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WORKING PAPER 00/03

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

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ABSTRACT

The paper examines the patterns of internal migration and population change in France over the recent decades at *département* and *commune* scales. Regional population change is controlled by both natural increase and internal migration. There are two differing patterns of natural increase: north and east France has higher natural increase and south and east has lower. The geographic pattern of internal migration has changed substantially over the last 50 years, most dramatically in the Île-de-France, which showed the highest gains between 1954 and 1962 but the highest losses between 1975 and 1982. Urban growth, which was strong in the 1950s and 1960s, reversed in the 1970s favouring small towns but recovered slightly in the last 20 years.

Migration gains and losses show a quite complicated pattern of depopulation of city centres combined with slow suburbanisation and advanced periurbanisation. Periurbanisation is evident in Paris region and in nearly all large urban agglomerations. Most other cities show suburbanisation or periurbanisation at various stages of development.

Out-migration shows a clear division of the country into a northern part with higher rates, and a central and southern part of the country with lower out-migration. This simple pattern is modified by higher out-migration from some cities such as Lyon or Clermont-Ferrand and from isolated rural communes scattered all over the country. Out-migration also has a regional dimension: there are shifts towards more attractive areas, in particular Alpine region and Mediterranean and Atlantic coasts.

Analysis of migration between size bands of rural and urban units shows a significant deconcentration process, and a similar pattern characterises migration between population density bands. The general movement is down the urban/density band hierarchy, from higher to lower urban/density bands. Deep rural areas are not attractive and excluded from the process of counterurbanisation. In addition, unemployment was found to have a strong and very efficient impact on migration behaviour.

Analysis for 1990-1999 leads to slight modification of this picture: a slow recovery of central parts of the largest urban agglomerations and less differentiated patterns than in the 1980s. deconcentration of the French population continues but is less powerful.

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1. CONTEXT

This study was funded by a research grant of the Economic and Social Research Council *Internal migration and population change in Europe. A comparative study* and constitutes a continuation of a research project on *Internal Migration and Regional Population Dynamics in Europe* commissioned to the School of Geography of the University of Leeds by the Council of Europe and the European Commission over the period 1995-1998. Within the ESRC project ten countries evenly distributed across Europe will be studied, adding to earlier ten case studies completed within the Council of Europe and the European Commission funded project, providing in total 20 case studies based on unified methodology and analysing spatial units in each country. Results are as comparable as possible, keeping in mind differences in how migration is defined and operational differences in how migration data are being acquired by National Statistical Offices.

2. INTERNAL MIGRATION AND POPULATION CHANGE REVIEWED

2.1 Demographic change

On March 8th, 1999 (Census Day) the population of metropolitan France stood at 58416500 inhabitants and has increased since 1990 by 385 thousands annually. Over the last two centuries the population of France doubled, but the speed of the increase varied from period to period. Over a long period lasting until World War II the increase was relatively slow. France was one of the first European countries to experience a lowering of fertility and in century prior to 1945 the natural increase of the population was lower than in her European rivals. The pattern of post-war changes is in sharp contrast with the preceding period: over 50 years the population increased by 18 million. This rapid increase was due to both natural increase and positive net international migration, though both have decreased since early 1970s.

Up to the first half of 1970s the rate of population increase was close, on average, to 1% annually due to the maintenance of high fertility and decreasing mortality. Increasing life expectancy at birth characterised the period, giving France one of the highest levels in Europe. Significant international migration gains from the Francophone Commonwealth and the Maghreb added to the positive natural growth.

Since 1974 the population increase rate halved to an average of 0.5% annually over the period 1974-1994. This phenomenon occurred mainly due to lower migration gains, but also in part as a result of lower natural increase. More recently population change has been mostly determined by the number of births, as immigration has been significantly reduced and the number of deaths levelled off. Low fertility (the Total Fertility Rate was 1.77 children per woman in 1999) brought about a reduction in the number of births, despite the increase in the number of females in fertile age groups. In future, the number of birth will decrease even

further with the entry into reproductive ages of smaller cohorts of women born after 1973. Despite this weakening of population growth, France has, in 1998, the second highest rate of population growth among European Union countries, after Ireland.

2.2 Evolving age structures

In the 1980s the French population increased on the average by 290 thousand per year. In the 1990s the annual increase of population dropped to around 240 thousand. These gains essentially depend on the excess in the number of births over the number of deaths. Various age groups benefit from these changes in different ways, which brings about changes in age structures through a decrease in the share of the youngest and the increase in the share of the oldest age groups.

The group below 20 years of age not only reduced its share in the total population from 28.3% in 1988 to 25.8% ten years later, but also decreased in absolute numbers. The numbers of new born are not sufficient to counterbalance the numbers leaving this age group through either dying or surviving to the next age group.

The economically active population (20-59 years) has increased in recent years its share in the total population as cohorts born in 1920s were gradually replaced by the last cohorts of baby-boom born in the decade of 1960s.

For the oldest age group the decrease in mortality plays a decisive role in delivering larger numbers of survivors to retirement and enabling them to live longer thereafter. The elderly population has been growing faster than the economically active population, resulting in overall ageing of the French population. In 1998 the population over 60 years of age accounted for 20.4% of total population, comparing to 18.6% ten years earlier. Under an assumption of TFR equal to 1.8 the proportion of 60 and more years old would rise in 2010 to

23%. In south western France the share of elderly population often exceeds 25% whereas in north eastern France rarely reaches 20%.

2.3 Geography of natural increase

There are two differing patterns contrasting north and east France with higher natural increase and south and west with lower natural increase. This geographical configuration of natural increase reproduces that of fertility. Traditionally fertility is below the national average in the south west while the highest fertility is concentrated around Paris basin, in the zone limited by English Channel and Mayenne in the west, Haute-Marne and Moselle in the east, Belgian frontier in the North and Yonne in the south. Only recently has the south east quarter of the country experienced relatively high fertility.

Differences in the level of mortality have much less impact on the natural increase. The inter regional differences in life expectancy are weak with slightly lower values in the north and slightly higher in the south but the differences in the level of ageing between regions eliminate this advantage of the southern regions. The Southern population experiences higher life expectancy but its older age structure means that in crude mortality terms North-South differences are reduced.

2.4 Internal migration change

The internal migration has been playing in this century an increasingly more important role, reaching maximum between 1968 and 1975 with 9.7% of population changing residence every year, 6% of population migrating between communes, 2.9% between departments and 1.8% between regions. Later on migration lowered, faster for short distance moves than for long distance ones. Between 1982 and 1990 the rates stood at 8.6% for changes of residence, 5.6% for intercommunal migration, 2.6% for migration between departments and 1.6% for interregional migration.

2.4.1 Interregional migration

Between 1954 and 1990 there were substantial changes in the geographic patterns of internal migration. There is little correlation between regional net migration observed for the 1954-1962 period, 1975-1982 period and finally 1982-1990 period.

The gains in the Rhône valley and the Mediterranean Coast were relatively stable, but the rest of the country underwent substantial changes: the net migration losses in North eastern France amplified over time and positive net migration in the Île-de-France and negative in the west reversed.

The most spectacular change concerns the Île-de-France, which switched from the highest gains between 1954 and 1962 (on the average 5.21 per thousand) to the highest losses between 1975 and 1982 (on the average -6.40 per thousand). Between periods 1975-1982 and 1982-1990 the deficit reduced and was lower than in North-eastern quarter of the country (Nord-Pas-de-Calais, Lorraine, Champagne-Ardennes). The Île-de-France experienced between 1962 and 1975 a strong increase of departures towards other regions followed between 1975 and 1982 by a decrease of arrivals from other regions. Between 1982 and 1990 departures decreased but the arrivals remained at an unchanged level.

