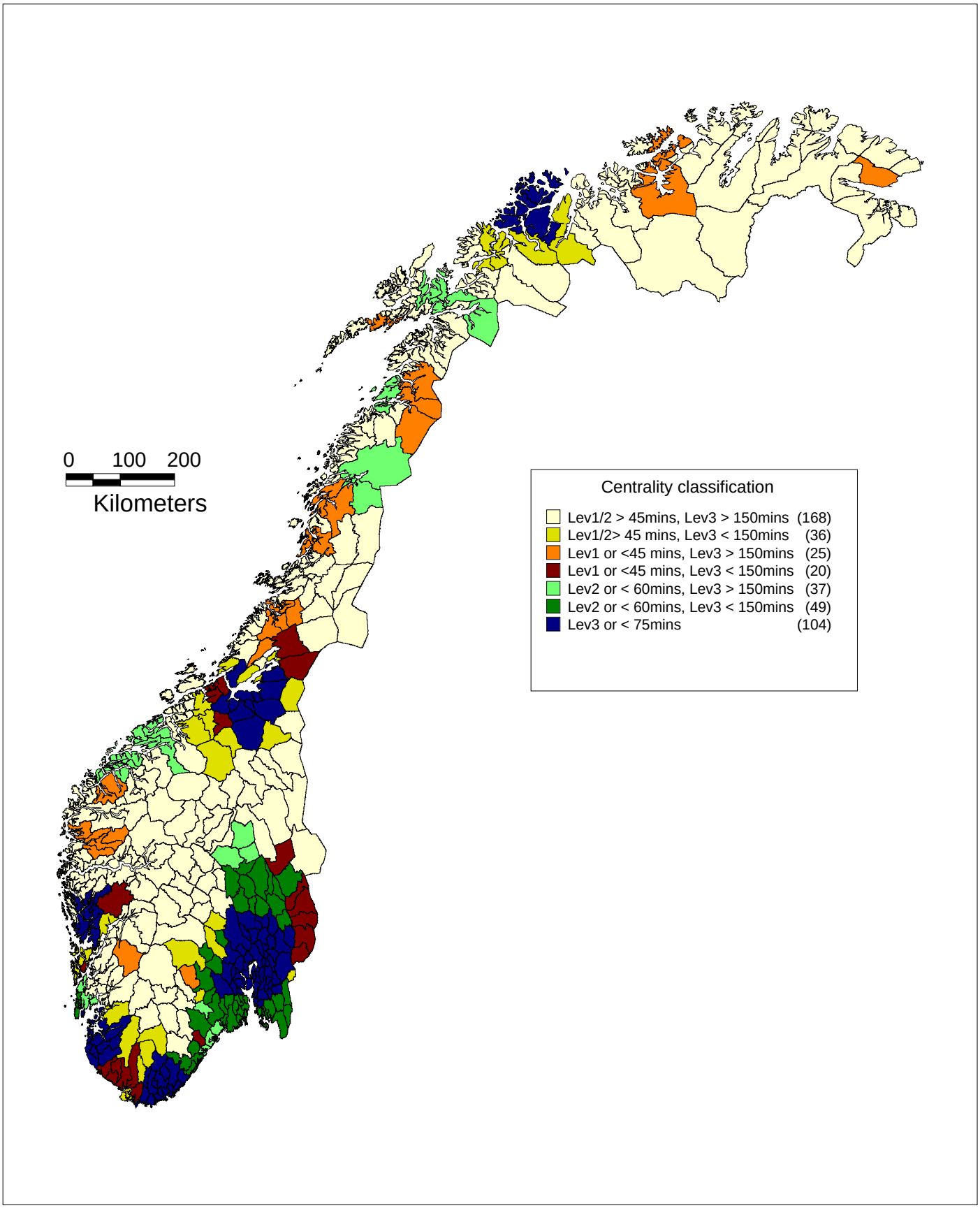
Centrality. This is a measure of a municipality's geographical position viewed in relation to a centre with higher order central functions are found. Urban centres are divided into three levels: (1) on level 1 they normally have between 5 and 15 thousand inhabitants, (2) on level 2 between 15 and 50 thousand residents and (3) on level 3 the centres house 50 000 people or more, although consideration is given to the type of functions that centres perform. The level 3 settlements are Oslo, Kristiansand, Stavanger, Bergen, Trondheim and Tromsø. The level 2 settlements are Halden, Sarpsborg, Fredrikstad, Moss, Hamar, Lillehammer, Gjøvik, Drammen, Kongsberg, Horten, Tønsberg, Sandefjord, Larvik, Porsgrunn, Skien, Arendal, Sandnes, Hauesund, Molde, Kristiansund, Ålesund, Bodø, Narvik, Mo i Rana and Harstad. There are some 50 Level 1 centres. Municipalities are then classified according to the travel time incurred to centres of different levels as specified in Table 4 while Figure 3 maps the classes. The centrality classification emphasises the accessibility of municipalities clustered around the largest cities and towns of Norway - Oslo, Kristiansand, Stavanger, Bergen, Trondheim and Tromsø. The accessibility is measured in two ways: for daily commuting trips (inside or outside commuting possibilities for centres on different levels, indicators 0-3) and for daily service trips (inside or outside travelling distance of 2 1/2 hours, for Oslo 3 hours to a centre of level 3). The point of departure that the commuting distance is much shorter than can be accepted for a service trip that can be made in one day. This is a very sophisticated measure of accessibility to urban functions, which is tailored, like the density measure, to the particular features of Norway's mountain, valley and fjord topography. It would not make sense to use crow flight distance as an accessibility index. Travel times are based on the fastest means of surface transport.

Table 4: Statistics Norway centrality classification of municipalities

Code	Description	*Index*
0B	Levels 1 or 2 not within 45 minutes, Level 3 not within 150 minutes	1
0A	Levels 1 or 2 not within 45 minutes, Level 3 within 150 minutes	2
1B	Level 1 or within 45 minutes, Level 3 not within 150 minutes	3
1A	Level 1 or within 45 minutes, Level 3 within 150 minutes	4
2B	Level 2 or within 60 minutes, Level 3 not within 150 minutes	5
2A	Level 2 or within 60 minutes, Level 3 within 150 minutes	6
3A	Level 3 or within 75 minutes	7

Source: Statistics Norway (1994a).
Notes:
1. Code = official Statistics Norway code.
2. Description: full details in Statistics Norway (1994a).

Figure 3: The centrality classification of Norwegian municipalities



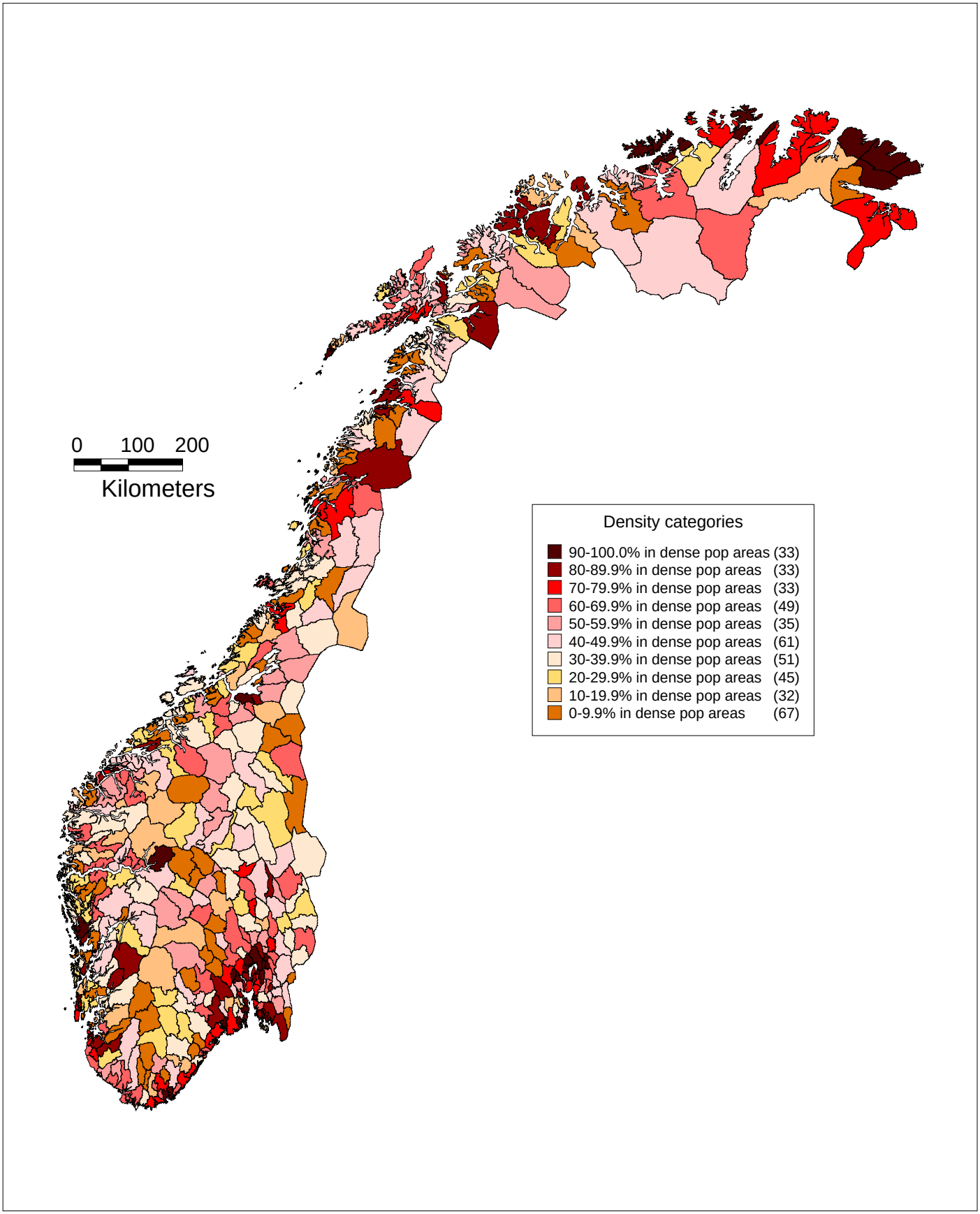
Density. Table 5 lists the ten categories for this classification, all of which have reasonable numbers of municipalities and Figure 4 shows the spatial distribution of these density categories. Density is not treated as population divided by area because much of Norway's territory is devoid of habitation and density measures would depend on which municipalities encompassed "empty" mountains and which did not. Rather, careful attention is paid to the settlement nucleations in each municipality and the percentage of the population that lives in densely populated areas is computed and used to form the classes. The density measure captures the degree to which population is concentrated in dense settlements rather than indicating the ratio of population to land area. Norway is, on the latter measure, one of the least populated countries in Europe, with an average density of 14 persons per km^2 (Statistics Norway, 1997, p.22). The map shows that the densest population concentrations are in the Oslo region and around the coast. It is of interest, however, to note that municipalities in north Norway record dense urban concentrations - most people living in the small urban settlements with the rest of the municipality (almost) uninhabited.

Table 5: Statistics Norway density classification of municipalities

Group	Description	Abbreviation	*Index*
0	0-9.9% in densely populated areas	L0	1
1	10-19.9% in densely populated areas	L1	2
2	20-29.9% in densely populated areas	L2	3
3	30-39.9% in densely populated areas	M3	4
4	40-49.9% in densely populated areas	M4	5
5	50-59.9% in densely populated areas	M5	6
6	60-69.9% in densely populated areas	M6	7
7	70-79.9% in densely populated areas	H7	8
8	80-89.9% in densely populated areas	H8	9
9	90-100.0% in densely populated areas	H9	10

Source: Statistics Norway (1994a).
Notes:
1. Group = official Statistics Norway code.
2. Description: full details in Statistics Norway (1994a).
3. *dnum* = index used in SPSS programs.
4. The abbreviation is used in later tables.

Figure 4: The density classification of Norwegian municipalities



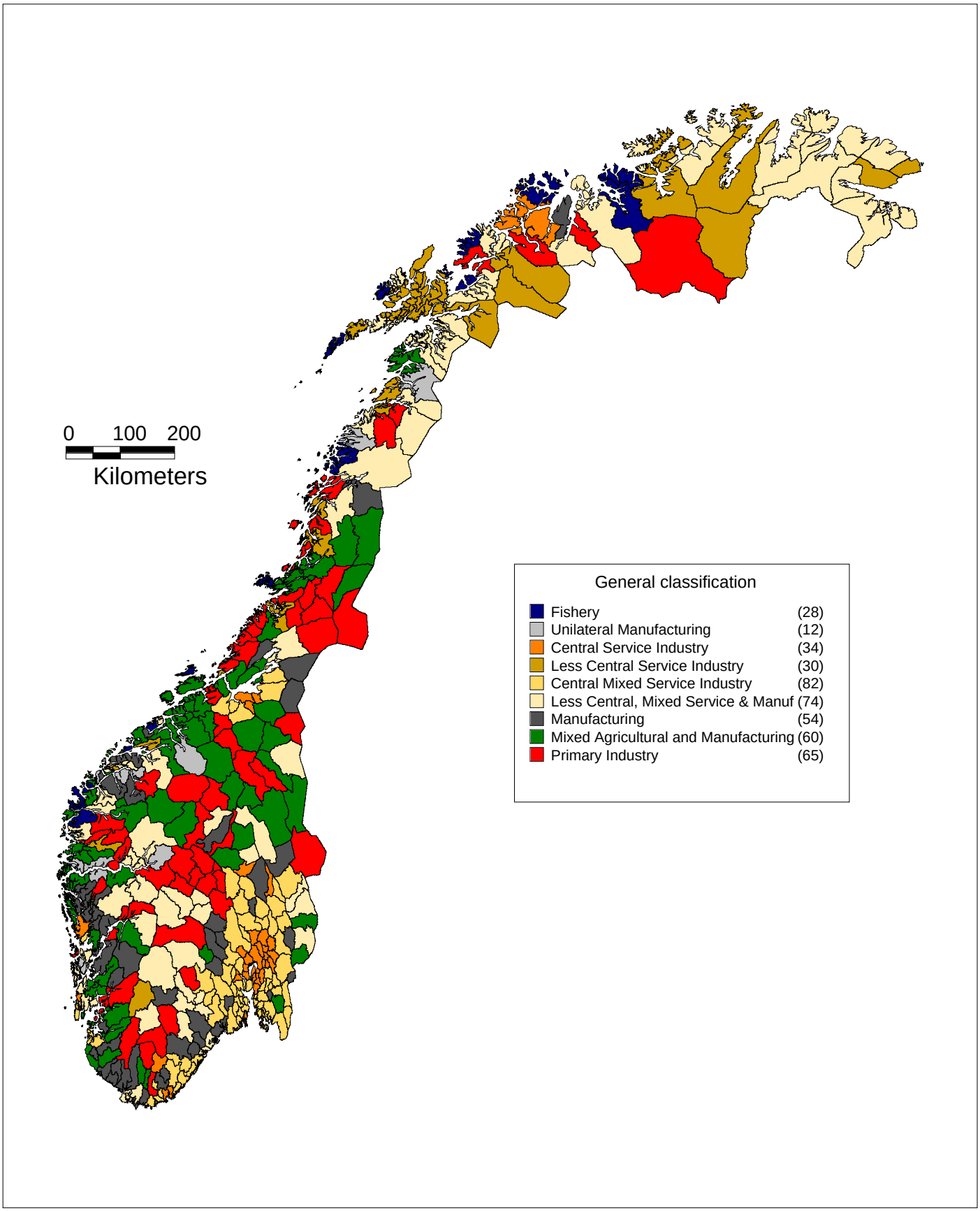
The main classification. The three previous classifications are used by Statistics Norway to compose a summary or synthetic classification (Table 6 and Figure 5). The main classes are the first seven, with the last two being distinguished to identify vulnerable municipalities dependent on a single industry or an activity dependent on fluctuating resources (fishing). Class 1 consists of *Primary industry municipalities;* Class 2 is made up of *Mixed agriculture and manufacturing municipalities;* Class 3 are *Manufacturing municipalities;* Class 4 comprise *Less central, mixed service industry and manufacturing municipalities*; Class 5 is made up of *Central, mixed service industry and manufacturing municipalities*; Class 6 involves *Less central service industry municipalities* while Class 7 embodies *Central service industry municipalities.* Full details of the criteria for membership of the groups is provided in Statistics Norway (1994a). Essentially, as one ascends the classification the economic structure becomes more advanced and less dependent on raw material harvesting and processing. The spatial features of the three single dimension classifications are combined in Figure 5. The south eastern part of the country is dominated, for example, by the "Central service industry" type of municipality while remoter areas fall into more specialised categories where farming, fishing or forestry are dominant.

Table 6: Statistics Norway general classification of municipalities

Code	Description	*knum*
K1	Primary industry municipalities	1
K2	Mixed agriculture and manufacturing municipalities	2
K3	Manufacturing municipalities	3
K4	Less central, mixed service industry and manufacturing municipalities	4
K5	Central mixed service industry and manufacturing municipalities	5
K6	Less central service industry municipalities	6
K7	Central service industry municipalities	7
K8	3E=Manufacturing municipalities unilateral i.e. dominated by one industry. Often included in K#	8
K9	1F=Fishery municipalities, often included in K1	9

Source: Statistics Norway (1994a).
Notes:
1. Code = official Statistics Norway code.
2. Description: full details in Statistics Norway (1994a).
3. k*num* = index used in SPSS programs.
4. The Code is used in later tables.

Figure 5: The general classification of Norwegian municipalities



3.5 Mapping methods

The key indicators of population change and net internal migration for municipalities are considered and compared using thematic maps. We acquired administrative area boundaries from the UNEP/GRID-Arendal project. These data were kindly provided by Sindre Langasas of the Department of Systems Ecology, Stockholm University, Manager of the Baltic/Nordic Region of the project, which has constructed a variety of digital maps for Northern Europe. The Mercator-like projection used in the maps exaggerates the area taken by northern Norway relative to southern Norway. However, we note that conventional maps tend to rotate the country to align the vertical dimension of the page with the western coast.