With a much weaker level of mobility, regions of the north and the east follow the same evolution, characterised in particular by a marked increase in departures between 1954 and 1975. The difference lies in the age structures of migrants. The Île-de-France attracted young migrants and loses people at the retirement age, while the regions of the North-east lose young people and people entering the labour market. Western regions evolved in the opposite direction: arrivals strongly increased between 1962 and 1975 while the departures remained stable. Since 1975-1982 in-migration has also stabilised. In the South-east the long run trend continued in the most recent period. Net migration into the South-east has been positive over a long time but decreased in the latest time interval for which data are available.

2.4.2 Urban growth

In the two decades following the end of the Second World War a strong increase was observed in the urban population, particularly in the largest cities. From 1970 to 1982 the differences in growth rate between large and small urban places reduced slowly and reversed: small towns started to grow much faster than large ones. Between 1982 and 1990 the population increase started again in the largest French agglomerations, small towns maintained strong growth and medium size towns, around 100000 inhabitants demonstrated the lowest growth. This pattern remained visible in the period 1990 – 1999.

Migration explains these changes. In the 20 year-period 1960–1980 a reversal of a trend occurred. Rural communes, which initially had been losing population at the end of the period, received a surplus of in-migrants over out-migrants while large cities went from a position of gaining migrants to one of losing migrants. In the 1980s the gains of rural communes reduced as were losses of large cities. Between 1990 and 1999 negative net migration rates were still observed in medium size towns. It has to be stressed that the rural communes, that showed growth through net in-migration, are located in the periurban ring of large agglomerations rather than in truly rural places.

2.5 The role of international migration in the population dynamics of France

In 1990 the Census recorded 4.19 million immigrants, defined as persons born in a foreign country with a foreign nationality. This number was slightly larger than the one registered eight years earlier (4.07 million). In fact the number of foreigners has been increasing slowly since the mid 1970s (on the average 0.5% per year), what is in stark contrast with the increase in the period 1945 – 1974 which was almost six times faster.

The annual inflow of immigrants is estimated to be around 100000 persons. Between 1968 and 1974, before a restrictive migration law was adopted, the inflow stood on average at 210000 per year.

With time the composition of the immigration flows has changed. The increase observed between 1982 and 1990 was above all due to immigration of females. The share of Europeans in the pool of migrants also reduced. Africans, proportionally more numerous than earlier, originate most frequently from non-Maghreb countries in Francophone West Africa. The share of migrants born in Asia is also increasing.

The geographical distribution of foreigners in France varies substantially. Few migrants can be met in Bretagne and in western part of the country. Île-de France is a focal region as are departments in the east and on the Mediterranean Coast.

3. METHODS USED AND DATA EMPLOYED

3.1 Geographical scale, geographical units and variables used

The investigation of the population change and migration is conducted using two levels of administrative division in France. The relationship between migration and life stage is investigated for the 96 departments (*départements*). Figure 1 provides a map showing the departments of metropolitan France which can be used as a reference to the indicator maps and text discussion of spatial patterns. The map also shows the boundaries of the 22 regions (*régions*) which now play an important role in French planning and infrastructure development. All other variables are analysed on commune level. France's peculiarity is a very large number of communes – 36573 units at the 1990 census resulting in the average number of inhabitants per commune equal to 1577. However, in comparison to other countries, the administrative divisions of France have been remarkably stable.

3.2 Mapping techniques and problems

The mapping techniques used in this study have been explained fully in Rees, Durham and Kupiszewski (1996). For mapping purposes we purchased the digital of French commune boundaries, for 1991, from MEGRIN, an umbrella organisation of national cartographic agencies in Europe. Some minor adjustments were made to match demographic and social data collected during the French Census of 1990 to the boundaries of 1991.

3.3 Variables and key indicators used

A set of variables and indicators has been used to extract the most important features from complicated patterns of internal migration recorded at commune level. The selection of variables and indicators was determined by the requirements of comparable multinational

studies carried out using units at the lowest level of the administrative hierarchy. These two limiting factors forced us to use relatively simple variables available in most countries at commune level. Obviously, some indicators were specific to the country being studied. In France the specific indicators used were various classifications of communes prepared by INSEE. We list below the variables and indicators used and explain their meanings and statistical definitions.

3.3.1 Population and population change data

Population counts by communes in the 1990 and 1982 censuses were used. The 1982 data were recalculated by INSEE to the administrative division of 1990. Population change over the period 1982-1990 was calculated as a rate of growth based on the assumption that 1982 population equals 100. Values larger than 100 denote population increase, values smaller than 100 denote population decrease. We consider the direction of population change as a summary but imprecise measure of the demographic situation of communes.

For departments, numbers of population by sex and age in five year groups were provided by INSEE. These values were used for the calculation of migration rates for broad age groups by department.

3.3.2 Migration

France, unlike a majority of European countries, does not maintain a register of migration. The core of information available on internal migration is based on the census question about the place of residence of enumerated person on January 1st preceding the date of the *previous* census. Tabulation of the replies to this question results in information on the number of migrants, each of whom could made more than one migration in the intercensal period. For the time span of eight years between censuses the probability of multiple migration is considerable. There is an ample literature discussing the differences in the conceptual and statistical meaning

of migrants (persons making the transition between time points) and migrations (the events of moving) and the consequences of the use of each of these concepts (Courgeau 1973, 1980, 1988, Rees 1977).

INSEE provided data on inflow and outflow of migrants to each commune over the intercensal period 1982-1990. For departments, information on gender and broad age group of migrants was also available.

The count of migrants is not the best measure of mobility as it neglects multiple migration of one person, does not take into account return migration and is not comparable with measures of migration in other countries. Therefore it would be beneficial to this study if we could estimate the number of migrations based on the data on the number of migrants. The method for such estimation was proposed by Courgeau (1973, 1988). It allows for conversion of migrant counts at commune or department level from a 8 year period (the time between the 1982 and 1990 censuses) to a migration count over 1 year period.

The model is expressed in the form of equation (Courgeau 1988):

$$mP = M(t) / \left[(1 - K(1-l))t + K(1+l)(1 - e^{-kt}) / k \right]$$

where m is an instantaneous migration rate (annual equivalent, occurrence-exposure definition), P is the population of a unit enumerated during the census, $M(t)$ is the number of migrants recorded over t years in answer to a census question “where were you 8 years ago?”, K is the proportion making another migration in the population of all migrants, k is the an instantaneous probability of migration for the subpopulation making another migration, l is the proportion of return migrants and mP denotes a number of migrations.

In order to calculate an average number of migrations over a specific period of time measured in years we need to multiply both sides of the above equation by this time. In the case of an average number of migrations over one year we need to multiply both sides of the equation by 1.

This model requires parameters K , k and l derived from fitting census migration flows to survey data giving full information on migrations. The estimation of the parameters of the model was done based on a longitudinal survey of French migration behaviour (Courgeau 1988). A number of additional assumptions was made by Courgeau, such as that only migrations of rank 1 and 2 were taken into account in the estimation of the parameters, that the parameter k is independent of the geography used and that the parameter K is constant for a given geography but varies between geographies applied. This parameter was estimated for population at the age of 70 and over. The values of parameters are shown in Table 1.

Table 1: The parameters of Courgeau’s model for the estimation of migrations from the migrant count for France

Parameter	Change of			
	residence	commune	department	region
k	0.18	0.18	0.18	0.18
K	0.78	0.71	0.69	0.63
l	0.00	0.07	0.16	0.22
$K(l+l)$	0.78	0.76	0.80	0.77

Source: Courgeau 1988, p.181.

This model has been tested by French researchers on a number of occasions. Examples of applications can be found in Le Jeannic (1997), who annualised the number of migrants and in Baccaïni, Courgeau and Desplanques (1993) who calculated instantaneous migration rates for consecutive intercensal periods.

Using above formula and parameters from Table 1 we can calculate a correction factor allowing us convert the count of migrants over eight years to the count of migrations. Calculation of the numerical value of the denominator of the right hand side of the model equation returns the value 5.21 for communes and 5.06 for departments. Consequently we obtain $mP=M(t)/5.21$ counts for communes and $mP=M(t)/5.06$ counts for departments.

Through application of the Courgeau model we estimated annual-equivalent migration counts from inter-census migrant figures. From these counts we computed migration rates by division by the corresponding end-of-period census populations. Adoption of these populations at risk was not ideal but avoided formidable spatial and temporal harmonisation problems. So the rates computed in this case study are not strictly comparable to those used in other countries for which good annual population register information is available.

By the term rate we usually mean occurrence-exposure intensity (events divided by person-time exposed). When dealing with in-migration flows and net migration flows, the rates are really ratios of the migration to the end of period population, whereas out-migration flows can be divided by the sending populations. Since none of these definitions is entirely satisfactory, we generally employ the term “rates” when referring to out-migration and “ratios” when referring to in-migration, while recognising that both are “fuzzy” concepts.

3.3.3 Births and deaths

The number of births and deaths over the intercensal period 1982-1990 and corresponding death and birth rates for communes were provided by INSEE. The period for which data on fertility and mortality were provided was deliberately set to be equal to the period for which data on mobility were available in order to make assessment of the interplay between mobility and natural change possible.

3.3.4 Population density

Data on population density in 1990 in communes was provided by INSEE. It is used here as a simple proxy variable for the level of urbanisation.

3.3.5 Size class of communes

French statistics use the concept of urban units, which are delimited by INSEE before each census. The delimitation for 1990 census was prepared in 1989. Communes are assigned to an urban unit based on the forecast population count at the 1990 Census of at least 2000 persons and continuous built up area. A commune with less than 2000 persons can belong to an urban unit if at least half of its population belongs to the continuous built up area. A commune can not be split into two urban units, but an urban unit may consist of communes belonging to different regions or departments.

The size classes of urban units (rural, up to 19999 inhabitants, between 20000 and 99999, between 100000 and 1999999 and the Paris agglomeration) were supplied by INSEE. These classes are rather broad, so a more detailed classification into rural communes was constructed, urban units with less than 5 thousand inhabitants, between 5 and 10, between 10 and 25, 25 and 50, 50 and 100, 100 and 250, 250 and 500, and over 500 thousand inhabitants, with the Paris agglomeration as a separate class.

In order to determine the size class of each urban unit all communes constituting this unit were combined and the populations aggregated. Then the size class of each commune belonging to this urban unit was defined based on the size of this urban unit. Given the size of communes in France this is the only way to avoid the artificial fragmentation of urban units.

3.3.6 Functional classification of communes

Three classes of communes have been distinguished by INSEE: communes belonging to urban centres (*pôles urbains*) defined as urban agglomerations that offer at least 5000 jobs. To the second class belong periurban communes defined as communes where at least 40% of their active population work in the urban centre or in communes linked to them, and multi-polar communes defined as communes where at least 40% of the active population work in several

urban centres. Finally rural communes are those which do not belong to any of above listed classes.

3.3.7 Socio-economic classification of communes

Tabard (1993) prepared a classification of communes based on the occupational structure of its population. The classification is hierarchical and has three levels (see Table 2). At the top level of the classification there are four broad socio-professional categories, which are attached to areas with the appropriate occupational mix: agricultural, industrial working class, middle class employed in tertiary sector or in technical professions and finally upper middle class of managers and professionals and senior employees of high-tech industries. These categories are further divided into nine subcategories specified in Table 2 and a further 33 classes (not used).

Table 2: A socio-economic classification of French communes based on the 1990 census

Class code	Class definition
A	Agricultural areas
A1	<i>Agriculture and rural crafts</i>
A2	<i>Forest industry and food industry</i>
A3	<i>Salaried employees in food and wine industry</i>
I	Industrial areas
I1	<i>Blue collars employees in dominant industries</i>
I2	<i>Blue collars associated with agriculture</i>
M	Middle class working and tertiary sector areas
M1	<i>Middle class working in tertiary sector, provincial towns</i>
M2	<i>Middle class employees in periurban and expanding cities</i>
S	High tech and tertiary sector areas
S1	<i>Small business, high tech, Paris agglomeration</i>
S2	<i>Teaching, information, communication, individual services</i>

Source: Tabard 1993, p.16

For the purpose of this analysis 9 subcategories will be used, a compromise between the small number of top level classes and the great detail of information at the lowest level of the scheme. Three subcategories refer to agriculture and rural crafts, two refer to industrial occupations, two refer to middle class working in tertiary sector and technical occupations and two refer to upper middle class working in tertiary sector and high tech industries.

3.3.8 Unemployment

Data on the unemployment rate in 1990 in communes calculated as a fraction of unemployed in economically active population were provided by INSEE and used in the study.

4. THE PATTERN OF INTERNAL MIGRATION BETWEEN DEPARTMENTS THROUGH LIFE COURSE, 1982-1990

4.1 The pattern of internal migration between departments, all ages

4.1.1 In-migration

Between 1982 and 1990, the annual ratio for migration between departments was equal to 25.8 per 1000, decreasing from the period 1968-1975 (29.0 per 1000 between 1968 and 1975, 26.5 per 1000 between 1975 and 1982) (Baccaïni, Courgeau, Desplanques, 1993).

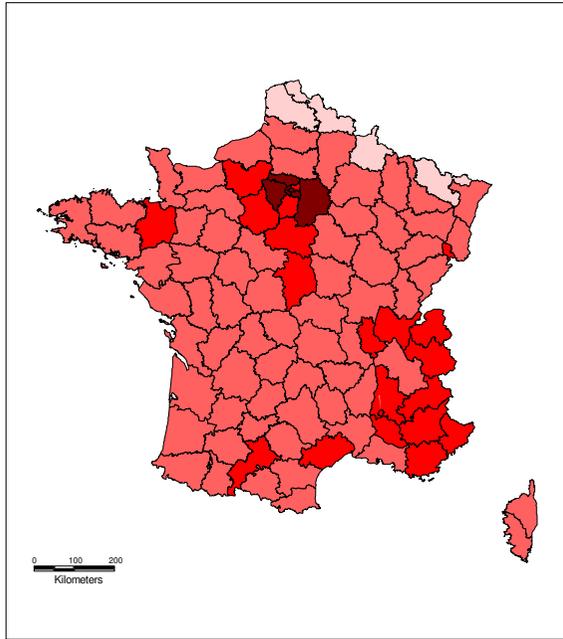
A map of internal in-migration ratios (Figure 2) by departments (*départements*) over the period 1982 – 1990 shows that there are three major areas of high level of inter-departmental in-migration: the Paris basin, the South-East and the South-West of the country. The annual in-migration ratio calculated according to the method of Courgeau exceeds 40 per 1000 in all departments of Île-de-France (with the maximum of 59 per 1000 in Seine-et-Marne). It is also high in Alpes-de-Haute-Provence and in the Var department. This ratio is high (over 30 per 1000) in most of departments of the regions Rhône-Alpes, Provence-Alpes-Côte-d'Azur and in numerous departments of Languedoc-Roussillon and Centre.

The attraction of southern departments is on the expense of other regions: Provence-Alpes-Côte d'Azur, Languedoc Roussillon and Corse, together with the Centre region have the highest in-migration ratios of all French regions in the period 1982 - 1990 (Baccaïni, Courgeau, Desplanques, 1993).