4. SPATIAL PATTERNS OF POPULATION CHANGE

This section of the report begins our analysis of internal migration and regional population dynamics in the Norway by looking at population shifts and its components by age for 1984 and 1994 for the simplest division of the country into five regions. It is important to gain an understanding of age and cohort shifts. In the subsequent analysis we concentrate on net internal and external migration, the key component for effecting redistribution (though not necessarily absolute change) at successively smaller scales. We will remind the reader of the stochastic element when we are comparing the situation in two single years, taken out of their historical context.

4.1 Population shifts and components of change for regions

Table 7 sets out population numbers and percentage shares of the national population for the five regions. Oslo and the East (counties 1-8), which constitute the core of the country, contain just under half of the Norwegian population. The rest of the country, peripheral regions with some important urban centres like Kristainsand, Stavanger, Bergen, Trondheim and Tromsø, make up the other half. All regions are growing in population still. The absolute and percentage shifts together with the change rates reported in Table 11 suggest that Hansen was right in suggesting a renewed urbanisation and concentration of population in the capital region. Oslo's share of the Norwegian population increases by 1 percent overall between 1984 and 1994. The rest of the core loses share as do the West and Centre-North. The gains of the South can be attributed to the employment generating and migrant attracting role of the oil industry, the onshore bases for which are most important in that region.

When the population picture is examined for the different age groups the picture changes somewhat because of the effects of cohort replacement. So, for example, the first two age groups and the retirement ages experience loss due to replacement of the 1984 population by smaller cohorts over the decade to 1994. Reduced numbers in retirement ages are due to the effect of the significant interwar fertility decline (yearly number of births was more than 70 000 in 1920, and only 42 000 in 1932). Migration balances some of this cohort effect in ensuring that these groups still grow in size in the Oslo and South regions. So the story is one of renewed centralisation coupled with resource led shifts.

Table 7: Populations, percentage shares by age and change, Norway, regions, 1984 and 1994

Region	Year	Age Groups 0-14	15-29	30-44	45-59	60-74	75+	Total
		POPULATIONS (1000s)						
Oslo	1984	145	192	182	128	126	55	827
	1994	164	197	216	155	114	62	907
	Change	19	5	34	27	-12	7	80
East	1984	233	256	238	181	187	79	1175
	1994	216	254	252	209	174	96	1202
	Change	-17	-2	14	28	-13	17	27
South	1984	129	129	111	76	74	30	549
	1994	131	136	130	93	69	39	599
	Change	2	7	19	17	-5	9	50
West	1984	163	173	144	104	105	49	740
	1994	157	171	162	120	97	59	767
	Change	-6	-2	18	16	-8	10	27
Centre-North	1984	183	203	171	120	117	49	843
	1994	168	194	182	139	108	59	850
	Change	-15	-9	11	19	-9	10	13
NORWAY	1984	854	953	846	609	611	261	4134
	1994	836	952	941	717	564	316	4325
	Change	-18	-1	95	108	-47	55	212
		PERCENTAGE SHARES						
Oslo	1984	17.0	20.1	21.5	21.0	20.6	21.1	20.0
	1994	19.6	20.7	23.0	21.6	20.2	19.6	21.0
	Change	1.4	0.6	1.5	0.6	-0.4	-1.5	1.0
East	1984	27.3	26.9	28.1	29.7	30.6	30.3	28.4
	1994	25.8	26.7	26.8	29.1	30.9	30.4	27.8
	Change	-1.5	-0.2	-1.3	-0.6	0.3	0.1	-0.6
South	1984	15.1	13.5	13.1	12.5	12.1	11.5	13.3
	1994	15.7	14.3	13.8	13.0	12.2	12.3	13.8
	Change	0.6	0.8	0.7	0.5	0.1	0.8	0.5
West	1984	19.1	18.2	17.0	17.1	17.2	18.8	17.9
	1994	18.8	18.0	17.2	16.7	17.2	18.7	17.7
	Change	-0.3	-0.2	0.2	-0.4	0.0	-0.1	-0.2
Centre-North	1984	21.4	21.3	20.2	19.7	19.1	18.8	20.4
	1994	20.1	20.4	19.3	19.4	19.1	18.7	19.7
	Change	-1.3	-0.9	-0.9	-0.3	0.0	-0.1	-0.7
NORWAY	1984	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	1994	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Computed from population statistics supplied by Statistics Norway.

4.2 Net internal and external migration patterns for regions and counties

4.2.1 Patterns for regions

The main driver of departures from the national trend of population development is migration. Table 8 sets out the absolute contributions of internal and external migration to population change, while Table 9 provides the internal migration figures relative to the underlying population base, that is, the internal migration rates. The top panel of Table 8 provides information on internal migration while the bottom panel shows the equivalent external migration figures.

Table 8: Migration components of change by age, Norway, regions, 1984 and 1994

Regions	Year	Age Groups						
		0-14	15-29	30-44	45-59	60-74	75+	Total
		NET INTERNAL MIGRATION						
Oslo	1984	-290	4560	221	-77	-458	-92	3864
	1994	-682	4465	-109	-140	-321	-79	3134
East	1984	1353	-1829	933	394	572	144	1567
	1994	1034	-2034	581	171	314	67	133
South	1984	337	261	293	111	75	15	1092
	1994	280	58	314	107	68	43	870
West	1984	-150	-1232	-212	-138	-36	-23	-1791
	1994	0	-992	-119	15	-23	-12	-1131
Centre-North	1984	-1250	-1760	-1235	-290	-153	-44	-4732
	1994	-668	-1509	-732	-165	-51	-14	-3139
NORWAY	1984	0	0	0	0	0	0	0
	1994	-36	-12	-65	-12	-13	5	-133
		NET EXTERNAL MIGRATION						
Oslo	1984	551	774	239	13	-53	-4	1520
	1994	579	1573	605	40	18	13	2828
East	1984	177	123	23	17	-36	4	308
	1994	621	542	434	183	102	24	1928
South	1984	366	242	503	69	-6	12	1186
	1994	210	154	-49	-85	41	0	271
West	1984	198	260	87	0	8	10	563
	1994	314	237	22	37	33	6	649
Centre-North	1984	72	145	15	-15	-25	-8	184
	1994	488	512	454	171	57	-3	1679
NORWAY	1984	1364	1544	867	84	-112	14	3761
	1994	2212	3018	1486	346	251	40	7353

Source: Computed from population and migration statistics supplied by Statistics Norway.

Table 9: Net internal migration rates by age, Norway, regions, 1984 and 1994

Regions	Year	0-14	15-29	30-44	45-59	60-74	75+	Total
		NET INTERNAL MIGRATION RATES PER 1000 POPULATION						
Oslo	1984	-2.0	23.7	1.2	-0.6	-3.6	-1.7	4.7
	1994	-4.2	22.7	-0.5	-0.9	-2.8	-1.3	3.5
East	1984	5.8	-7.2	3.9	2.2	3.0	1.8	1.3
	1994	4.8	-8.0	2.3	0.8	1.8	0.7	0.1
South	1984	2.6	2.0	2.6	1.5	1.0	0.5	2.0
	1994	2.1	0.4	2.4	1.1	1.0	1.1	1.5
West	1984	-0.9	-7.1	-1.5	-1.3	-0.3	-0.5	-2.4
	1994	0.0	-5.8	-0.7	0.1	-0.2	-0.2	-1.5
Centre-North	1984	-6.8	-8.7	-7.2	-2.4	-1.3	-0.9	-5.6
	1994	-4.0	-7.8	-4.0	-1.2	-0.5	-0.2	-3.7
NORWAY	1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1994	-0.0	-0.0	-0.1	-0.0	-0.0	0.0	-0.0

Source: Computed from population and migration statistics supplied by Statistics Norway.

External migration provides positive additions to the populations of all regions and most ages, and is about twice as high in 1994 as in 1984. Its positive contribution to the Centre-North region goes about half way to counterbalance the net internal migration losses. External migration gains are most pronounced in the ages below 45, although gains are evenly spread between the family/childhood ages and the late adolescent/young adult ages.

When internal migration is examined, we can see immediately in the tables that there are very considerable differences between the life course stages in the directions of migration. The gains to the capital region are made up almost entirely of gains in the 15-29 age group. Net losses characterise the other ages in 1994 and all except the 30-44 age group in 1984. This picture is mirrored by the profile of the East region that surrounds the capital and gains migrants from all age groups except from those aged 15-29. There are heavy losses from almost all other regions in this age group, directed towards the capital region. It is therefore unwise to talk just about de-concentration and concentration of the population as a whole when the different life course stages exhibit such different behaviour. Behind this pattern, we will find the effeect of different needs in the family life cycle.

Does this differentiation of behaviour extend to other groups, such as men and women? Table 10 reports the all age internal migration rates for the two sexes while Table 11 reports population change by sex for 1984-94. There is relatively little in the way of differentiation between men and women in these figures. A little reflection suggests the reasons. For most of their lives men and women are in partnership or in families together with person of the opposite sex. The sexes may differ in their occupations and achievements but not much in their residential location. Even when young and single there is little reason for men and women to seek different destinations in migration and most are not anxious to live in single sex neighbourhoods or institutions. Such preference can be safely left to countries that cultivate celibate living or single sex boarding schools. In the remainder of the study, the analysis is targeted on the two sexes in combination. Before doing that, we will remind the reader that earlier in the post-war era, young women on average had a shorter time in education than men. The labour market for unskilled women was in central regions, whereas unskilled men could be absorbed in the local labour market. Consequently, the mobility for women was higher, and more centrally directed.

Table 10: Net internal and external migration rates by sex, Norway, regions, 1984 and 1994

Regions	Year	Internal			External		
		Males	Females	Persons	Males	Females	Persons
Oslo	1984	4.7	4.7	4.7	1.5	2.1	1.8
	1994	3.7	3.2	3.5	2.7	3.5	3.1
East	1984	1.1	1.5	1.3	0.2	0.3	0.3
	1994	0.4	-0.2	0.1	1.3	1.9	1.6
South	1984	2.2	1.8	2.0	2.6	1.7	2.2
	1994	1.3	1.6	1.5	0.0	0.9	0.5
West	1984	-2.5	-2.4	-2.4	0.8	0.8	0.8
	1994	-1.6	-1.4	-1.5	0.5	1.2	0.8
Centre-North	1984	-5.2	-6.0	-5.6	0.2	0.2	0.2
	1994	-4.1	-3.3	-3.7	1.6	2.3	2.0
NORWAY	1984	0.0	0.0	0.0	0.9	0.9	0.9
	1994	-0.0	-0.0	-0.0	1.4	2.0	1.7

Source: Computed from population and migration statistics supplied by Statistics Norway.

Table 11: Population change rates by sex, Norway, regions, 1984-94

Regions	Population change rates		
	Males	Females	Persons
Oslo	108.3	85.6	96.5
East	16.6	28.9	22.8
South	91.5	88.1	89.8
West	37.7	36.3	37.0
Centre-North	3.7	13.4	8.5
NORWAY	45.5	46.6	46.1

4.2.2 Patterns for counties

More detail of the pattern of migration in 1984 and 1994 is provided when we look at net internal migration rates for the counties of Norway (Table 12). Note that our conclusions here are particularly dependent on the years chosen for the comparison. The regional generalisations of the previous section of the paper can be refined. The statistics confirm the enhanced position of Oslo in 1994 compared with 1984. The county moves from net out-migration to in-migration; though smaller net losses still characterise ages other than the 15-29 and 45-59 age groups, these are counterbalanced by greater gains in the late adolescent and young adult ages. Counties surrounding Oslo in the rest of its region and in the East show both gains and losses but the shift over the 1984-94 period is to lesser gains or greater losses. Greater losses are characteristic of the 15-29 age group in particular. The counties of the South have maintained positive net in-migration, particularly Rogaland, the heart of the onshore oil service industry, which uniquely outside of Oslo experiences gains in the 15-29 ages in both 1984 and 1994. The beneficial features of oil related job development may be behind the favourable shift in Hordaland's decrease in net out-migration in the period. As one moves north along the Norwegian coast the pattern of net loss comes to characterise more and more age groups though there is some evidence of a lessening of the rate of out-migration. The all ages rate for Troms county, for example, shifts from -8.6/1000 in 1984 to -2.2 in 1994 and in particular the shift for the age group 15-29 shows the effect of the growth in the new university town of Tromsø. The Trøndelag counties and Finnmark maintain roughly the same position in the two years. The difference between the two counties in Trøndelag shows the influence of the third largest town in Norway, Trondheim, that has more than 50 per cent of the population of Sør- Trøndelag, and has the national technical university. Perhaps we might suggest

that the fears of Hansen (1989) about the future of the Norwegian periphery are still relevant, although the speed of population loss may be slower than initially feared.

Table 12: Net internal migration rates by age, Norway, counties, 1984 and 1994

Region	County	Year	Age Groups 0-14	15-29	30-34	45-59	60-74	75+	Total
OSLO	Akerhus	1984	18.2	12.7	13.7	1.4	1.4	4.9	10.7
		1994	11.4	-3.5	10.7	-4.4	-1.4	5.2	3.3
	Oslo	1984	-27.6	33.4	-10.8	-2.4	-6.4	-4.3	-0.4
		1994	-21.6	45.8	-10.1	2.7	-4.0	-4.6	3.6
EAST	Ostfold	1984	5.4	-4.9	3.1	3.0	3.7	2.4	1.8
		1994	5.7	-6.4	3.2	1.3	2.4	-0.2	0.9
	Hedmark	1984	5.9	-15.9	2.3	2.9	4.4	-0.1	-0.6
		1994	0.8	-17.0	-1.0	0.5	2.4	-0.8	-3.1
	Oppland	1984	3.9	-15.6	3.9	1.3	1.6	1.7	-1.3
		1994	4.1	-12.1	-1.3	-0.7	0.9	2.3	-1.9
	Buskerud	1984	4.2	1.0	2.2	0.8	2.9	3.3	2.3
		1994	5.4	-1.9	3.5	1.4	-0.0	1.6	1.7
	Vestfold	1984	12.5	-3.2	9.9	4.1	4.2	3.2	5.3
		1994	8.5	-3.8	8.0	2.2	4.7	1.4	3.6
	Telemark	1984	2.6	-6.9	2.4	0.6	1.1	0.2	-0.2
		1994	2.9	-9.6	-0.3	-0.3	0.3	-0.1	-1.6
SOUTH	Aust-Agder	1984	6.6	-6.1	8.0	5.3	3.2	2.6	3.1
		1994	6.4	-6.5	5.0	3.1	2.6	1.2	1.8
	Vest-Agder	1984	3.9	-1.8	1.9	1.8	2.1	0.3	1.4
		1994	1.2	-6.3	1.6	0.3	0.8	1.3	-0.6
	Rogaland	1984	0.9	5.8	1.4	0.1	-0.2	-0.3	1.9
		1994	1.4	5.0	2.1	0.9	0.5	1.0	2.2
WEST	Hordaland	1984	-0.9	-2.2	-1.3	-1.2	-0.5	-0.8	-1.3
		1994	-1.3	0.5	-1.7	0.6	-0.2	-0.8	-0.5
	Sogn og Fjordane	1984	-0.1	-10.4	0.0	-1.0	0.4	0.2	-2.5
		1994	-2.8	-16.7	-3.0	-0.5	-1.5	0.2	-5.1
	Møre og Romsdal	1984	-1.2	-14.1	-2.4	-1.7	-0.4	-0.4	-4.3
		1994	3.5	-12.3	2.1	-0.4	0.2	0.5	-1.5
CENTRE-NORTH	Sør-Trøndelag	1984	-3.9	-0.9	-2.6	-0.1	-0.7	-1.0	-1.7
		1994	-4.6	0.4	-4.5	-1.4	-1.2	-1.3	-2.3
	Nord-Trøndelag	1984	-1.2	-13.9	-2.5	-0.8	0.3	1.2	-4.0
			-0.8	-19.7	-2.4	-1.1	1.5	0.5	-5.0
	Nordland	1984	-6.1	-13.3	-8.2	-3.6	-1.1	-1.4	-6.8
		1994	0.8	-14.2	-1.4	0.2	-0.1	0.6	-3.2
	Troms	1984	-13.1	-8.5	-12.1	-3.7	-2.8	-1.9	-8.6
		1994	-5.4	-0.4	-3.0	-0.9	-1.3	-0.5	-2.2
	Finnmark	1984	-14.5	-10.5	-16.4	-6.3	-4.7	-1.7	-11.1
		1994	-19.2	-10.4	-14.7	-5.7	-1.3	-0.3	-10.8

Source: Computed from population and migration statistics supplied by Statistics Norway.
Notes: Net migration rates are expressed per 1000 population.