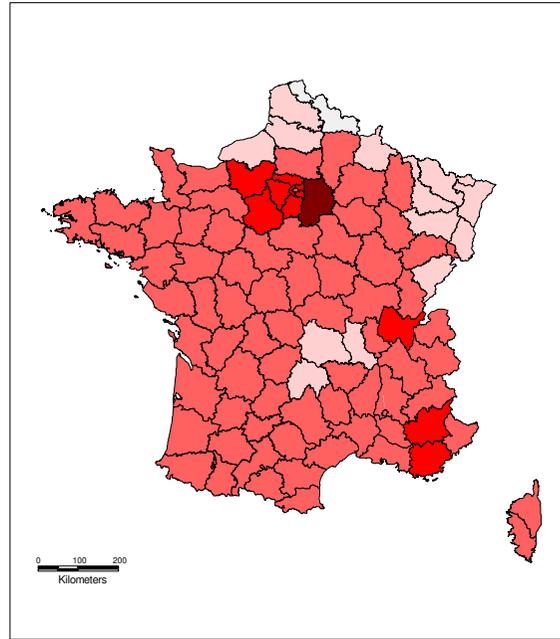
Inflows to the departments of the region Centre also originate very often from another regions and above all from the nearby Paris region. Region Île-de-France became less attractive from early 1970s, and the high in-migration rate is mostly due to intraregional interdepartmental flows. An exceptionally high level of immigration to Seine-et-Marne reflects

Figure 2: In-migration rates by departments and age groups, France 1982-1990

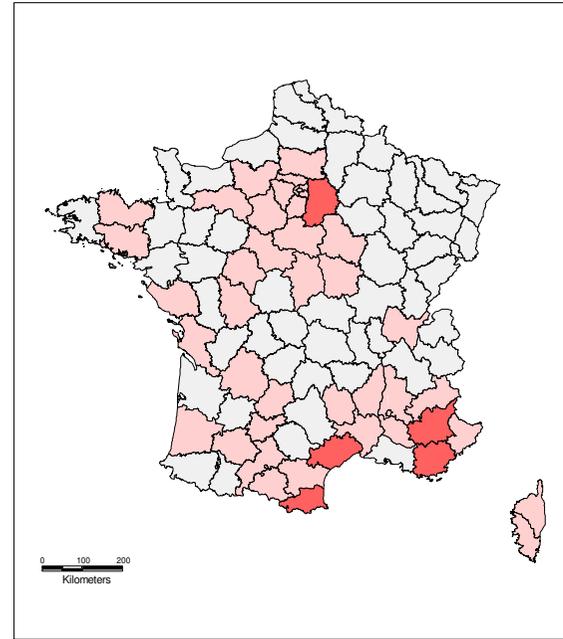
Ages 25-29



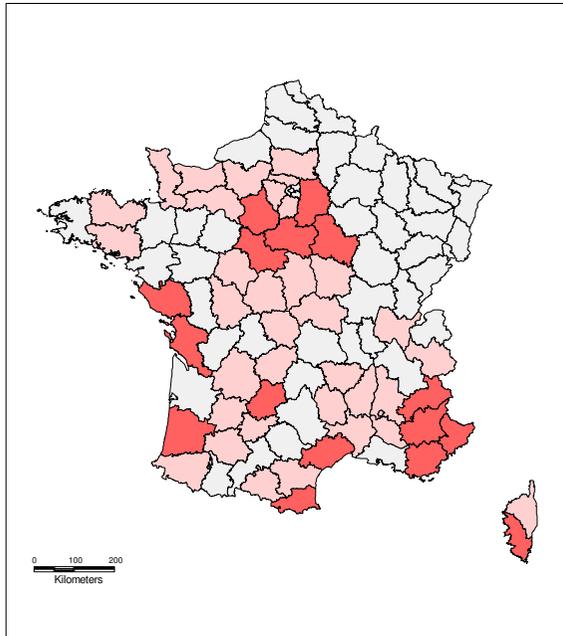
Ages 30-44



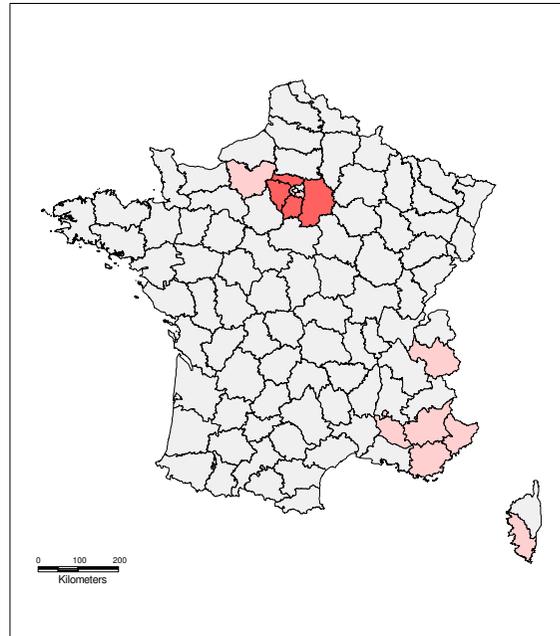
Ages 45-59



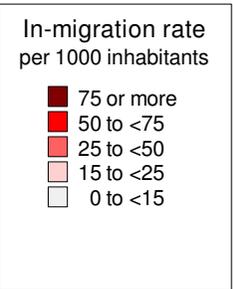
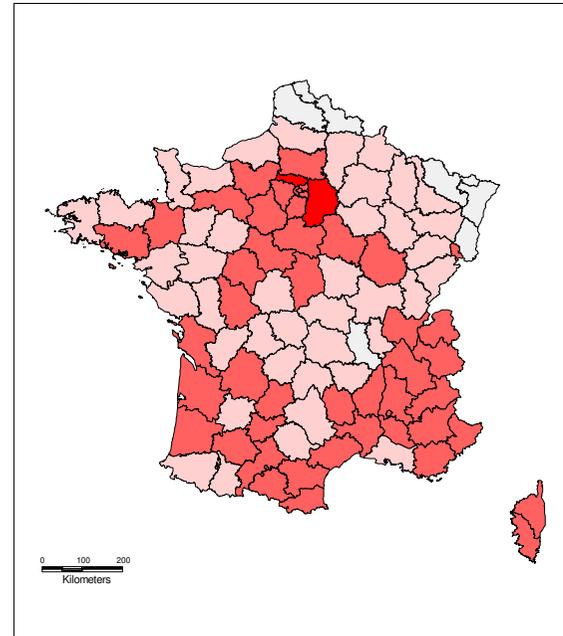
Ages 60-74



Ages 75 or more



All ages



the process of periurbanisation, the out-migrations of inhabitants of Paris and “Petite Couronne” (inner ring) towards rural peripheries with lower population density.

High levels of in-migration to departments of the region Rhône-Alpes can also mostly be explained by intraregional migration. The lowest levels of in-migration could be observed in the departments in northern and eastern part of the country (Nord, Moselle, Haut-Rhin, Bas-Rhin, Pas-de-Calais, Vosges). Three regions, Nord, Lorraine and Alsace, had the lowest level of internal migration between 1982 and 1990, this low level of internal in-migration in the north-east of France being observed since the 1950s.

4.1.2 Out-migration

Two unequal in size groups of departments are characterised by high outmigration rates (Figure 3): a small group of non-coastal Mediterranean departments on one hand and a large group of departments ranging from Centre region through Île-de-France to Champagne-Ardenne.

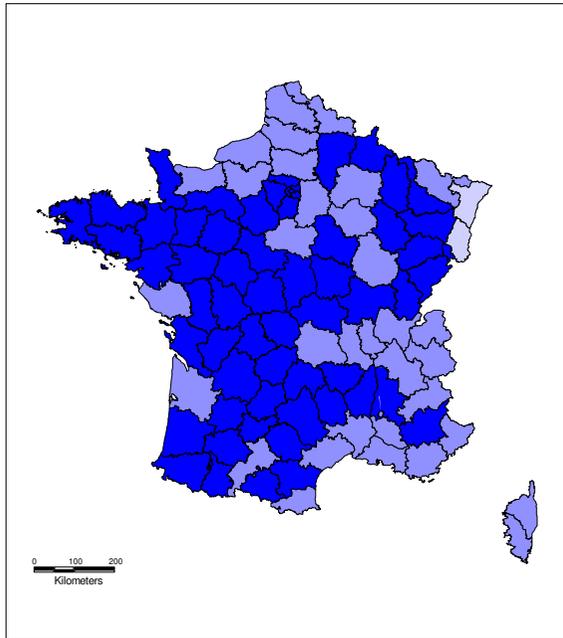
The highest level of out-migration occurred in Paris and surrounding departments (69 per 1000 in Paris and over 50 per 1000 a year in its ring between 1982 and 1990). These rates express on one hand deconcentration within the Paris region and, on other hand, departures to other regions, in particular in the south and west.

The high out-migration rate from the Rhône department can be also attributed to periurbanisation: departures from the Lyon agglomeration to surrounding nearby departments, in particular Ain.

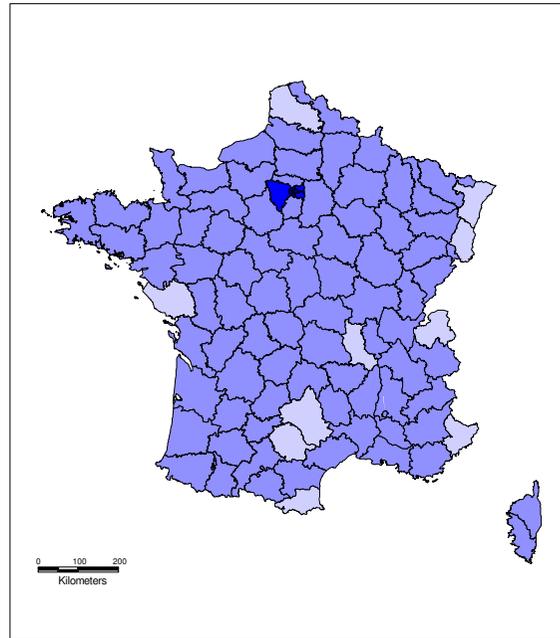
Out-migration plays important role in the departments around Paris, in a number of departments in the east (Haute-Marne, Meuse, Meurthe-et-Moselle), west of Paris basin (Orne, Eure-et-Loir, Eure, Loiret) and in several non-coastal departments of the Midi (Vaucluse, Hautes-Alpes, Alpes de Haute-Provence).

Figure 3: Out-migration rates by departments and age groups, France 1982-1990

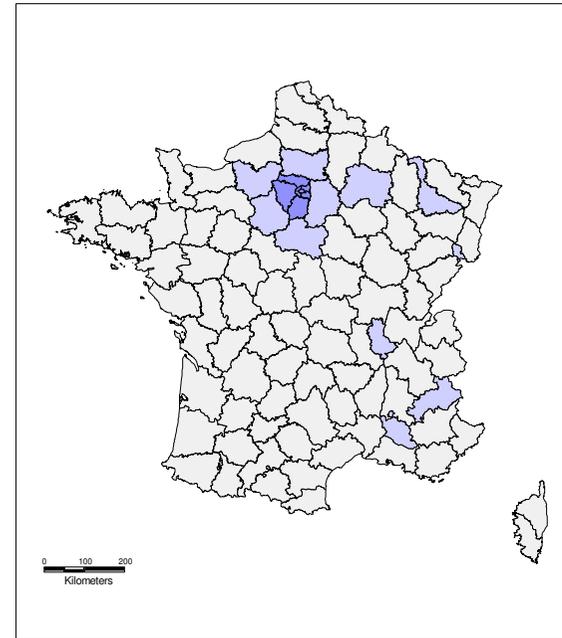
Ages 25-29



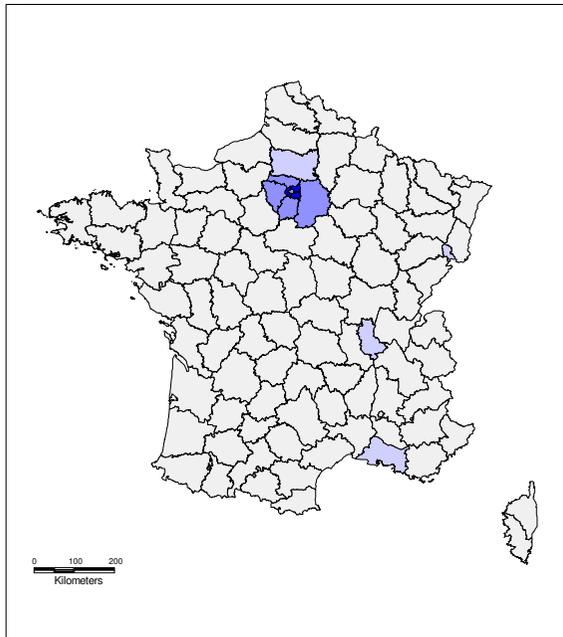
Ages 30-44



Ages 45-59



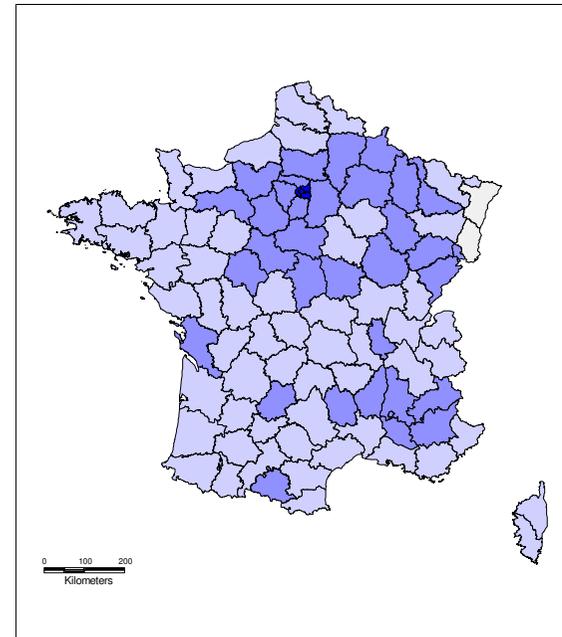
Ages 60-74



Ages 75 or more



All ages



Out-migration rate
per 1000 inhabitants

- 75 or more
- 50 to <75
- 25 to <50
- 15 to <25
- 0 to <15

There are, however, different mechanisms behind these high outmigration rates. In departments of the Paris basin, interregional out-migration accounts for substantial part of all moves, whereas in Provence most interdepartmental migrations are internal to the Provence-Alpes-Côte d'Azur region towards the Mediterranean departments.

Departments with low out-migration rates are spread all over the country. The lowest rates occurred in two Alsacien departments. This situation is not a new one: Alsace and the north of the country have recorded the lowest out-migration rates for over 30 years. Such attachment of the population of Alsace and the North to their regions of origin has often been observed in the past and continues up to the present.

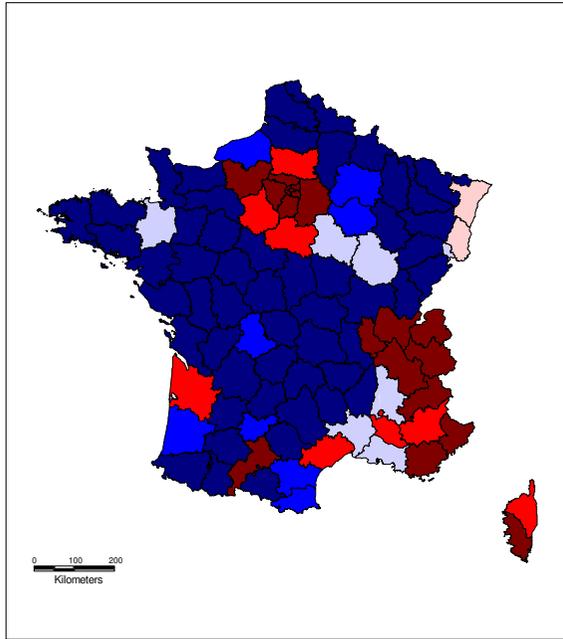
4.1.3 Net migration

Departures are much larger than arrivals in all departments of the north-east, from Nord to Lorraine and Champagne-Ardenne, where the net migration rates are around -10 per 1000 per year (Figure 4). These departmental deficits are mostly created through interregional exchanges. These regions suffered in the period 1982-1990 the largest net migration losses, confirmed by consecutive censuses of population. This is due to an unattractive character of these regions dominated by old traditional industries in permanent economic crisis for the last 30 years.