4.3 Population change by municipality: the overall picture

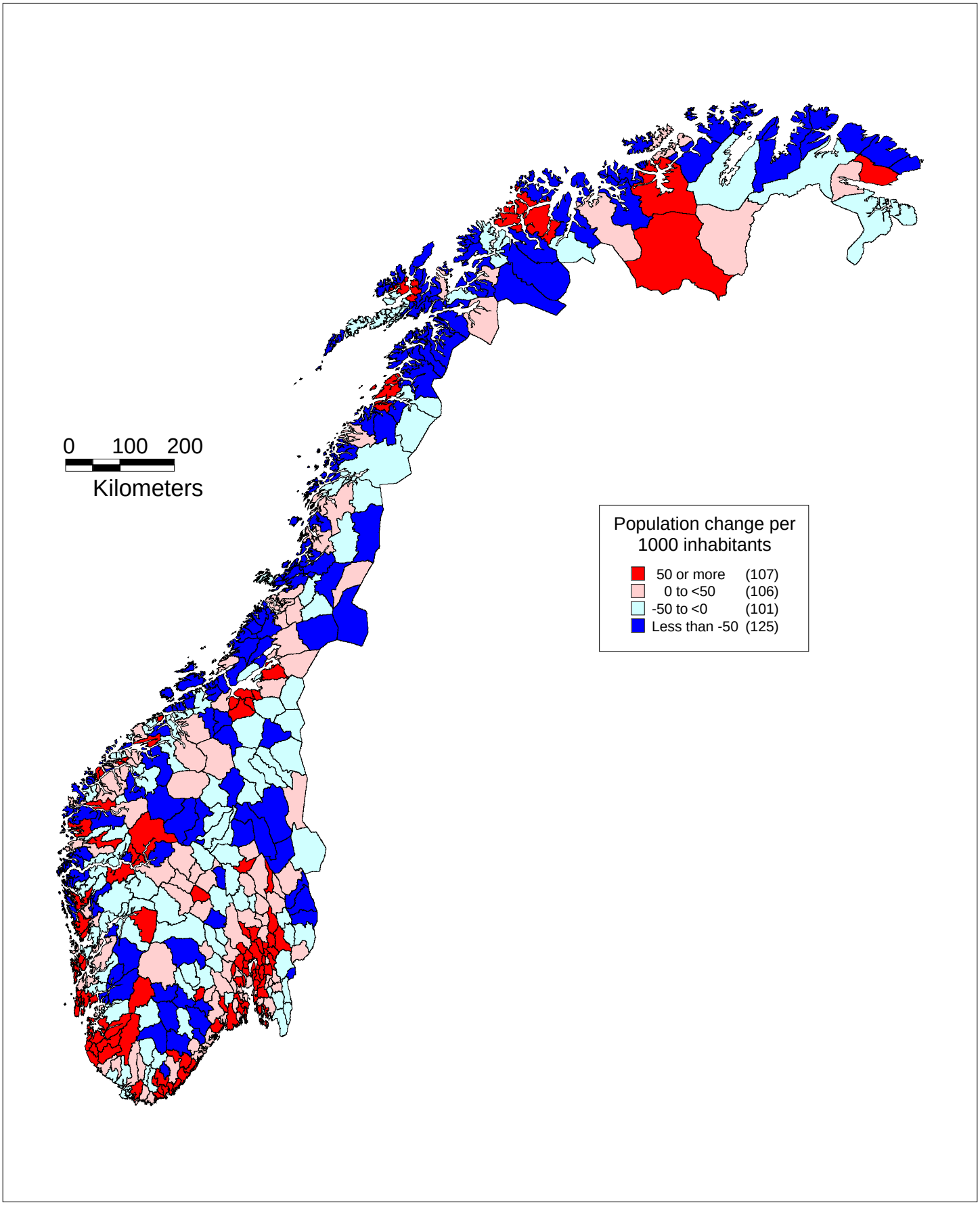
We now turn to the patterns of population change at the smallest spatial scale for which data are easily available in the Norway. To present statistics for a set of 439 municipalities necessitates use of maps.

Figure 6 reports population change rates for all ages between 1984 and 1994. The population change rates are computed by dividing the difference between the January 1st population in one year and that in the next (1984, 1994) by the population in 1984. Note that this is the ten-year rate rather than an average annual equivalent rate.

It is important to note that, as with most shaded thematic maps, the figures give more prominence to rural areas with lower population densities. The map legends give information about the distribution of municipalities by shading class. All rates are expressed per thousand population. Six classes are used on the population change map: (1) from the minimum value up to -100/1000, (2) from -100 up to -50/1000, (3) from -50 up to 0/1000, (4) from 0 up to 50/1000, (5) from 50 up to 100/1000, and (6) from 100 up to the maximum value. These classes are equivalent to the annual ones used in the net migration maps and are the same as those used in other country studies.

As usual with maps at such fine scale, an intricate mosaic of population change is revealed, which shows that considerable geographic variation occurs within counties. Figure 6 shows a pattern of contrast between urban centres and rural hinterland in eastern Norway, of contrast between coastal gains and interior losses in southern Norway, of gain in municipalities along the West coast but with losses in from the coast. Further north coastal municipalities also suffer loss along with interior *kommuner*. Occasional exceptions are urban municipalities like Bodø in Nordland, Tromsø and Alta municipality in Finnmark.

Figure 6: Population change rates, Norwegian municipalities, 1984-94, all ages



4.4 Net internal migration for municipalities: general patterns

The maps of overall net migration rates are displayed in Figures 7 and 9 for 1984 and 1994 respectively. Because the variable being plotted is net *internal* migration, there is a even distribution of municipalities around a mean of zero, because an internal out-migrant from one area is an internal in-migrant to another area. Internal migration is a zero sum game. The patterns of gain and loss are varied and intricate; in some cases we have stability between the two years and in others much change. The pattern has strong regional components, as might be expected from the preceding discussion. Most northern municipalities lose migrants in net terms. The gaining municipalities are concentrated in the Oslo, East and South regions but interior and remote coastal areas suffer net migration losses. The 1994 pattern shows a greater concentration of migrant gains in fewer municipalities, again mainly in the Oslo, East and South regions. There are also a few gaining municipalities on the coast in the North, due to special circumstances in th fishing industry. However, regional location alone is insufficient as a pattern descriptor. A small minority of municipalities in the West and Centre-North also gain. More municipalities are losing migrants than are growing, indicating that population concentration through net migration is taking place. Many of the extreme numbers both in 1984 and 1994 are found in small municipalities, where small events can have a great influence on the relative numbers.

4.5 Net external migration for municipalities: general patterns

The maps displayed in Figures 8 and 10 show the lower but generally positive pattern of net external migration. The net migration doubled from 3 800 (0.9 per thousand) to 7 400 (1.7 per thousand) in 1994. In 1984 the levels are rather low and vary only moderately across the country. Many gaining municipalities were central cities, but also some tourist and hydro-electricity regions in the mountains also gained. Almost all municipalities have net external migration rates between +5 and -5 per 1000 population. The range of values in 1994 is greater, reflecting the higher level of international migration, especially the higher number of asylum seekers, but still much narrower than internal migration. A minority of municipalities experience losses through international migration. A majority shows, in 1994 particularly, a positive contribution to population change through external migration. Extreme values, both positive and negative, are related to reception centres for asylum seekers. They were,

while waiting for a decision, often settled temporarily in available hostel accommodation located in mountain resort settlements. Both moves into these centres and their closing down can be seen in a number of municipalities. Some immigrants (mainly Tamils) do also find a living in the fishing industry in the extreme north. The great majority of non-western immigrants, however, live in the capital region of Oslo.

4.6 Population change regimes

Figure 11 combines indicators of natural increase and (total) net migration to provide a map of the eight demographic regimes defined by Webb (1963).

4.7 Net internal migration for municipalities: life course patterns

A succession of maps chart the progress of the Norwegian population through the life course and reveal dramatically the differences in migration behaviour at the different stages. We divide the life course into six ages in this study and map net internal migration rates for 1984 and 1994 for the following groups:

(1) the *childhood ages*, 0-14, mapped in Figures 12 and 13;

(2) the *adolescent and young adult ages,* 15-29, mapped in Figures 14 and 15;

(3) the *family ages*, 30-44, mapped in Figures 16 and 17;

(4) the *older working ages*, 45-59, mapped in Figures 18 and 19;

(5) the *retirement ages*, 60-74, mapped in Figures 20 and 21; and

(6) the *elderly* ages, 75 and over, mapped in Figures 22 and 23.

4.7.1 The childhood ages

Figures 12 and 13 plot the net internal migration rates for the childhood ages. These two maps exhibit the same broad characteristics and resemble closely the parental age maps. Oslo loses migrants, mainly to the surrounding municipalities that have net migration rates of 10 or more per 1000. Gains predominate in the south of the country while losses are prevalent in many municipalities in the interior of the country and in the north. There are more gaining municipalities than losing in the higher rate categories (e.g. 116 municipalities have rates of 10+ in 1984, while only 91 have rates of less than -10). There is some difference in the 1994 map, where the pattern is more varied and less regional, with a switch from gain to loss in the interior of western Norway. Gaining municipalities still outnumber losing ones. This indicates that, on average, the migration of this group for these years results in de-concentration of population.

Figure 7: Net internal migration rates, Norwegian municipalities, 1984, all ages

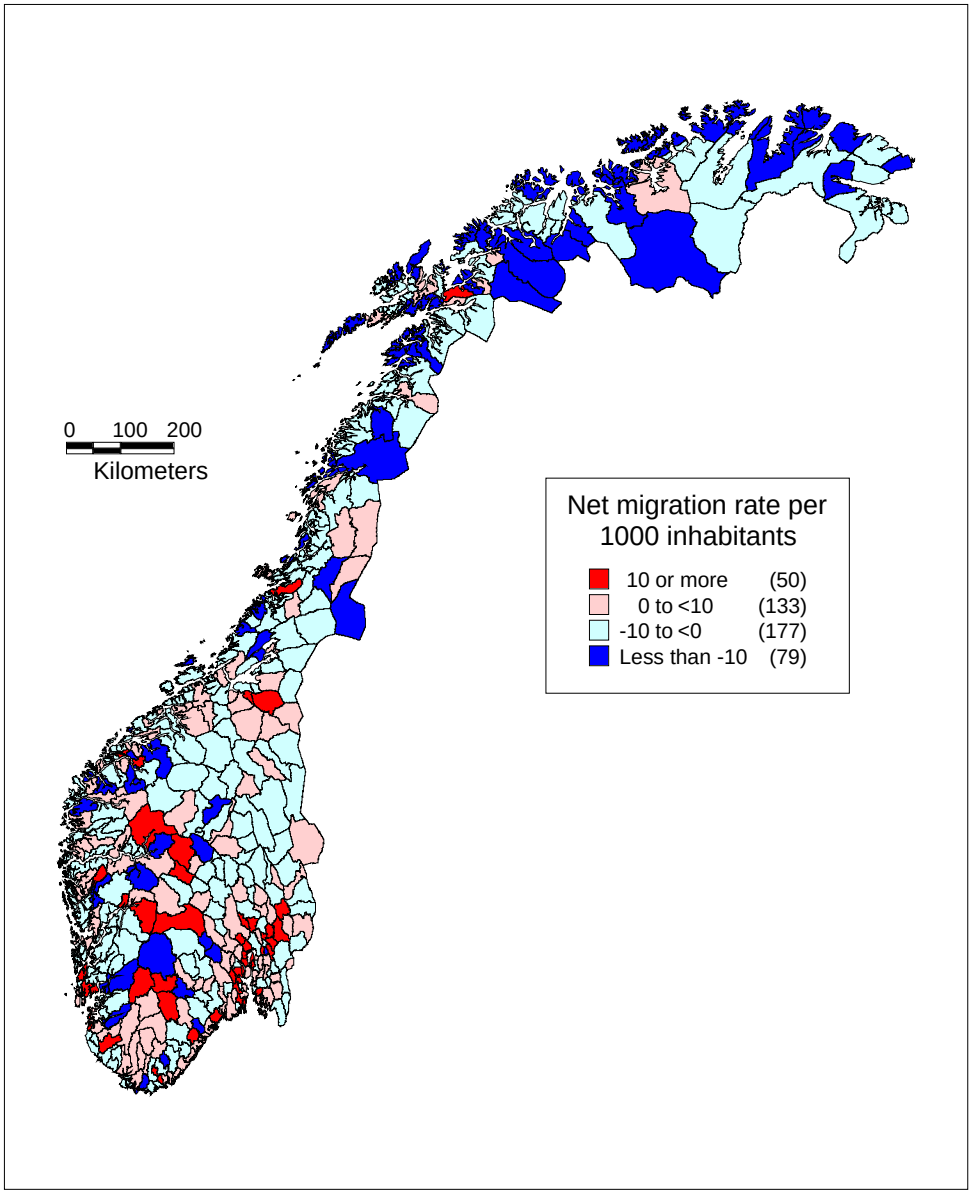


Figure 8: Net external migration rates, Norwegian municipalities, 1984, all ages

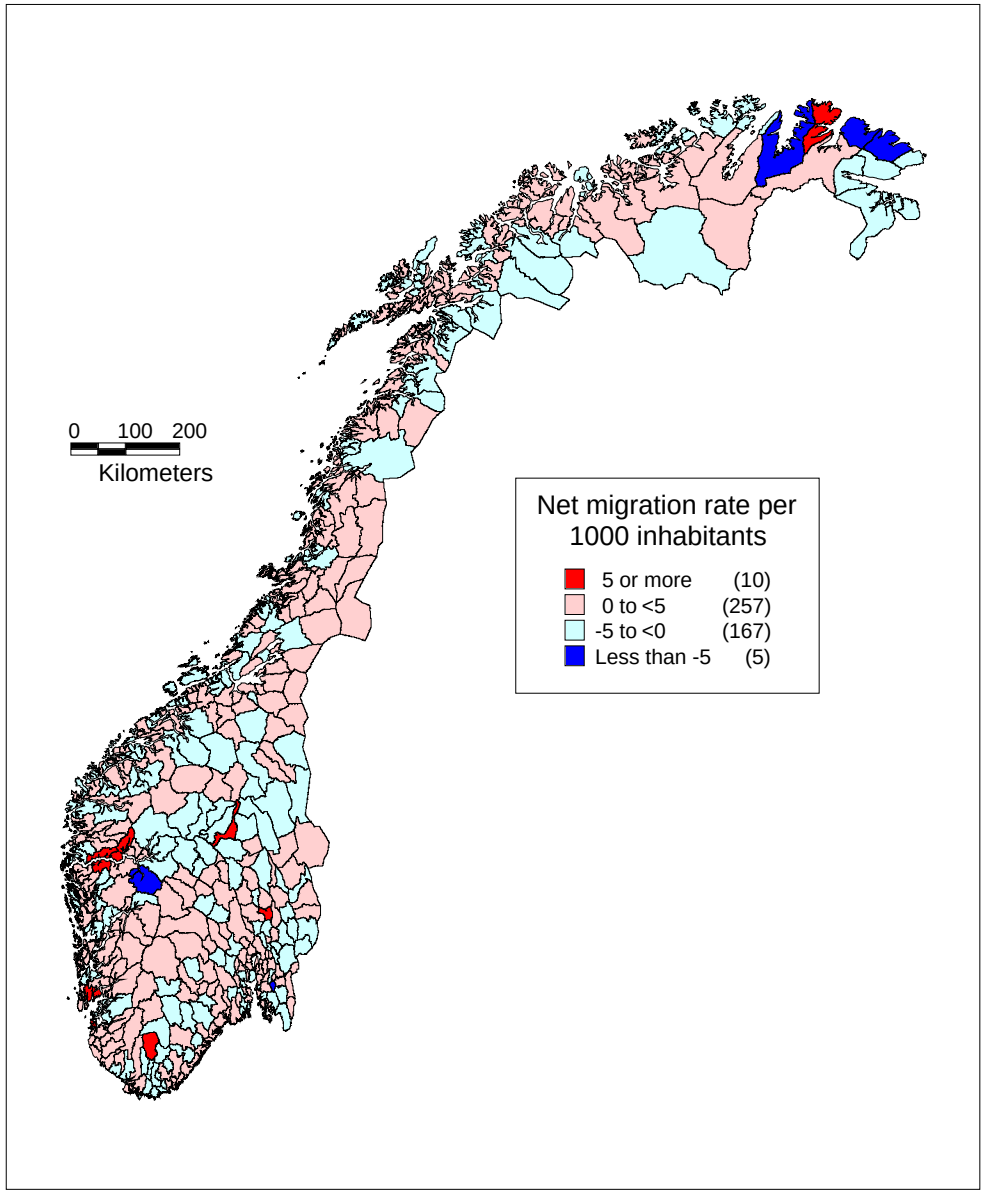


Figure 9: Net internal migration rates, Norwegian municipalities, 1994, all ages

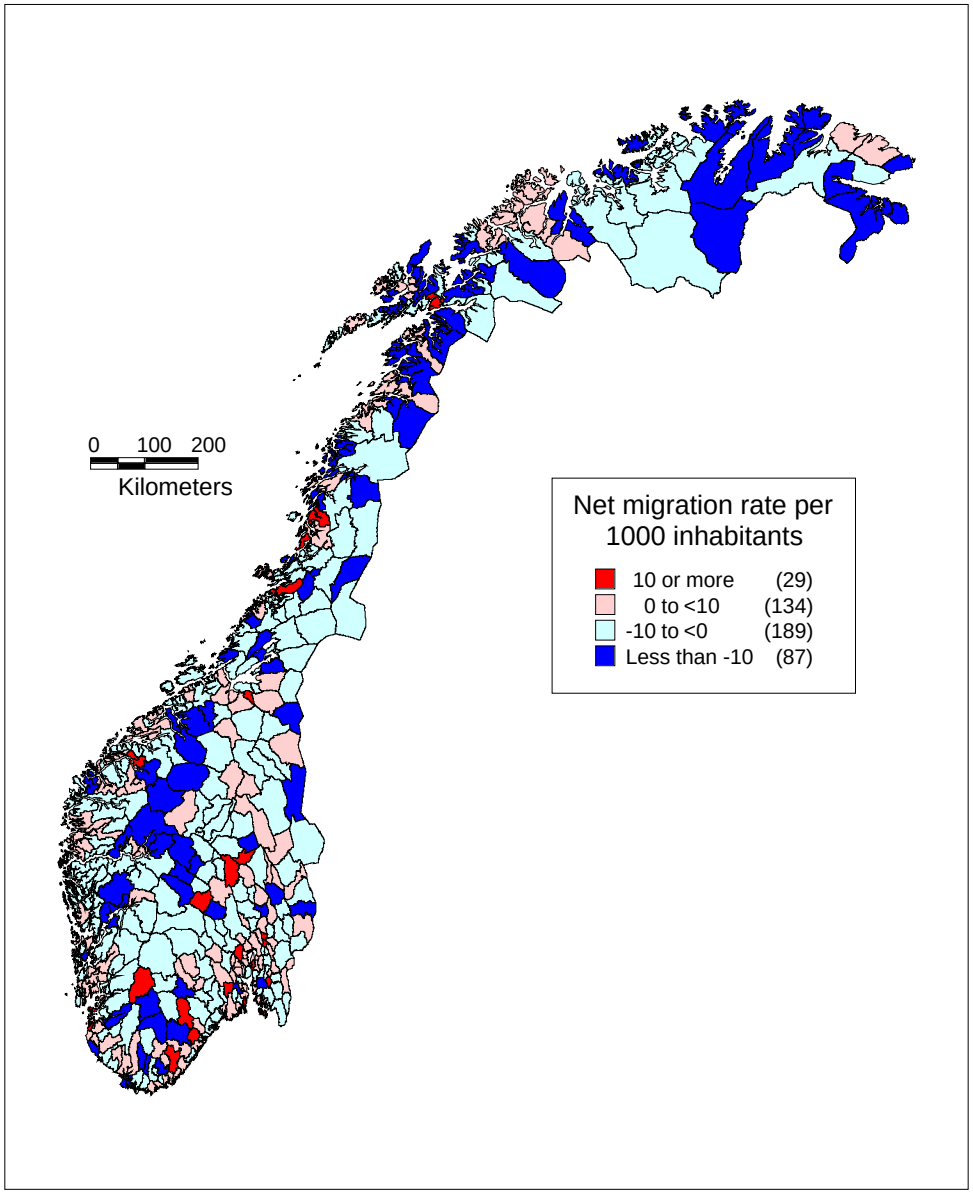


Figure 10: Net external migration rates, Norwegian municipalities, 1994, all ages

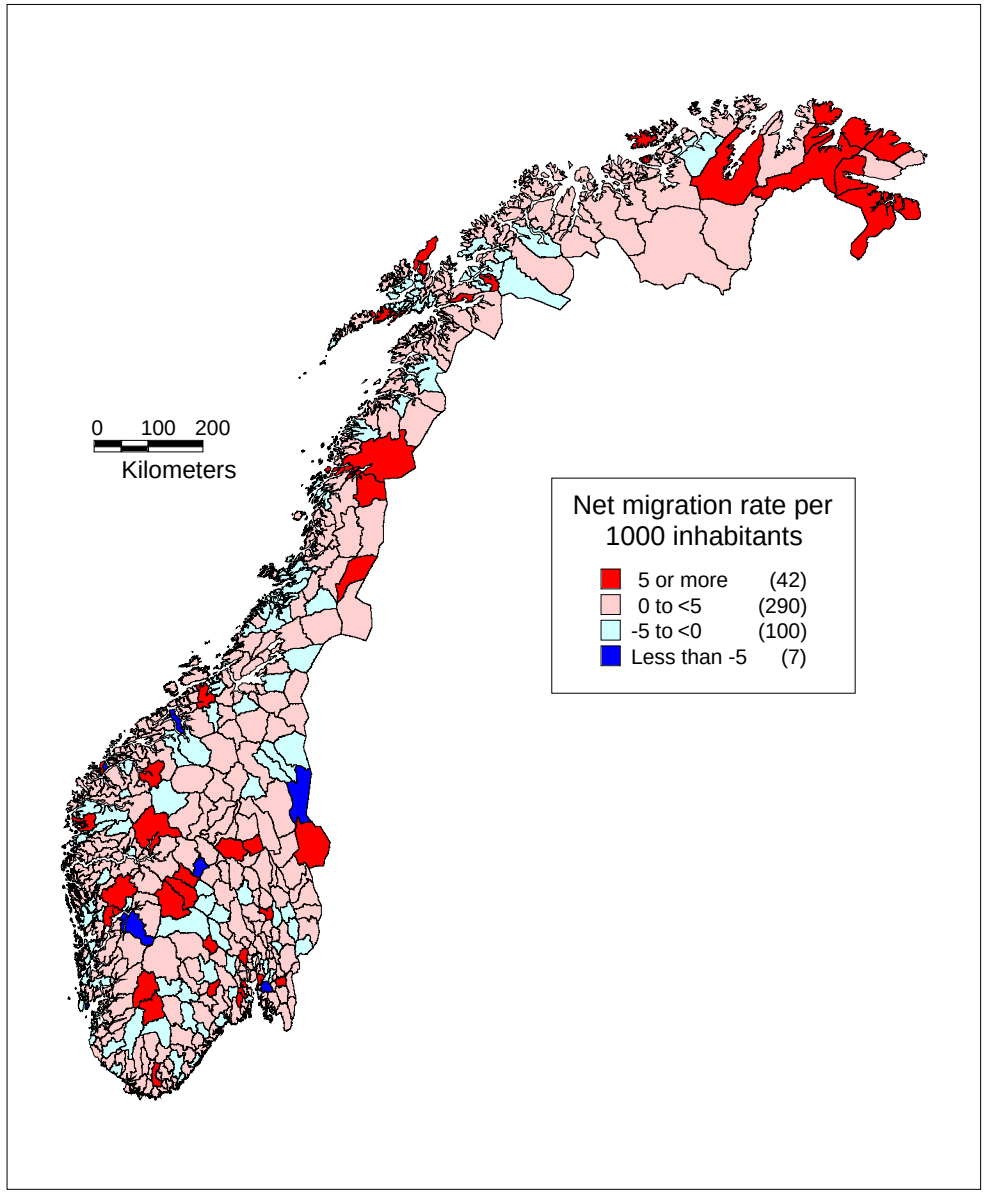


Figure 11: The Webb classification of population change, Norwegian municipalities, 1994

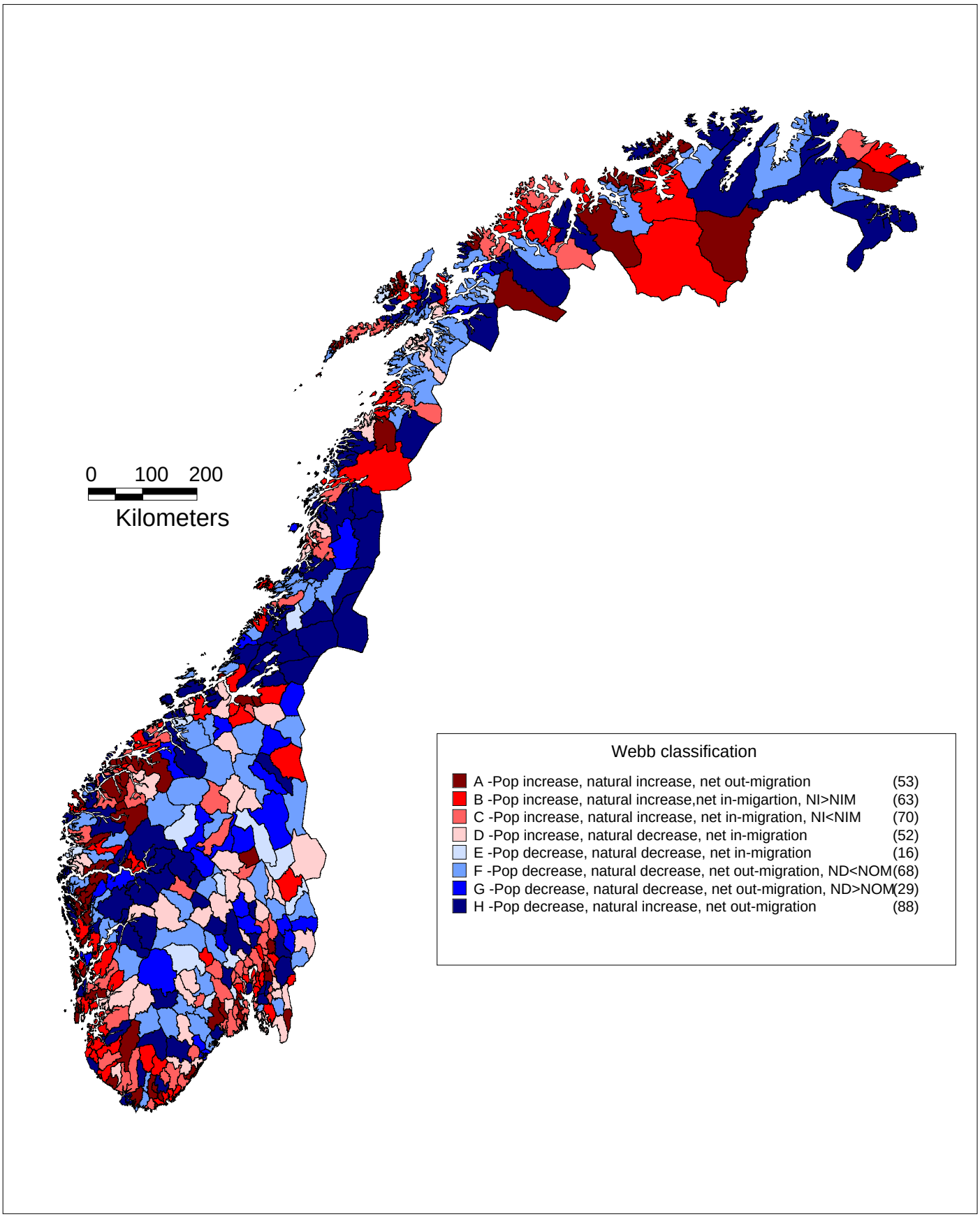


Figure 12: Net migration rates, Norwegian municipalities, 1984, ages 0-14

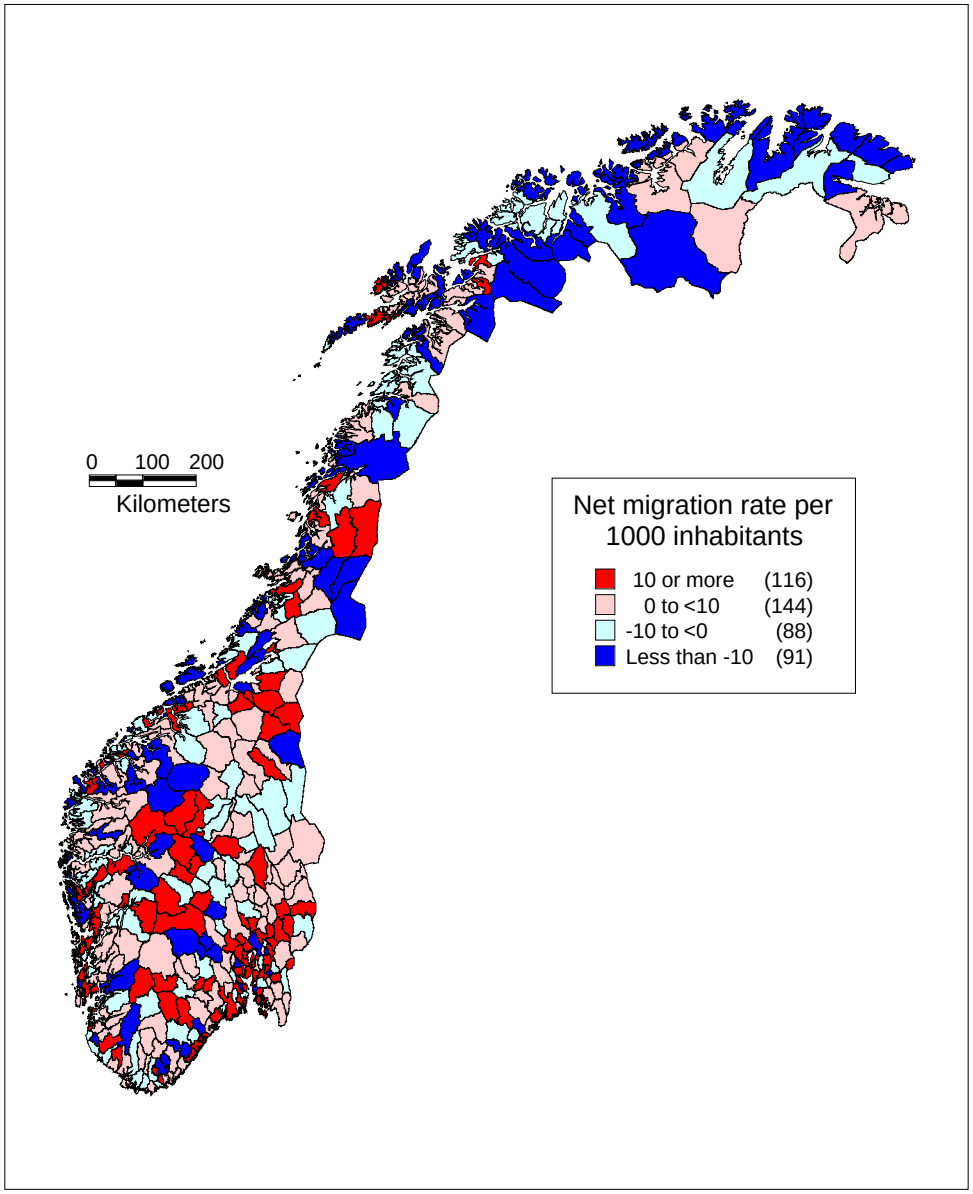
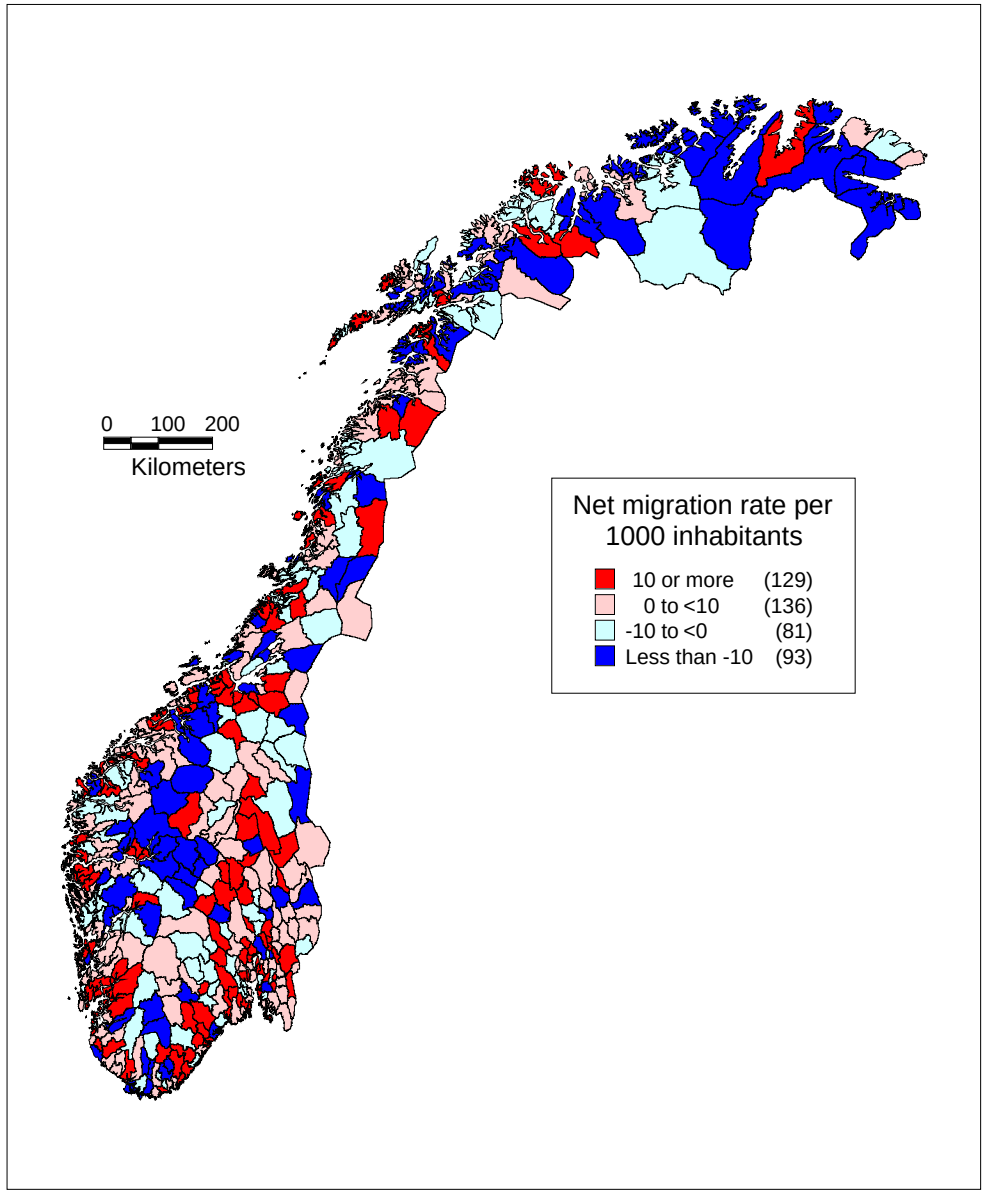


Figure 13: Net migration rates, Norwegian municipalities, 1994, ages 0-14



4.7.2 The adolescent and young adult ages

The immediate impression on viewing Figures 14 and 15 is that the pattern of net internal migration for young adults is quite different from that of any of the other life course groups. The maps are a sea of losses with just a few gains. Most smaller, remote and rural *kommuner* lose migrants to the level 1 and level 2 municipalities. Young people, on leaving home for the first time, seek new experiences in other locations, either in first jobs or increasingly in further or higher education. Oslo is a particularly attractive destination. The process has intensified between 1984 and 1994. In the latter year there were only 97 gaining municipalities but 342 losing compared with 129 gainers and 310 losers in 1984. The degree of loss to losing areas is generally more intense than at other ages, with as many as 286 *kommuner* experiencing losses or gains of more than 10 net migrants per 1000 population, with losses in 255 of them. Gaining municipalities outsid the big cities are often educational centres.