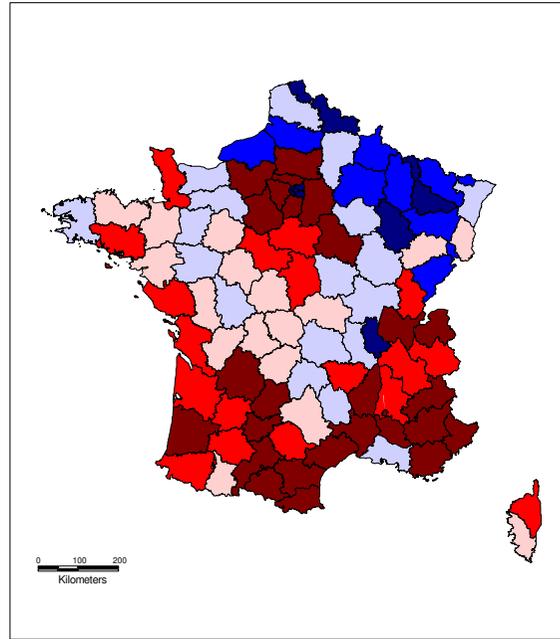
The situation in the Paris region is more complex: strong migration deficits in central departments (Paris and its suburbs) exceed values observed in the periurban zone, which extends to the departments of Eure and Oise. The city of Paris shows record net migration losses of -30 per 1000 a year, whereas the rates for suburban departments of Paris vary around an average of -10 per 1000 a year. This situation may be explained by the important role of the departures to the periurban departments and to other departments of the Paris basin, but also to distant departments of Western and Southern France.

Figure 4: Net migration rates by departments and age groups, France 1982-1990

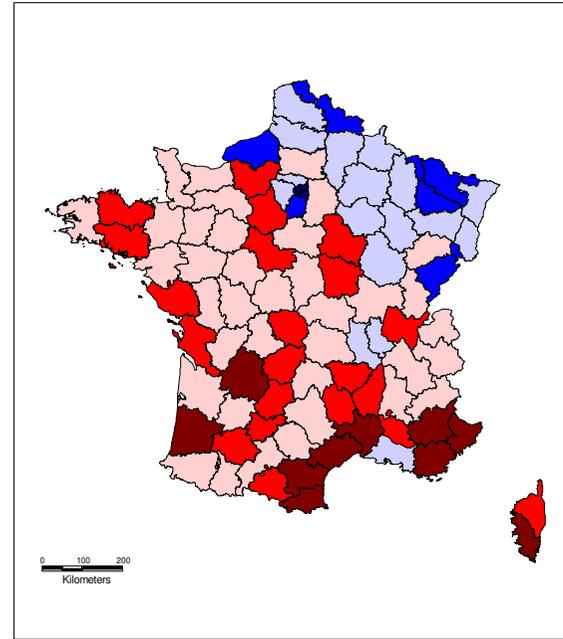
Ages 25-29



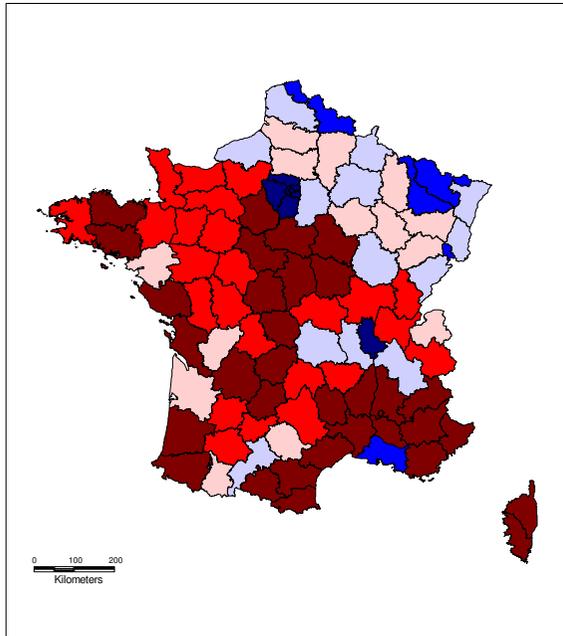
Ages 30-44



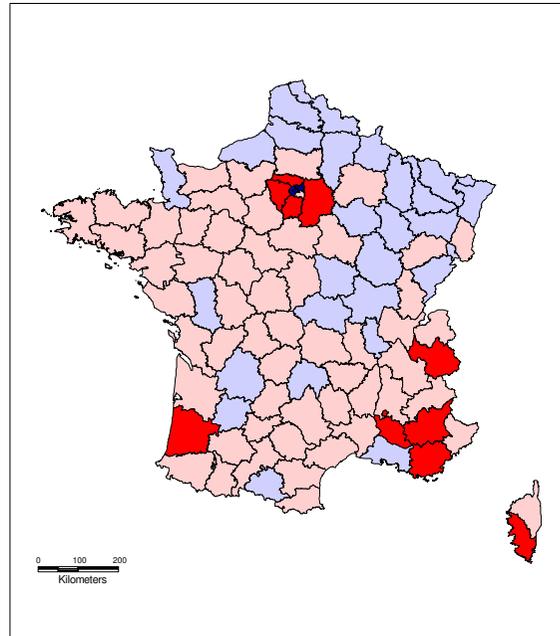
Ages 45-59



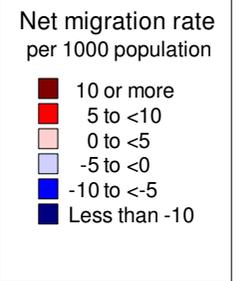
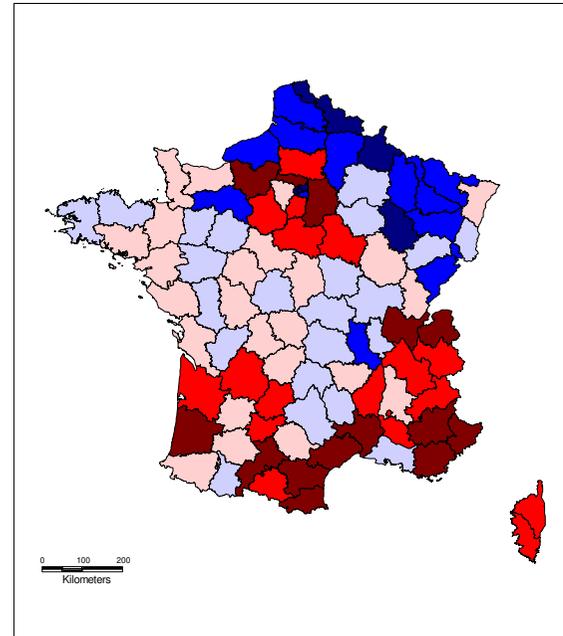
Ages 60-74



Ages 75 or more



All ages



The high migration gains of the periurban ring around Paris can be explained by the attraction of these departments to the out-migrants from Paris, due to pleasant living conditions and lower prices of housing, making owner occupancy affordable. The department of Seine-et-Marne enjoyed a record high net migration of 28.2 per 1000 a year between 1982 and 1990.