4.7.3 The family ages

Figures 16 and 17 plot the net internal migration rates for the family ages. These two maps exhibit the same broad characteristics and closely resemble the maps for the childhood ages. Northern municipalities and Oslo lose family migrants. More accessible municipalities in southern, eastern and south-west Norway and in some coastal areas gain migrants at a net migration rate of 10 or more per 1000. Gains predominate in the south of the country while losses are prevalent in the north of Norway, There is some difference in the 1994 maps, in which the pattern is more varied and less regional, although the number of gaining municipalities still exceeds the count of losing ones. On average, the migration of this group results in de-concentration of population.

4.7.4 The older working ages

Figures 18 and 19 depict the structure of internal migration for the older working ages. At these ages migration activity is much reduced and most municipalities cluster in the categories that bracket migration balance (zero net migration). There are more gaining municipalities than losing and the numbers of gainers are larger than in the family ages. The 1994 pattern is similar to that in 1984, except that there are fewer gainers and more losers. Families in this age group have reached the rather stable part of their life

course: their work careers are settled, they have finished or are finishing the bringing up of their children, they are saving for their retirement, and some of them are contemplating relocation after that event. There are fewer gaining municipalities in the East part of the country in 1994, and more gaining in the north.

4.7.5 The retirement ages

Figures 20 and 21 show the net internal migration patterns for the ages around retirement. The pattern shifts to one of more gaining municipalities than losing (280 gainers in 1984 and 159 losers; 265 gainers in 1994 and 174 losers). The cities lose migrants at these ages and smaller municipalities gain but only some are chosen as destinations. The net effects are smaller than in the younger age groups, with only 73 municipalities outside the +/- 10 per 1000 band in this group in 1994, compared to 114 in the older working ages. For some of the gaining municipalities, the gains are probably the result of return migration after the rural exodus from the interior municipalities in South Norway in the first decades after World War II.

4.7.6 The elderly ages

Figures 22 and 23 map the net internal migration patterns for the elderly. Migration activity is subdued but shows the same pattern of more gaining municipalities than losing, in all sections of the country. The pattern does not depart radically from that of the retirement ages. The two older age groups do not show any significant relocation of the elderly population. There is a very small "Florida" effect to be seen in the consistent net migration to the coastal municipalities west of Oslo-fjord, in the counties of Vestfold and Vest-Agder.

Figure 14: Net internal migration rates, Norwegian municipalities, 1984, ages 15-29

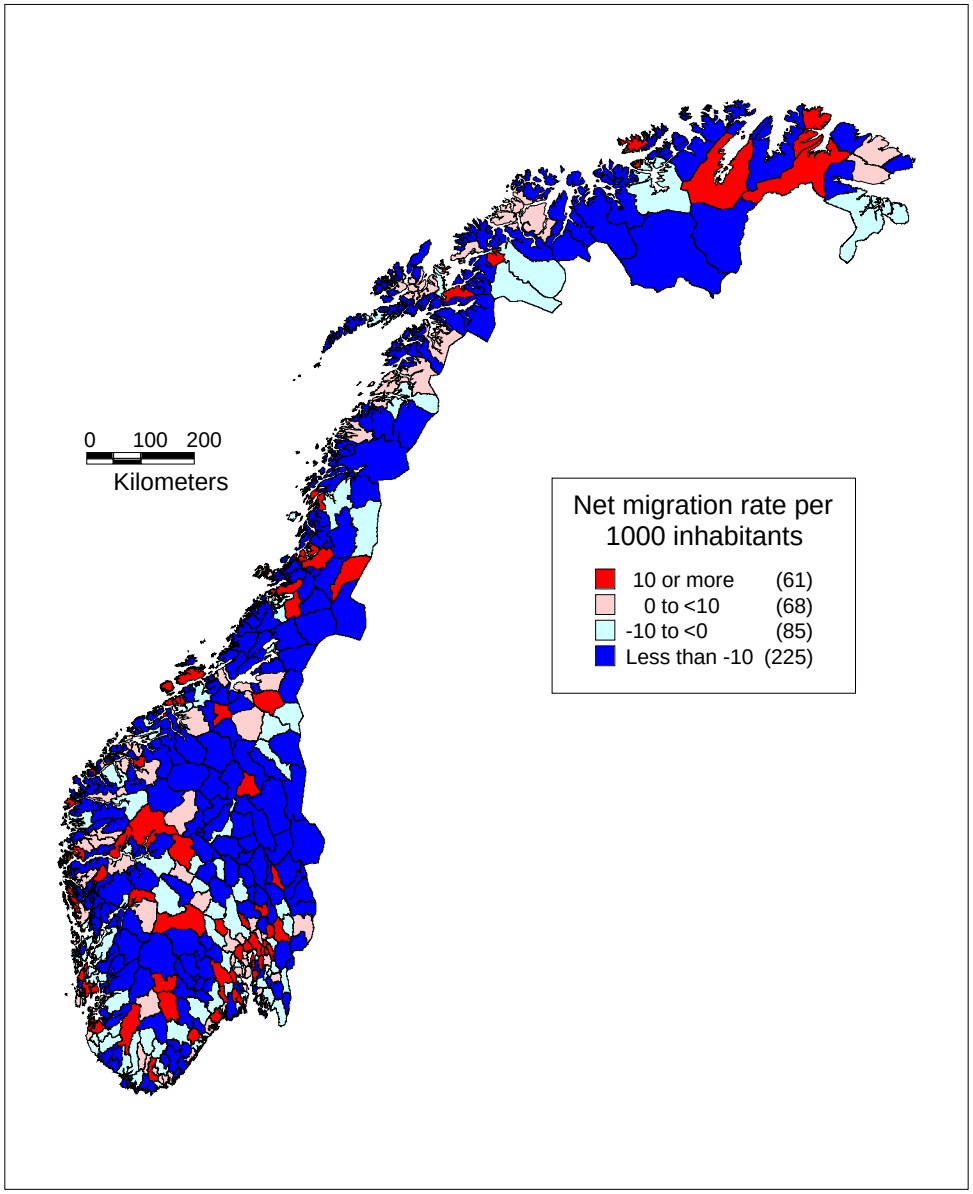


Figure 15: Net internal migration rates, Norwegian municipalities, 1994, ages 15-29

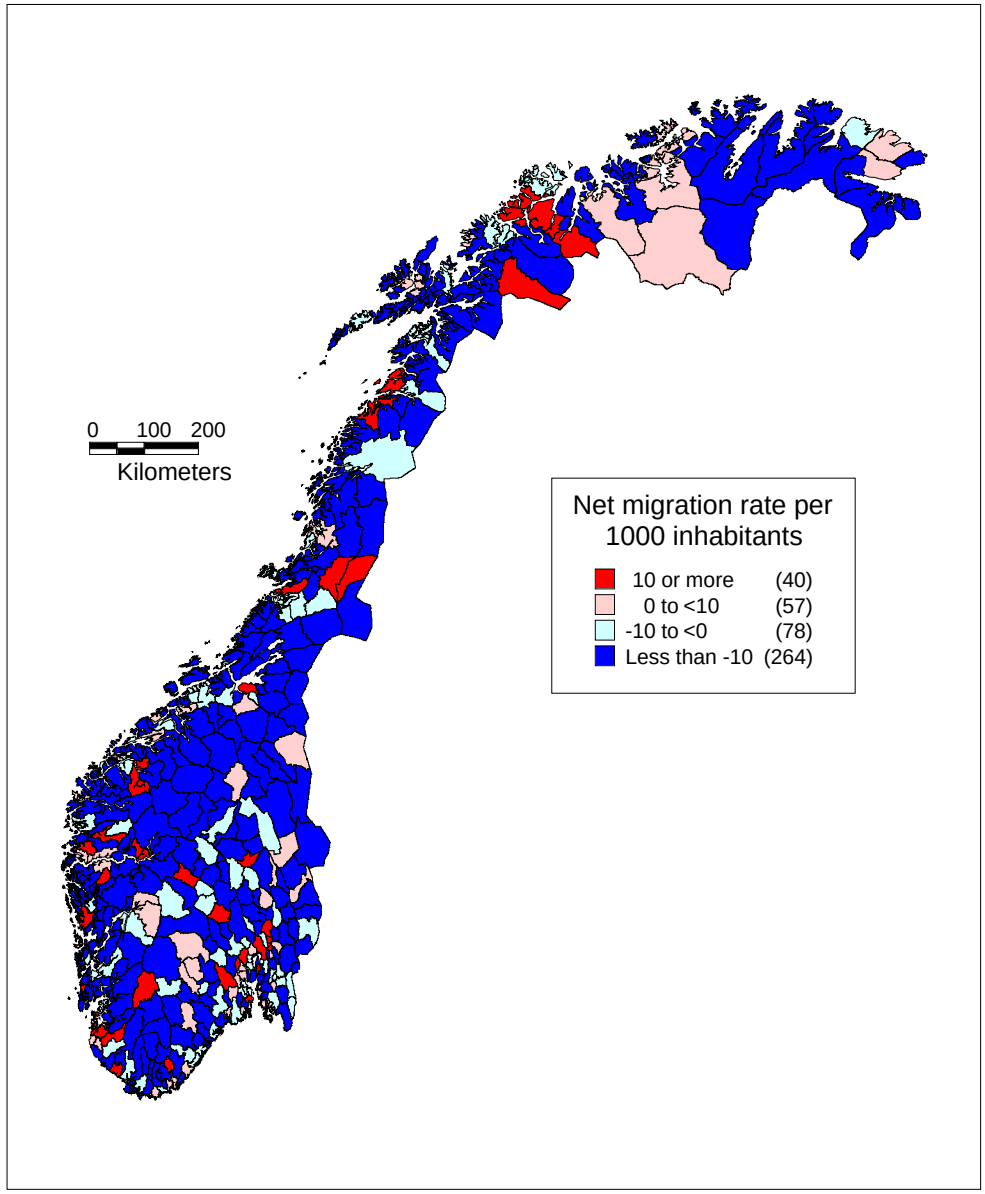


Figure 16: Net internal migration rates, Norwegian municipalities, 1984, ages 30-44

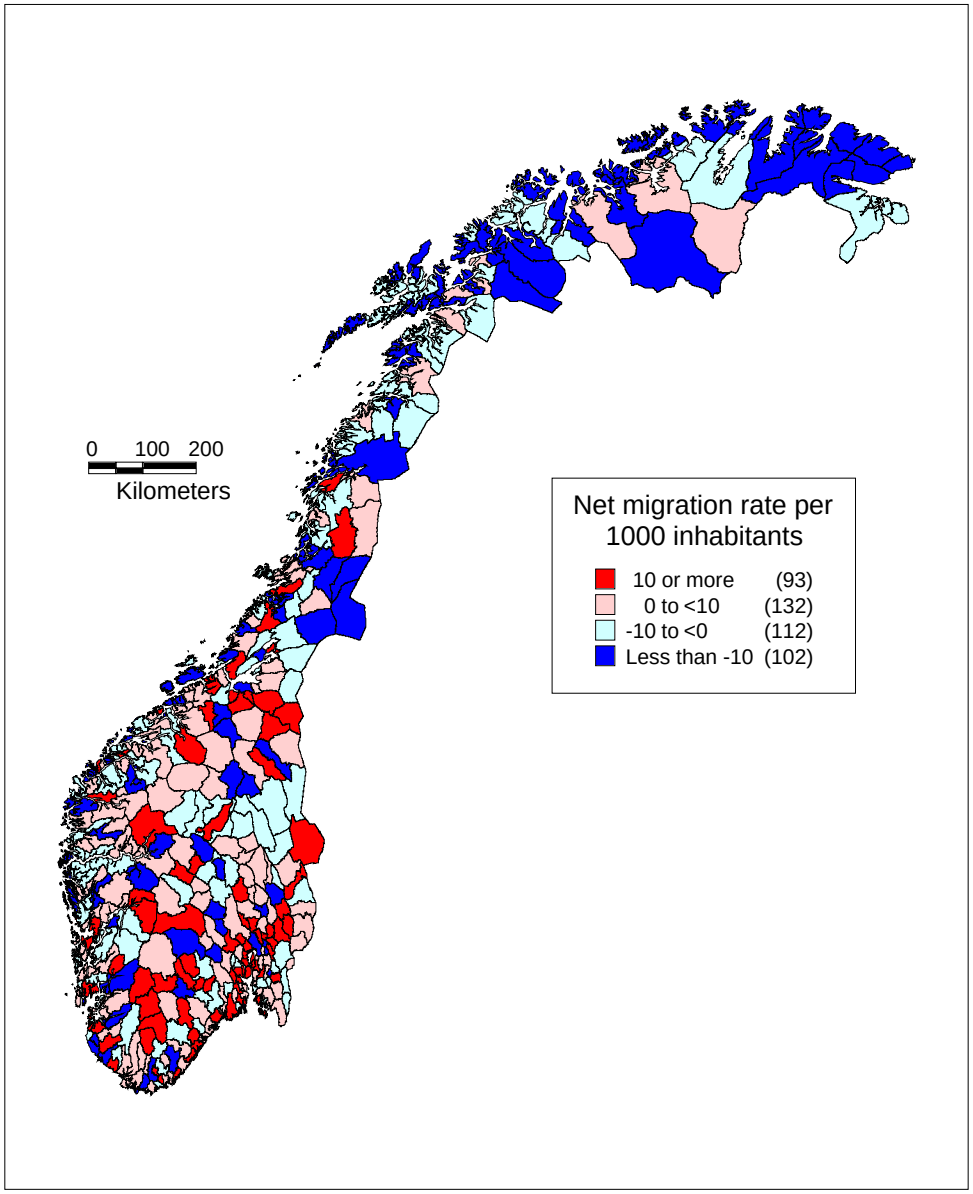


Figure 17: Net internal migration rates, Norwegian municipalities, 1994, ages 30-44

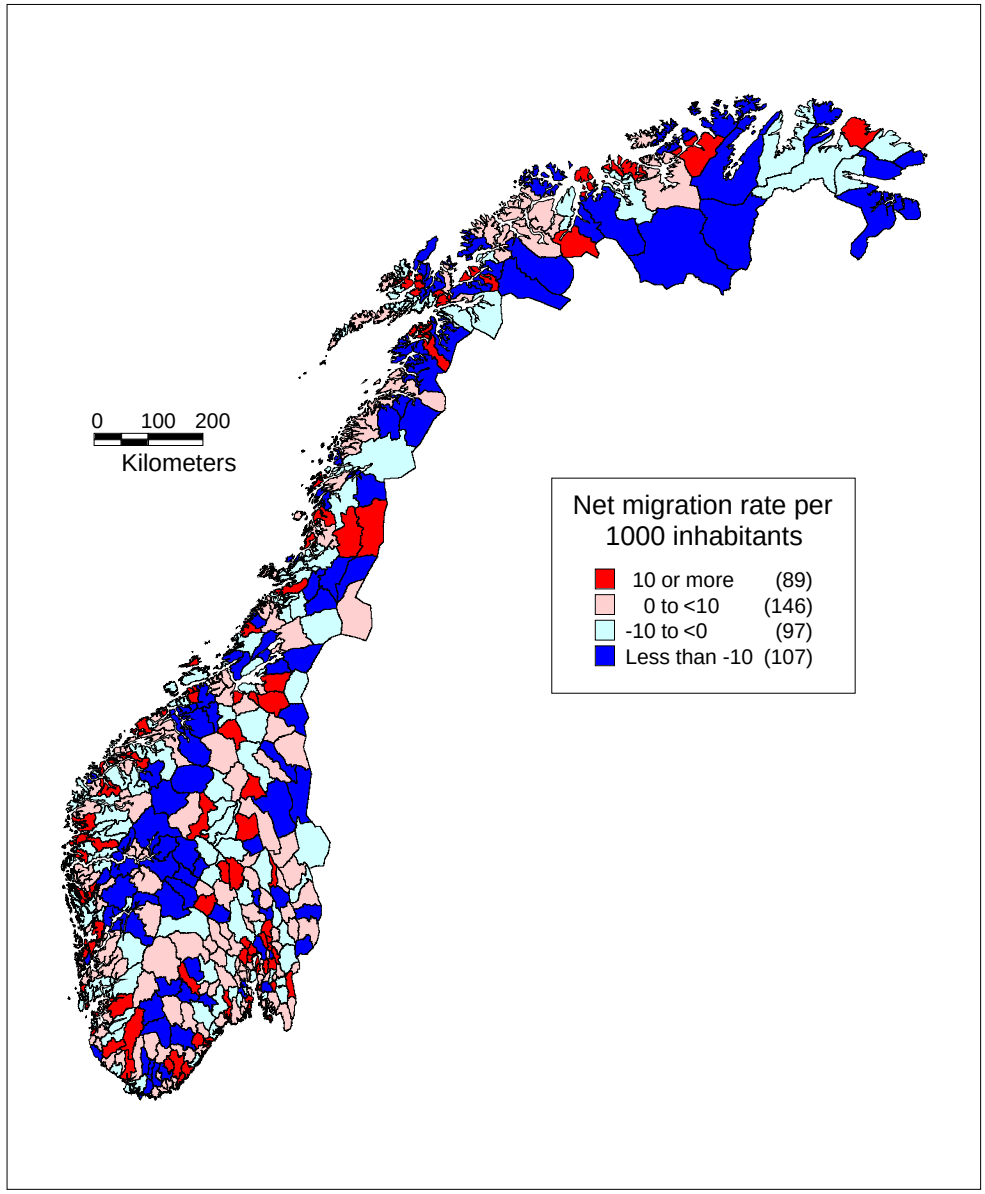


Figure 18: Net internal migration rates, Norwegian municipalities, 1984, ages 45-59

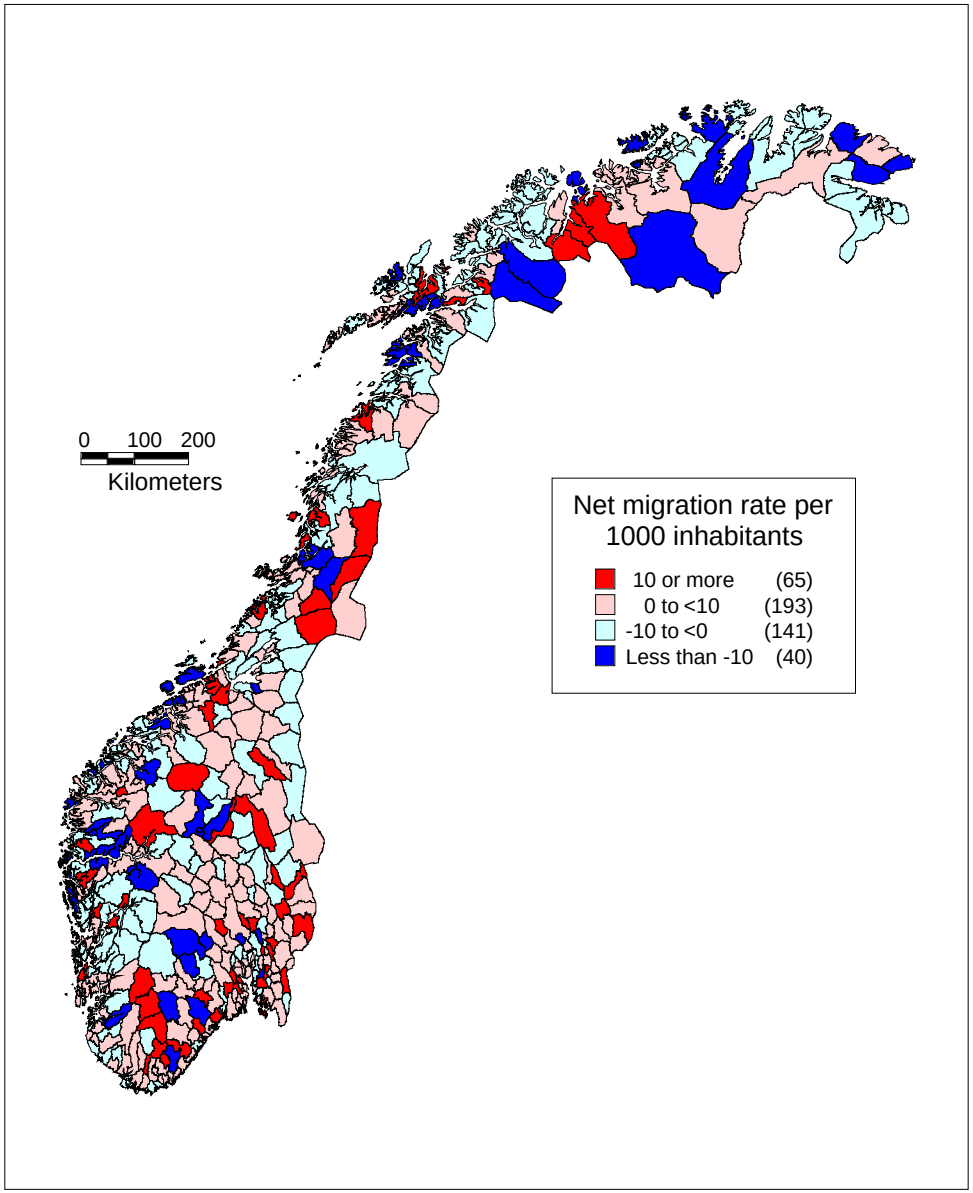


Figure 19: Net internal migration rates, Norwegian municipalities, 1994, ages 45-59

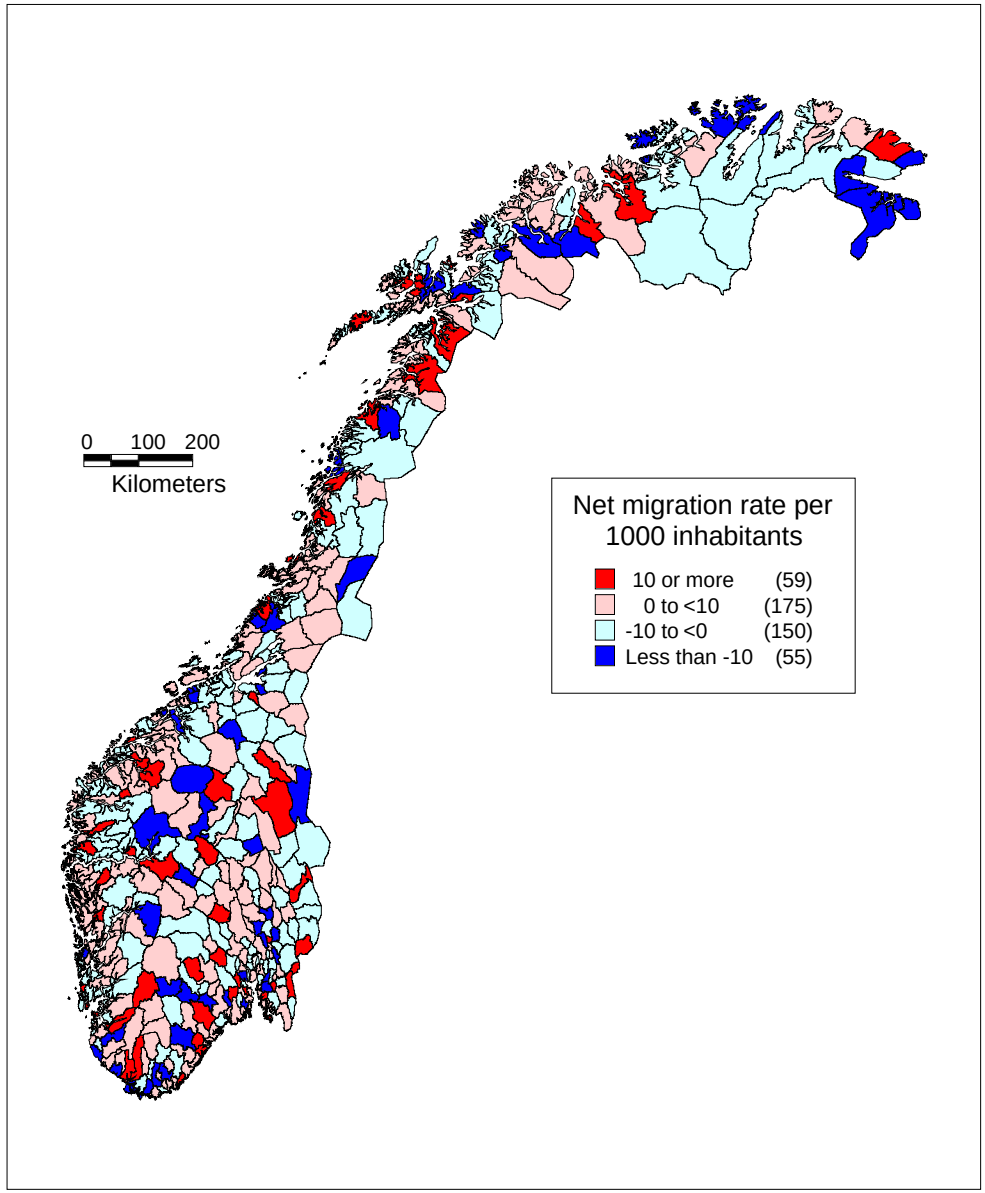


Figure 20: Net internal migration rates, Norwegian municipalities, 1984, ages 60-74

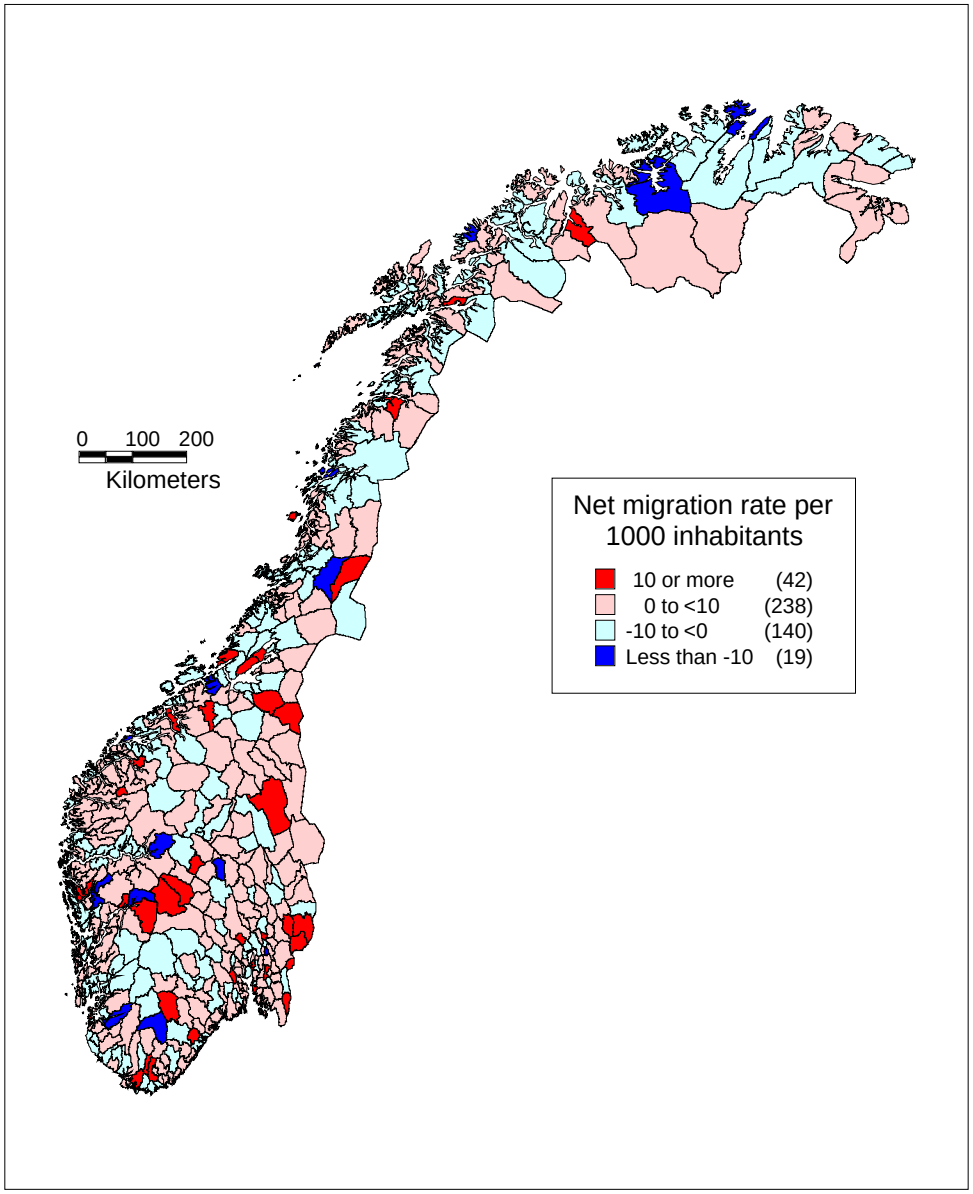


Figure 21: Net internal migration rates, Norwegian municipalities, 1994, ages 60-74

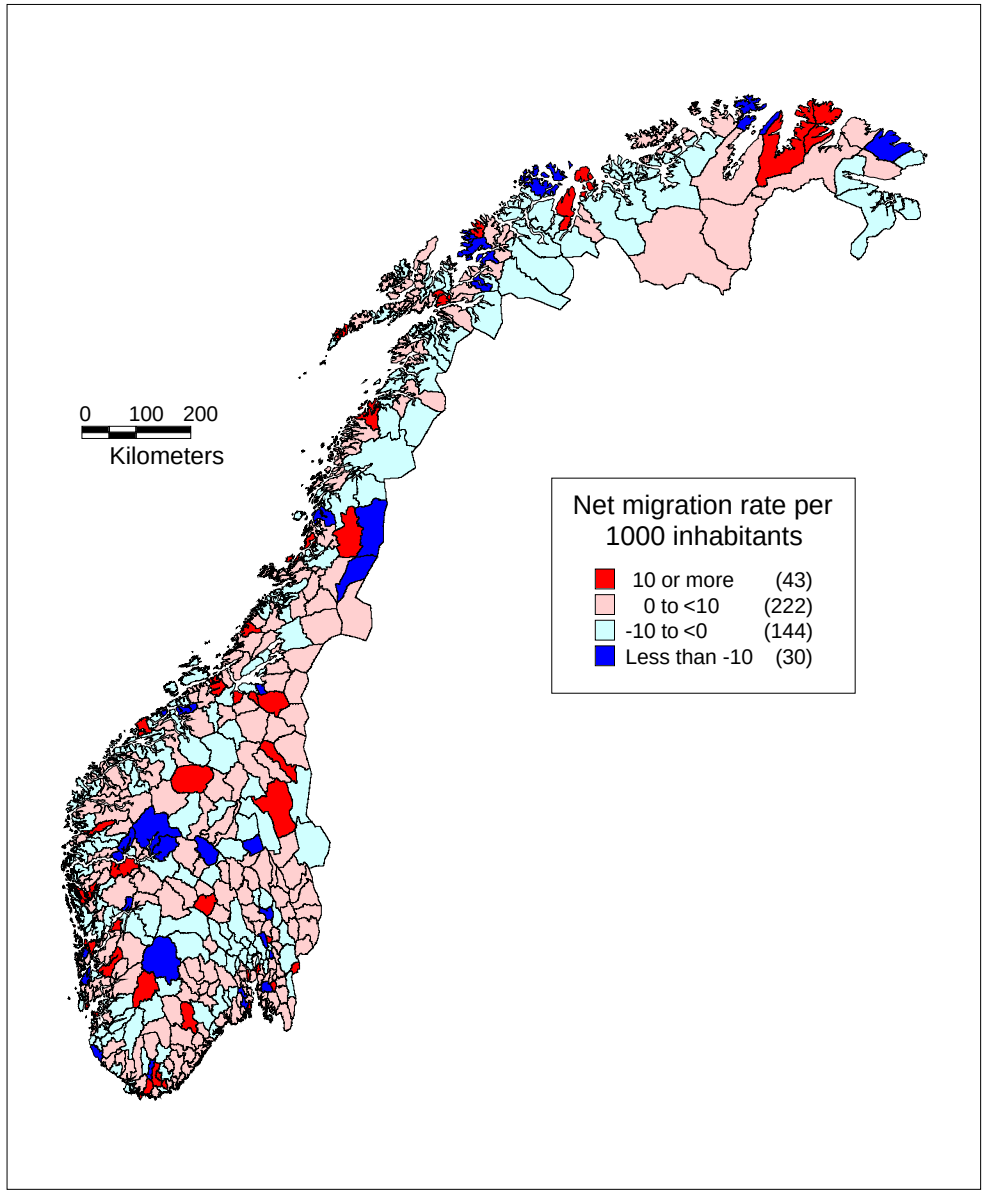


Figure 22: Net internal migration rates, Norwegian municipalities, 1984, ages 75+