As a whole the region Île-de-France has lost population due to migration exchange with other regions between 1982 and 1990, but the deficit decreased in comparison with previous inter-censal period of 1975-1982, essentially because of the reduction in the number of departures.

The highest net migration gains were observed in the south of France, forming a large band from the region Rhône-Alpes, through the Mediterranean region to the South-West. These southern departments profit most from interregional migration.

A general scheme of interdepartmental migration should be first of all investigated in detail by considering separately different age groups, corresponding to different stages of the life cycle. The same department or region may be at the same time very attractive for one group of age and very repulsive for another.

Before we proceed any further, let us recall the limitations of the census data from the point of view of the analysis of migration by age. A migrant between two departments was defined as a person who resided on the 1st January 1982 (the date of the previous census), in a department different from the place of residence at the census of 1990. The date(s) of migration(s) are ignored. That means that a migrant aged 30 in 1990 could have actually migrated at any age between 22 and 30. This uncertainty about the age distribution of migrants at the time of their migration is reinforced when one examines single age groups. Migrations of persons aged 30-34 in 1990 could have taken place when these persons were

aged 22 to 34 years. Therefore it has to be kept in mind that the discussion that follows refers to the age of migrants at the time of the census rather than at the time of migration.

4.2 Migration in the economically active age groups

Population at the ages from 30 to 59 years will be considered as economically active.

4.2.1 In-migration

The spatial pattern of in-migration rates by departments is different for the 30-44 and 45-59 age groups (Figure 2). Between 30 and 44 years, creation and expansion of families dictate, to large extent, migration behaviour. The most attractive departments are those in region Île-de-France, in particular the Seine-et-Marne department, extending towards Eure and Eure-et-Loir, with the notable exception of Paris. Periurbanisation is mostly fuelled by migrants in the age group 30-44 years, who, in pursuit of more spacious housing and better living conditions for children quit Paris and move towards the suburbs (*banlieue*) or more distant periphery.

The same phenomenon can be observed in Rhône-Alpes, with the high in-migration ratio in the age group 30-45 years with high inflow to the department of Ain which attracts migrants from the Lyon agglomeration.

Departments lying in the south of the Mediterranean region (Alpes-de-Haute-Provence, Var, Vaucluse, Hautes-Alpes) are equally attractive for migrants aged 30-44 as they are for all other age groups.

The departments in the North, North-East and in the Massif Central are characterised by low in-migration rates in age group of 30-44 years. This is either due to an unattractive economic structure dominated by old industries in crisis with low restructuring potential or due to the very rural character of some areas (Massif-Central).

For the population aged 45 or over, departments of the Paris region are less attractive (with the exception of Seine-et-Marne, which maintains a high in-migration ratio).

Departments in the south of France attract migrants from all origins. Lowest in-migration ratios in this age group occurs in the North-East part of the country and in the Massif-Central.

4.2.2 *Out-migration*

Departments of the Paris region and in particular Paris itself displayed the highest rates of out-migration in the 30-59 age group (Figure 3). High rates could be also seen in a number of departments relatively dispersed: several departments in the east (Meurthe-et-Moselle, Meuse, Haute-Marne, Marne), several departments in the south (Vaucluse, Hautes-Alpes) and the department of Rhône.

4.2.3 *Net migration*

For ages 30-44, two groupings of departments with very high positive net migration rates can be distinguished. The first consist of departments in the periurban ring of Paris and contiguous region: Eure, Eure-et-Loir, Oise and Yonne (Figure 4). The second forms a belt extending from region Rhône-Alpes in the south of France to the south of Bretagne. The highest net migration rates for age group 30 to 44 are observed in department of Seine-et-Marne (42.8 per 1000 per year).

The largest migration losses occurred in North-East of the country, in the core of Paris region (Paris and *banlieue*) and in the department of Rhône.

In other words regions gaining in the family ages are located in the periurban zones of urban agglomerations and in the south. At the other end of the spectrum very rural zones, zones with old industries in economic crisis and centres of large metropolitan areas (principally Paris and Lyon) are characterised by highest migration losses.

For ages 45-59 the spatial pattern of net interdepartmental migration rates is slightly modified in comparison to the pattern for ages 30-44. France is divided into two parts along a line running from Le Havre to Jura: north-east of this line, departures exceed arrivals; south of

this line arrivals are more numerous than departures, in particular in the Mediterranean south. The entire Paris region with exception of the department of Seine-et-Marne, departments of Rhône, Loire and Bouches-du-Rhône belong to the first group of departments, with negative net migration rates.

4.3 Interdepartmental migration of retired persons

In this section we will concentrate on the migration of persons at the ages from 60 to 74 years, the age of leaving labour force and retiring. In the oldest age group, 75 and over, the mobility is very low.

4.3.1 In-migration

High rates of in-migration can be seen in three groups of departments: first is found in the south-east of the Mediterranean region (with exception of Bouches-du-Rhône), the second group of departments is located immediately south of the region Île-de-France (Eure-et-loir, Loiret, Loir-et-Cher, Yonne), and the third is a small cluster of departments in the West on the Atlantic coast (Vendée, Charentes-Maritime, Landes) (Figure 2). This in-migration originates mostly from the Paris region at the time of retirement. Many of them return either to their region of birth or to another region judged as attractive due to a pleasant environment. Low in-migration rates are seen in the North-East of France, but also in Paris, Rhône (with the city of Lyon at its core) and Bouches du Rhône (containing the city Marseille).

4.3.2 Outmigration

A map of interdepartmental out-migration rates in the age group 60-74 (Figure 3) shows a Paris – province dichotomy. Among important senders are the departments of Île-de-France, to which one may add departments of Rhône and Bouches-du-Rhône, containing the two largest French cities after Paris: Lyon and Marseille. The lowest rate of departures is seen in departments in Bretagne (Morbihan, Finistère, Côte-du-Nord). The geography of migration of

the retired population can be summarised as an escape from big urban regions, and above all, from Paris

4.3.3 Net migration

The spatial pattern of net migration rates for persons aged 60 to 74 years resembles the pattern of net migration of those aged 45-59. On the one hand, we have departments gaining population due to migration located south to the line joining Le Havre and Jura, and departments with prevailing migration losses in the north-eastern part of the country (Figure 4). To the losing departments we have to add those of the Paris region and some of the wide region of Lyon (departments of Rhône, Loire and Isère), as well as Puy-de-Dôme, Bouches-du-Rhône, and Haute-Garonne, that is departments with large urban agglomerations.

The attraction of the Mediterranean coast for the elderly is not a new phenomenon. It was quite strong in the 1950s but in the period 1982-1990, it was overtaken by the neighbouring region of Languedoc-Roussillon and by a number of departments on the Atlantic coast.

4.4 Interdepartmental migration of young adults

This group was 16-20 or 17-21 years of age at the start of 1982, so we are effectively looking at migrations which could have taken place between ages 16 to 29 years. This is a broad age span in which peak mobility is reached, within which several important life transitions occur (first job, first marriage or cohabitation, entry to higher education, launching a new career or starting a family). The interpretation of the spatial patterns of migration of this age group will therefore be a difficult task.

4.4.1 In-migration

The eight departments of the Paris region are the most attractive to migrants in the age group 25-29 in 1990, with the in-migration ratios extremely high in the Paris and Hauts-de-Seine departments. The Paris region plays a particular role for young adults: they come there to study or to look for their first job, and for many young people from the provinces, Paris is a compulsory stage in their professional career. A relatively high in-migration ratio was also observed in a cluster of departments in the south-east, from Haute-Savoie to Var. The most northern departments (Nord, Pas-de-Calais, Ardennes, Moselle) offer few attractions to young adults as, being in permanent economic crisis, they offer few employment opportunities. A less attractive milieu (climate, natural environment) probably also plays a role.