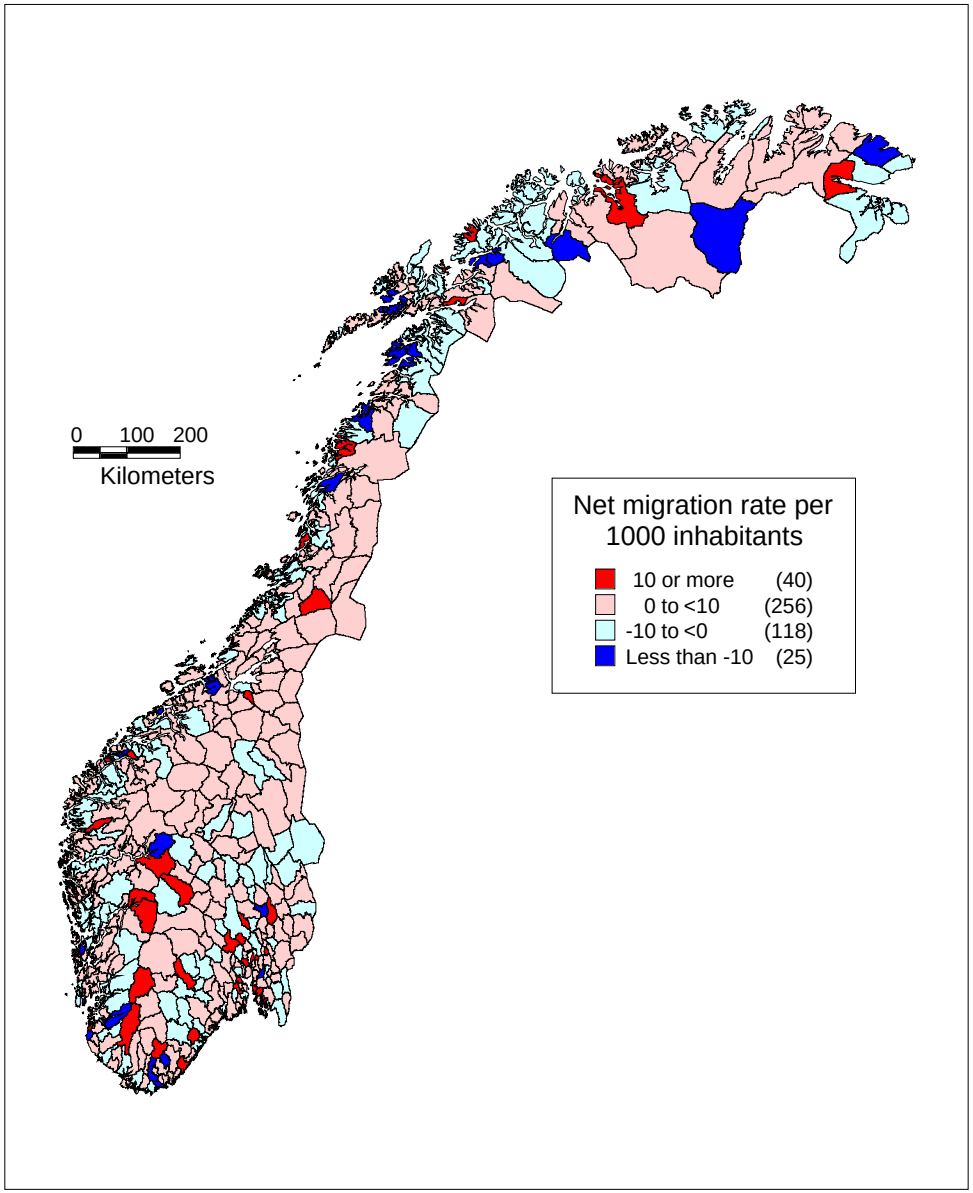
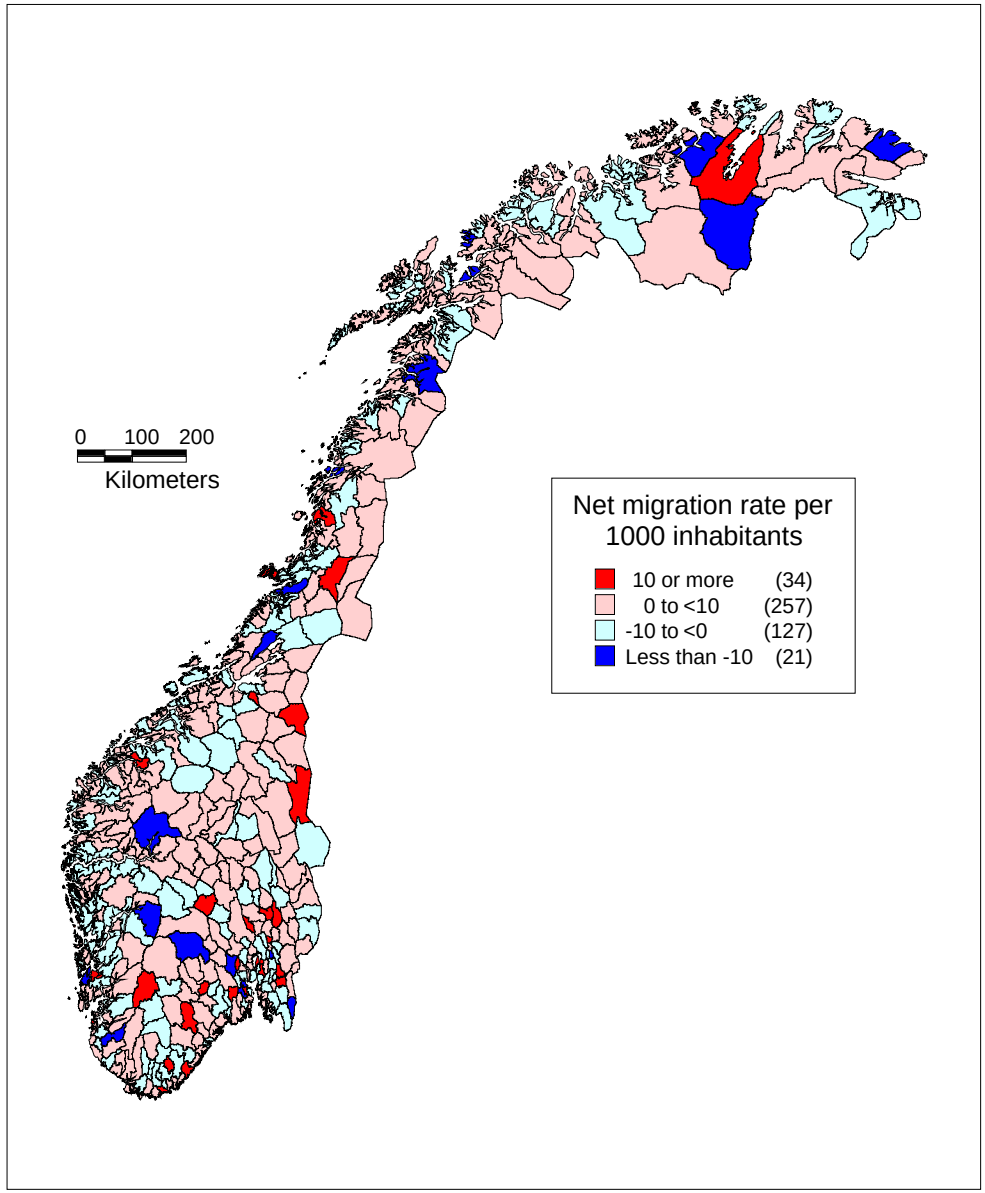


Figure 23: Net internal migration rates, Norwegian municipalities, 1994, ages 75+



5. RELATIONSHIPS BETWEEN POPULATION DYNAMICS AND THE SETTLEMENT SYSTEM

To make sense of the intricate mosaics of the municipality maps, we employ the classifications of municipalities developed by Statistics Norway. Essentially, we ask the following questions. Firstly, does the economic structure of places have an influence on the net balance of people leaving and arriving? Secondly, does the degree of urbanisation represented by the Norwegian operational definition of density have an effect on the pattern of migration between places? Are people choosing one density of living over another, urbanity over rurality? Thirdly, is accessibility to centrally provided functions in an urban network an important factor determining the flows of people into and out of municipalities? Fourthly, does putting these separate dimensions of settlement variation together afford a clearer picture of which are the gaining areas and which are the losing? A fifth question, related to the first, asks whether the level of unemployment in a place is an important driver of the direction of internal migration.

5.1 Relationship to the production system

Table 13 sets out the net internal migration statistics for the main Industry link types. This typology is based on the resident population in the municipality. We have dropped from the table the categories with only a few municipalities in, leaving nine types in which reside 94% of Norway's population in 1994. One difficulty in using the classification is the clustering of the vast majority of municipalities into just two types: Services and Manufacturing centres (dominated by the former) in which reside 34.8% of Norway's population, and Services municipalities, which house 42.5% of the 1994 population. This illustrates the increasing standardisation and modernisation of the industrial structure.

Industry Link LI, Agriculture and Manufacturing municipalities. These lose migrants on balance, particularly in the young adult ages, but do gain in the family ages in 1994. The 1994 position was worse than the 1984. These municipalities are rather remote, dependent upon agriculture and forestry, and weekly commuting to building sites in central towns, or to construction sites related to hydro-electricity or oil extraction.

Industry Link LA, Agriculture and Construction municipalities. These lose migrants in all ages except the retired and elderly and more in 1994 than in 1984.

Industry Link IL, Manufacturing and Agriculture municipalities. These lose migrants, particularly in the 15-29 age group and their position has worsened in 1994.

Industry Link IA, Manufacturing and Construction municipalities. These lose migrants in the same way as the previous group but the position in 1994 is little different from 1984 overall though the contrast between age groups has grown.

Industry Link TL, Services and Agriculture municipalities. These lose migrants with the position worsening in 1994.

Industry Link TF, Services and Fishing municipalities. These lose migrants in both years but the position is better in 1994 with lower losses in the family ages in particular, due to the improved market and resource situation. in the fisheries.

Industry Link TI, Services and Manufacturing municipalities. These centres gain migrants in both years though the 15-29 group is an exception. The gains shrink between the years.

Industry Link TA, Services and Construction municipalities. These lose migrants in both years but the rate of loss is much greater in 1994 than in 1984, especially in the family ages.

Industry Link TT, Services municipalities. These are the main gainers in the decade moving to higher net in-migration in the 15-29 age group. However, the family and an older age groups experience net migration loss.

To sum up, there seems to be evidence of divergence in net migration patterns from 1984 to 1994, but the all ages averages paint a misleading picture, and for each life course stage there is a different pattern of gain and loss.

Table 13: Net internal migration rates by age, Norway, industry link types, 1984 and 1994

Industry Link type (% pop 1994)	Year	Age Groups 0-14	15-29	30-44	45-59	60-74	75+	Total
LA Agric, Manuf	1984	4.0	-11.8	-0.1	0.7	2.0	-0.4	-1.3
(2.3%)	1994	4.5	-23.6	1.1	0.9	-0.1	-1.0	-3.8
LI Agric, Constr	1984	1.5	-15.3	-5.5	4.1	0.7	1.8	-3.0
(1.0%)	1994	-1.3	-21.5	-6.5	-2.9	3.8	0.5	-5.9
IL Manuf, Agric	1984	3.3	-9.5	1.0	-0.3	3.3	-0.7	-0.8
(2.8%)	1994	-5.2	-21.4	-4.6	-0.9	2.3	-.7	-6.4
IA Manuf, Constr	1984	1.9	-12.3	-1.6	-0.5	1.7	-1.0	-2.5
(5.6%)	1994	3.1	-16.2	-.3	1.8	2.2	-0.8	-2.3
TL Service, Agric	1984	-2.0	-17.5	-1.8	-0.2	1.3	-0.1	-4.4
(1.9%)	1994	-1.1	-23.4	-8.0	-1.4	-0.6	1.3	-6.9
TF Serv, Fishing	1984	-14.1	-27.3	-21.7	-1.3	0.6	1.4	-13.1
(0.6%)	1994	7.8	-20.1	-4.1	5.5	-0.5	-2.7	-3.1
TI Serv, Manuf	1984	5.5	-4.4	3.5	1.7	2.2	2.0	1.5
(34.8%)	1994	4.2	-6.2	2.7	-0.2	1.2	1.0	0.3
TA Serv, Constr	1984	4.7	-15.2	3.9	2.9	3.1	2.2	-0.6
(2.5%)	1994	-8.2	-21.4	-10.3	-4.1	-0.1	-0.6	-9.1
TT Services	1984	-5.6	11.1	-2.4	-1.5	-2.7	-1.6	0.4
(42.5%)	1994	-3.4	14.9	-0.6	0.4	-1.6	-0.9	2.3

Source: Computed from data supplied by Statistics Norway.
Note:
1. Only Industry link types with more than 10 municipalities are reported.
2. The Industry link types reported in the table house 94% of Norway's population in 1994.

5.2 Relationship to population density

Table 14 records the net migration rates by age for density categories. The distribution of the population across these categories is much more even than was the case in the Industry classification. The gradients of change in rate, once again, differ depending on the age group examined. The family ages show a pattern of net migrant loss in the highest and lowest categories and gains in between. The young adult ages see gains in both 1984 and 1994 in the highest category and in 1994 in the second highest, with increasing losses as density falls, The later working ages have lower net rates and a pattern that varies between years. The retirement ages are characterised by loss from the densest settlements and mostly gains elsewhere. So the association of the all age pattern with a neat density gradient (the higher the density the greater the gain or lower the loss) should not be taken too seriously. H3 municipalities (mostly central cities) show a pattern almost consistently the opposite of all others.

5.3 Relationship to the degree of centrality

The remarks made in connection with density categories can be repeated in good measure for the closely correlated centrality pattern. Table 15 reveals a strong relationship between the all age rate and centrality, with net migration intensity rising with increasing centrality. This pattern is one that basically derives from the 15-29 age group whose high level of activity dominate the picture. For groups aged 45 and over the most central places are not the most attractive. The second centrality class, especially regional centres far away from the 6 top-level centres, is the one favoured by age groups other than young adults.

Table 14: Net internal migration rates by age, Norway, density categories , 1984 and 1994

Density % dpa Category (% pop 1994)	Year	Age Groups 0-14	15-29	30-44	45-59	60-74	75+	Total
LO 0-9.9	1984	-1.0	-18.8	-4.9	0.3	1.5	-0.4	-4.9
(3.0%)	1994	-0.8	-27.1	-3.1	1.3	-0.2	0.8	-6.1
LI 10-19.9	1984	4.5	-10.5	3.4	3.5	0.9	-0.3	-0.0
(2.3%)	1994	2.3	-24.5	-2.8	0.4	-1.6	0.0	-5.5
L2 20-29.9	1984	6.7	-11.8	0.7	1.3	2.8	0.6	-0.3
(3.9%)	1994	2.5	-21.9	-0.9	-0.2	4.7	-0.3	-3.8
M3 30-39.9	1984	5.4	-16.5	3.5	2.6	2.8	0.8	-0.8
(5.3%)	1994	1.5	-21.8	-1.2	-1.6	1.2	1.0	-4.5
M4 40-49.9	1984	4.4	-12.2	1.8	0.6	1.3	1.1	-1.1
(8.1%)	1994	3.3	-17.7	-0.9	-1.1	-.2	1.0	-3.4
M5 50-59.9	1984	1.0	-12.7	-0.5	-0.7	1.9	0.3	-2.7
(5.7%)	1994	3.8	-11.8	1.0	-0.1	2.2	-0.5	-1.4
M6 60-69.9	1984	4.8	-7.7	3.6	1.9	1.3	1.8	0.6
(9.7%)	1994	1.8	-11.1	0.6	-0.9	0.6	2.9	-1.8
H1 70-79.9	1984	6.7	-2.5	5.2	0.2	3.1	2.4	2.6
(10.3%)	1994	3.3	-7.7	1.5	-1.9	1.0	2.0	-0.8
H2 80-89.9	1984	4.0	-1.4	3.6	0.2	0.8	0.8	1.4
(14.6%)	1994	4.4	1.5	3.6	-0,.4	0.1	-0.4	1.9
H3 90-100.0	1984	-9.2	13.6	-4.6	-1.4	-2.9	-1.7	-0.2
(37.2%)	1994	-5.6	18.7	-1.5	1.3	-1.5	-1.4	2.7

Source: Computed from data supplied by Statistics Norway.
Notes:
1. dpa = densely populated areas

Table 15 Net internal migration rates by age, Norway, centrality categories, 1984 and 1994

Centrality Category (% pop 1994)	Year	Age Groups 0-14	15-29	30-44	45-59	60-74	75+	Total
OB Not near	1984	-5.5	-18.5	-6.6	-1.3	0.2	0.4	-6.7
(11.9%)	1994	-4.7	-21.4	-7.1	-0.4	0.4	0.1	-7.0
OA Not levels 1 and 2	1984	-0.4	-15.7	-2.3	0.0	2.8	-0.6	-3.6
(3.3%)	1994	-1.8	-21.4	-2.6	-3.5	0.7	-0.2	-6.1
IB level 1	1984	-2.4	-6.8	-4.8	-2.0	-0.3	-1.4	-3.5
(3.9%)	1994	-0.2	-8.9	-2.1	-1.8	0.4	0.3	-2.8
1A level 1	1984	-0.1	-12.7	-12.	2.0	1.8	0.4	-2.5
(3.7%)	1994	-2.2	-14.7	-3.8	1.2	2.1	-0.2	-3.9
2A level 2	1984	-0.1	-7.4	-2.6	-1.7	-1.5	-0.4	-2.8
(8.0%)	1994	2.7	-10.0	1.0	-2.1	-1.4	0.6	-1.9
2B level 2	1984	5.6	-7.4	4.6	1.8	2.8	0.5	1.2
(17.3%)	1994	4.9	-5.6	3.8	2.1	2.0	0.3	1.2
3A level 3	1984	-0.1	10.8	0.9	-0.1	-1.3	-0.1	2.5
(51.9%)	1994	-0.7	11.2	0.5	-0.1	-0.1	-0.2	2.3

Source: Computed from data supplied by Statistics Norway
Notes:
1. See Table 5 for the full definition of the centrality categories.

5.4 Relationship to general settlement types

When the three dimensions are combined we get the patterns of Table 16. The same observation about the all age pattern hiding profound variation across the life course stages can be repeated. The Central Service municipalities stand out as overall gainers but this is because of the net influx of young people, which exceeds the outflow of other ages. By way of contrast Central Mixed Service municipalities, which also gain overall, lose migrants in the young adult ages and gain in the other ages. All other types lose migrants in 1994.

Table 16: Net internal migration rates by age, Norway, general settlement classes , 1984 and 1994

Class (% pop 1994)	Year	Age Groups 0-14	15-29	30-44	45-59	60-74	75+	Total
KI Primary Industry	1984	-2.1	-17.5	-2.7	1.1	1.2	0.4	-4.3
(3.6%)	1994	-1.4	-24.1	-7.4	-2.1	1.1	1.1	-6.8
K2 Mixed agric & manuf	1984	3.6	-10.6	0.5	0.2	2.6	-0.6	1.0
(5.1%)	1994	-1.0	-22.4	-2.1	-0.1	1.1	-0.1	-5.3
K3 Manuf	1984	1.2	-10.6	-0.4	0.1	2.0	-0.5	-1.9
(7.3%)	1994	2.0	-14.2	-0.8	0.5	1.8	-0.5	-2.5
K4 Less central, mixed	1984	-0.1	-15.6	-1.9	0.3	0.7	0.6	-3.8
(9.3%)	1994	-2.0	-17.7	-2.9	-3.1	-0.2	-0.6	-5.5
K5 Central, mixed service	1984	7.4	-1.3	5.4	2.3	2.8	2.6	3.3
(28.0%)	1994	5.2	-3.6	3.4	0.5	1.6	1.4	1.3
K6 Less central, services	1984	-9.4	-5.3	-10.1	.-4.4	-2.5	-1.2	-6.5
(7.0%)	1994	-2.3	-3.6	-2.9	0.2	-0.5	1.1	-1.9
K7 Central Service	1984	-4.6	14.6	-0.8	-0.9	-2.7	-1.7	1.8
(35.5%)	1994	-3.6	18.7	-0.2	-0.5	-1.8	-1.2	3.2
K8 Manuf unilateral	1984	0.4	-12.9	0.4	-2.6	-2.5	-1.6	-3.6
(2.6%)	1994	0.9	-15.4	-2.4	-0.9	-0.7	1.0	-3.9
K9 Fishery	1984	-11.2	-28.5	-14.4	-0.9	-1.9	1..1	-11.8
(1.7%)	1994	0.8	-23.2	-4.2	1.2	-0.6	0.0	-5.6

Source; Computed from data supplied by Statistics Norway.
Notes:
1. See Table 6 for the full definition of the centrality categories.

5.5 Relationship between migration and unemployment

Using unemployment rates for 1994 Table 17 establishes, for Norway, a clear association between levels of unemployment and overall net migration gains and losses. The areas with the highest unemployment rates lose migrants while areas with below average unemployment gain. The relationship is strongest for the young labour groups but is not applicable to older labour where a more complicated pattern is seen. Table 18 reports the simple correlations between unemployment rate in 1994 and other indicators: most have the expected signs but the magnitude is very low.

Table 17: Net internal migration rates by age, Norway, by unemployment band, 1984 and 1994

Unemployment band		Age Groups						
(% pop 1994)	Year	0-14	15-29	30-44	45-59	60-74	75+	Total
Less than 4%	1984	6.0	-0.5	5.3	-0.5	1.1	1.3	2.5
(19.1%)	1994	4.6	-6.6	4.1	-1.4	-0.4	1.6	0.2
4-<6%	1984	-2.4	4.1	-1.6	-0.5	-0.9	-0.5	-0.1
	1994	-2.9	5.5	-1.9	0.0	-0.4	-0.5	0.2
6-<8%	1984	0.8	-6.3	-0.0	1.4	1.2	0.2	-0.9
	1994	2.1	-4.9	0.8	0.8	0.9	0.1	-0.2
8-<10%	1984	-10.5	-17.0	-8.4	-1.5	-3.3	-0.5	-8.6
	1994	-2.3	-16.1	-0.8	0.7	0.6	-0.9	-4.0
10-<12%	1984	-9.5	-24.9	-7.4	-8.0	-1.2	0.0	-10.4
	1994	-8.2	--23.3	-17.3	-3.6	-0.5	-4.7	-11.0
12%+	1984	-16.6	-37.3	-11.1	10.9	10.6	5.6	-12.0
	1994	-23.8	-41.0	-13.8	13.7	0.0	0.0	-14.8

Table 18: Correlation of net internal and external migration rates by age 1994 with unemployment rates for municipalities

Year	Age Groups						
	0-14	15-29	30-44	45-59	60-74	75+	Total
NMR1984	-0.22	-0.10	-0.19	0.03	-0.07	-0.10	-0.21
NMR 1994	-0.12	0.06	-0.12	0.10	0.07	-0.14	-0.04
PCR8494							-0.30
NER1984							-0.09
NER1994							-0.05

Notes:
1. NMR = Net internal migration rate.
2. PCR= population change rate.
3. NER= Net external migration rate.

6. CHANGING MIGRATION PATTERNS

So far in the report, we have analysed the patterns of internal migration using net migration as our diagnostic indicator. However, net migration values can result from widely different pairs of in- and out-flow components. In this section, the gross flows between geographical regions and between the general municipality types are examined. These flow tables have been aggregated from the inter-municipality migration arrays for 1984 and 1994.

6.1 Migration flows between regions

The regions used here are a slight aggregation of the standard regionalisation shown in Figure 1. The Trøndelag and North regions are grouped into the Centre-North, while Hedmark and Oppland and the East region are together as East Norway.

The structure of migration flows between regions remains the same in 1994 as it was in 1984. The Oslo, East and South regions are the net gainers in both years, while the West and Centre-North are the net losers. Between the two years migration flows increased by 3.7% but this was lower than the population increase of 4.6% over the same time interval, indicating a small decrease in the rate of inter-municipality migration. To assess the significance of such a switch would, however, require further analysis of a time series of migration.

The majority of inter-region flows increased when 1994 and 1984 figures are compared with six notable exceptions. The outflows from the West and the Centre-North to the three other regions decreased between 1984 and 1994, while the corresponding inflows increased, accounting for the decreased net migration between the two sets in about equal measure. This may herald a re-assessment by migrants of the relative attractiveness of the core regions of Norway compared with the peripheral regions. Exchanges of migrants between the peripheral regions themselves increased a little between the two years. In this context, we will also remind the reader of the observations on the cyclical pattern of migration made at the end of section 2.

The migration effectiveness measures indicate, in both years, that the greater the distance between regions the more “effective” the migration exchanges between them. Regions which are close together (e.g. the Oslo region and East Norway) have flows and counterflows which are close together in size while more distant regions (e.g. the Oslo region and the Centre-North) have less balanced flows. The flow to the

Oslo region from the Centre-North was 26% greater than the counterflow in 1984. However, the effectiveness measures for most flow pairs decreased between 1984 and 1994, suggesting that, at the regional scale, the Norwegian migration system was closer to equilibrium in the latter year.

Table 19: Migration flows between regions, Norway, 1984

MIGRATION FLOWS

Origins	Destinations					
	Oslo	East	South	West	Centre-North	Totals
Oslo	0	8945	1841	1977	2924	15687
East	9399	0	1868	1665	2790	15722
South	2064	1609	0	2016	1062	6751
West	3077	2327	2251	0	2158	9813
Centre-North	5011	4408	1883	2364	0	13666
Totals	19551	17289	7843	8022	8934	61639

NET MIGRATION

Origins	Destinations					
	Oslo	East	South	West	Centre-North	Totals
Oslo	0	-454	-223	-1100	-2087	-3864
East	454	0	259	-662	-1618	-1567
South	223	-259	0	-235	-821	-1092
West	1100	662	235	0	-206	1791
Centre-North	2087	1618	821	206	0	4732
Totals	3864	1567	1092	-1791	-4732	0

EFFECTIVENESS

Origins	Destinations					
	Oslo	East	South	West	Centre-North	Totals
Oslo	0	-2	-6	-22	-26	-5
East	2	0	7	-17	-22	-2
South	6	-7	0	-6	-28	-2
West	22	17	6	0	-5	4
Centre-North	26	22	28	5	0	7
Totals	5	2	2	-4	-7	0

Notes:
The regions are made up of the following counties:
Oslo: Akershus, Oslo
East: Østfold, Hedmark, Oppland, Buskerud, Vestfold, Telemark
South: Aust-Agder, Vest-Agder, Rogaland
West: Hordaland, Sogn og Fjordane, Møre og Romdal
Centre-North: Sør-Trøndelag, Nord-Trøndelag, Nordland, Troms, Finnmark

Table 20: Migration flows between regions, Norway, 1994

MIGRATION FLOWS

Origins	Destinations					
	Oslo	East	South	West	Centre-North	Totals
Oslo	0	9449	2103	2080	3249	16881
East	9774	0	1941	1944	2966	16627
South	2395	1723	0	2154	1272	7544
West	3031	2059	2595	0	2295	9980
Centre-North	4839	3595	1791	2666	0	12891
Totals	20039	16827	8430	8844	9782	63923

NET MIGRATION

Origins	Destinations					
	Oslo	East	South	West	Centre-North	Totals
Oslo	0	-325	-292	-951	-1590	-3158
East	325	0	218	-115	-629	-200
South	292	-218	0	-441	-519	-886
West	951	115	441	0	-371	1136
Centre-North	1590	629	519	371	0	3109
Totals	3158	200	886	-1136	-3109	0

MIGRATION EFFECTIVENESS

Origins	Destinations					
	Oslo	East	South	West	Centre-North	Totals
Oslo	0	-2	-6	-19	-20	-4
East	2	0	6	-3	-10	0
South	6	-6	0	-9	-17	-2
West	19	3	9	0	-7	2
Centre-North	20	10	17	7	0	5
Totals	4	0	2	-2	-5	0

Notes:
The regions are made up of the following counties:
Oslo: Akershus, Oslo
East: Østfold, Hedmark, Oppland, Buskerud, Vestfold, Telemark
South: Aust-Agder, Vest-Agder, Rogaland
West: Hordaland, Sogn og Fjordane, Møre og Romdal
Centre-North: Sør-Trøndelag, Nord-Trøndelag, Nordland, Troms, Finnmark

6.2 Migration flows between settlement types

Tables 21 and 22 collect together the migration flow statistics for municipalities grouped into the general classes used by Statistics Norway. Figure 5 presented earlier showed that several classes of municipality have geographically concentrated distributions (e.g. the Central mixed service industry category clustered in the Oslo region and its immediate surrounds) while others are dispersed (e.g. primary industry municipalities are found in the interior of most of Norway's regions).

The level of migration between these classes is higher and has increased more than the level of migration between regions, by 8.1% compared with 3.7% for inter-regional migration. Comparing 1984 and 1994 migration flows into all municipality classes increased. The largest increases were into the Central service municipalities class (K7) of 3 688 migrations or 11.1%. Because out-migration levels for this class distinction did not increase as much, the net migration increased into Central service municipalities. Out-migration behaved less uniformly over the period than in-migration, with the Less central services (K6) and Fishery (K9) classes experiencing declines in the level of out-migration. Net migration declined over the 1984-94 comparison for seven of the nine municipality classes. The Central service class saw larger net inflows while the Less central service and Fishery classes saw decreased net outflows. For the Fishery class one could expect a varying pattern given its small size and its dependence on a fluctuating resource base.

The effectiveness of flow exchanges between municipality types does not show the same clear structure as the inter-regional matrix (Tables 19 and 20). The municipality classes are not in any hierarchical order ranked by increasing distance. The highest values are found in the first and last rows of th table, where the K1 class, Primary Industry municipalities and the K9 class, Fishery municipalities, have many effectiveness indicators of greater than 10%. A greater proportion of out-migrants from these economically less sophisticated municipalities fail to be compensated for the counterflow.

Table 21: Migration flows between general settlement classes, Norway, 1984

MIGRATION FLOWS

Origins	Class	Destinations									
		K1	K2	K3	K4	K5	K6	K7	K8	K9	Totals
K1	Primary industry	0	425	330	738	919	735	1646	130	93	5016
K2	Mixed agric & manuf	391	0	667	698	1445	603	1769	222	132	5927
K3	Manuf	322	600	0	1204	3149	513	3163	342	106	9399
K4	Less central, mixed service & manuf	699	731	1158	0	2508	2484	4486	414	286	12760
K5	Central mixed service industry & manuf	742	1279	2974	1925	0	1219	15044	759	187	24129
K6	Less central service	648	572	477	2313	2013	0	4471	386	526	11406
K7	Central service	1224	1708	2702	3468	16621	2988	0	758	430	29899
K8	Manuf unilateral	152	233	352	430	911	321	1008	0	123	3530
K9	Fishery	137	148	140	454	328	642	841	119	0	2809
Totals		4315	5696	8800	11230	27894	9505	32428	3130	1883	104881

NET MIGRATION

Origins	Class	Destinations									
		K1	K2	K3	K4	K5	K6	K7	K8	K9	Totals
K1	Primary industry	0	34	8	39	177	87	422	-22	-44	701
K2	Mixed agric & manuf	-34	0	67	-33	166	31	61	-11	-16	231
K3	Manuf	-8	-67	0	46	175	36	461	-10	-34	599
K4	Less central, mixed service & manuf	-39	33	-46	0	583	171	1018	-16	-168	1536
K5	Central mixed service industry & manuf	-177	-166	-175	-583	0	-794	-1577	-152	-141	-3765
K6	Less central service	-87	-31	-36	-171	794	0	1483	65	-116	1901
K7	Central service	-422	-61	-461	-1018	1577	-1483	0	-250	-411	-2529
K8	Manuf unilateral	22	11	10	16	152	-65	250	0	4	400
K9	Fishery	44	16	34	168	141	116	411	-4	0	926
Totals		-701	-231	-599	-1536	3765	-1901	2529	-400	-926	0

EFFECTIVENESS

Origins	Class	Destinations									
		K1	K2	K3	K4	K5	K6	K7	K8	K9	Totals
K1	Primary industry	0	4	1	3	11	6	15	-8	-19	7
K2	Mixed agric & manuf	-4	0	5	-2	6	3	2	-2	-6	2
K3	Manuf	-1	-5	0	2	3	4	8	-1	-14	3
K4	Less central, mixed service & manuf	-3	2	-2	0	13	4	13	-2	-23	5
K5	Central mixed service industry & manuf	-11	-6	-3	-13	0	-25	-5	-9	-27	-4
K6	Less central service	-6	-3	-4	-4	25	0	20	9	-10	7
K7	Central service	-15	-2	-8	-13	5	-20	0	-14	-32	-2
K8	Manuf unilateral	8	2	1	2	9	-9	14	0	2	6
K9	Fishery	19	6	14	23	27	10	32	-2	0	18
Totals		-7	-2	-3	-5	4	-7	2	-6	-18	0

Notes: See Table 6 for the full description of the municipality class.
Agric = agriculture; manuf = manufacturing

Table 22: Migration between main municipality classes, 1994

MIGRATION FLOWS

Origins Class		Destinations									
		K1	K2	K3	K4	K5	K6	K7	K8	K9	Totals
K1	Primary industry	0	378	305	860	1148	786	1693	143	112	5425
K2	Mixed agric & manuf	406	0	812	805	1884	793	2066	226	184	7176
K3	Manuf	322	688	0	1246	3375	571	3367	346	153	10068
K4	Less central, mixed service & manuf	710	741	1108	0	2864	2753	5097	458	383	14114
K5	Central mixed service industry & manuf	711	1659	3433	2205	0	1299	7820	854	207	28189
K6	Less central service	675	620	514	2362	1665	0	4354	325	476	10991
K7	Central service	1338	1558	2611	3560	17694	3208	0	748	503	31220
K8	Manuf unilateral	134	247	346	447	1010	352	1030	0	107	3673
K9	Fishery	79	136	132	421	243	688	689	139	0	2527
Totals		4375	6027	9261	11906	29883	10450	36116	3239	2125	113383

NET MIGRATION

Origins Class		Destinations									
		K1	K2	K3	K4	K5	K6	K7	K8	K9	Totals
K1	Primary industry	0	-28	-17	150	436	111	355	9.	33	1049
K2	Mixed agric & manuf	28	0	124	64	225	173	508	-21	48	1149
K3	Manuf	17	-124	0	138	-58	57	756	0	21	807
K4	Less central, mixed service & manuf	-150	-64	-138	0	660	391	1537	11	-38	2209
K5	Central mixed service industry & manuf	-436	-225	58	-660	0	-365	126	-156	-37	-1694
K6	Less central service	-111	-173	-57	-391	365	0	1146	-27	-212	540
K7	Central service	-355	-508	-756	-1537	-126	-1146	0	-282	-186	-4896
K8	Manuf unilateral	-9	21	0	-11	156	27	282	0	-32	434
K9	Fishery	-33	-48	-21	38	37	212	186	32	0	403
Totals		-1049	-1149	-807	-2209	1694	-540	4896	-434	-403	0

EFFECTIVENESS

Origins Class		Destinations									
		K1	K2	K3	K4	K5	K6	K7	K8	K9	Totals
K1	Primary industry	0	-4	-3	10	23	8	12	3	17	10
K2	Mixed agric & manuf	4	0	8	4	6	12	14	-4	15	8
K3	Manuf	3	-8	0	6	-1	5	13	0	7	4
K4	Less central, mixed service & manuf	-10	-4	-6	0	13	8	18	1	-5	7
K5	Central mixed service industry & manuf	-23	-6	1	-13	0	-12	0	-8	-8	-2
K6	Less central service	-8	-12	-5	-8	12	0	15	-4	-18	2
K7	Central service	-12	-14	-13	-18	0	-15	0	-16	-16	-4
K8	Manuf unilateral	-3	4	0	-1	8	4	16	0	-13	6
K9	Fishery	-17	-15	-7	5	8	18	16	13	0	8
Totals		-10	-8	-4	-7	2	-2	4	-6	-8	0

Notes: See Table 6 for the full description of the municipality class.
Agric = agriculture; manuf = manufacturing

7. SYNTHESIS AND CONCLUSIONS

7.1 General change

Norway's population maintains relatively high population growth by European standards, fuelled by continuing natural increase and net migration from outside the country. The main period of external gain consequent on waves of out-migrants from countries in transition and the Third World fell between and after the dates of this study. External migration makes the most significant impact in the Oslo region (Table 10) where net immigration reinforces net internal in-migration and the East of Norway where external gains exceed internal. In the other parts of the country external gains balance internal losses.

7.2 Rural depopulation

About half of Norway's municipalities lost population in aggregate over the 1984 to 1994 (Figure 6). These municipalities are concentrated in the Centre-North and interior of southern Norway. There is evidence that communities with the lowest densities (Table 14) and least centrality (Table 15) are losing population through internal migration.

The internal migration losses from these remoter areas are dominated by the outflows of young persons (aged 15-29). However, there are some small gains in the retirement and elderly ages and in the family ages in these rural municipalities.

7.3 Urban deconcentration

Although the direction of migration is towards denser and more central places. This is a product mainly of the migration of young people when the migration streams are broken down by age, the resulting tales show that the largest urban areas are experiencing net losses from middle age and upwards, and also losses for the family ages.

7.4 Suburbanization or counter-urbanization

There is little direct evidence of net positive migration flows to rural remote areas for the population as a whole. Migration flows out of the Oslo region are to other

municipalities within commuting range. This deconcentration should therefore be identified as extended suburbanisation rather than counter-urbanisation.

7.5 The importance of the life course

Throughout the current report the role of life course stage in influencing the direction of migration has been stressed. Most often the overall pattern of population shifts conceal very different flow structures for family migrants, young adults, older workers, retirees and the elderly. In this respect internal migration dynamics in Norway strongly resemble those in other West European countries (the United Kingdom, the Netherlands).

7.6 The role of economic factors

These have an important influence on migration patterns. Municipalities with an economic concentration in service industries attract internal migrants while those specialised in primary industry suffer migration outflows consequent on the decline of or productivity improvements in their economic activities. There is a strong gradient of increasing net outflows with increasing levels of unemployment.

7.7 Future evolution

Mobility (total internal migration) has been declining since the 1960s in Norway and there is some evidence that in our study period the size of net exchanges of migrants reduced when 1994 is compared with 1984. In this respect Norway resembles other West European countries. Over the period studied, there was stability in the patterns with no major transitions to new regimes of population shift. We would not anticipate any dramatic changes to the current system of emphasis on central places and urban coastal regions in the south, with some local deconcentration.

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