4.4.2 Out-migration

The map of interdepartmental out-migration rates (Figure 3) of young adults is much less clear: departments with highest rates are dispersed all over France, many of them are rural departments without an urban agglomeration: Côte-du Nord, Orne, Haute-Marne, Nièvre, Creuse and Haute-Saône, for example. They offer little choice of education and jobs for young adults. The departments which retain their young adults (low outmigration rates) are the departments in Alsace joined by departments in the south-east (Haute-Savoie, Haute-Corse, Alpes-Maritimes) as well as departments in the north of France (Seine-Maritime, Nord, Moselle). Often young people from unattractive areas, in particular in the North, find it difficult to leave them, what effectively reduces out-migration rates.

4.4.3 Net migration

High net migration rates for ages 25-29 clearly are characteristic for two groups of departments: in the Paris region and in neighbouring departments (Eure, Loiret, Oise, Eure-et-Loir), as well as in the south-east (from Ain to Corse). The South-West, attractive for older

age groups, is not that attractive for young adults: only departments containing large urban agglomerations (Hérault with Montpellier, Haute-Garonne with Toulouse, Gironde with Bordeaux) have positive net migration rates. Positive net migration rates in Alsace are mostly due to very low out-migration level.

High net migration losses are observed in a large band extending from Bretagne to Massif-Central. These are rural departments, often with a poor economic performance, where young people can find neither education nor employment. The second group of departments where departures exceed arrivals constitutes a band of departments in the north-east, from Pas-de-Calais to Jura.

Concluding, Île-de-France plays an exceptional role in the system of the migration exchanges in France. More than 40% of persons that change region either migrate to or leave Île-de-France. The capital region continues to attract young adults from other regions, at the time of starting tertiary education or first employment, but departures from Île-de-France exceed arrivals in the region, before age 20 and after age 30. This mechanism is not without an impact on the natural growth of departments. Migrants who start their economically active life in the Paris region also start their families here, resulting in a high birth rate for the area. Departures of retirees contribute to the lowering of crude death rates. Because of migrations, the Paris region benefits from high natural increase. International migration is also very important in bringing young adults and families, with a high fertility tradition, to the national capital.

5. POPULATION CHANGE AND MIGRATION BY COMMUNE

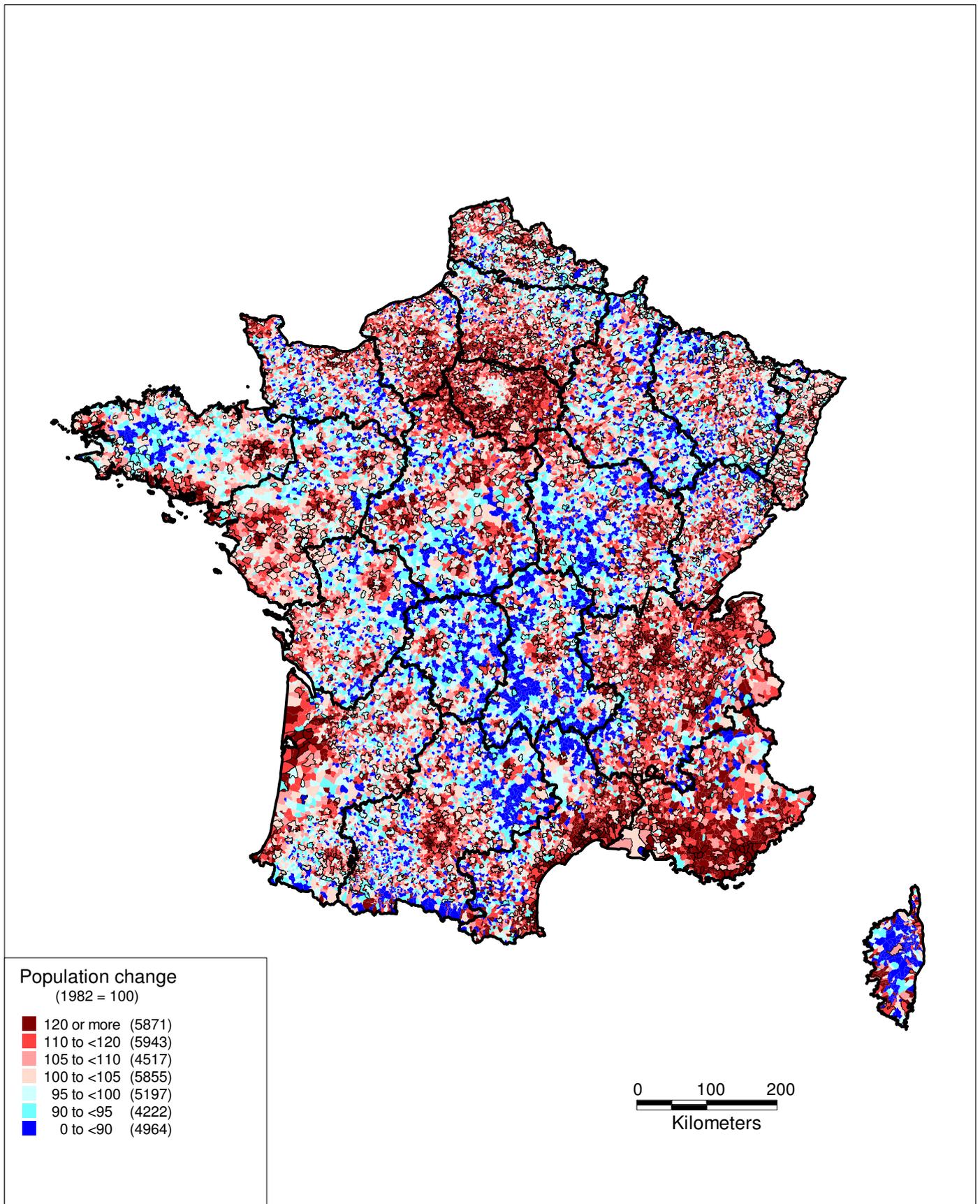
5.1 Population change in France by communes 1982-1990

Over the period 1982-1990 slightly less than two thirds of all communes in France gained population (Figure 5). There is a clear geographic patterns of population change. Rapidly declining rural communes concentrate in the eastern Midi-Pyrénées, Limousin, southern Auvergne and in the belt extending from Limoges to Nancy. Slower population losses are visible in a belt between Lille and Metz, in non-coastal Bretagne and Basse Normandie and in non-coastal Corse.

As mentioned in section 4, the prevailing pattern of population change was increase. The fastest growth could be seen in south-eastern France. However, the most significant process of population concentration and deconcentration has involved large towns and cities. Most visible is the process of periurbanisation, where both city centre and suburban ring lose population, and communes more distant, but still within a commuting access to the labour market of the urban agglomeration, increase population. Such process is very clear in the Île-de-France and was analysed in detail by Baccaïni (1998) together with an analysis of underlying commuting patterns (Baccaïni 1996a, 1996b, 1997).

Among urban agglomerations over 150000 inhabitants there was a mixed fate in terms of population growth. Approximately half experienced moderate growth and the other half moderate decline. More significant differences occurred between population change in agglomeration cores and suburban rings surrounding these cities. To characterise these processes it may be useful to apply a simple model of phases of population change of functional urban regions initially invented by Hall (1971) and further developed by Klaasen, Molle and Pealinck (1981).

Figure 5: Population change by communes, France 1982-1990



Klaasen and colleagues distinguished eight phases in the development of functional urban regions, defined by the relationship between the growth of urban core and its surrounding ring, overall changes of the population of functional urban region and the speed of change. Grzeszczak (1996) has reviewed these and other models of urban development and the unified nomenclature used by him will be used in this study. It is useful, in particular, to distinguish between the processes of suburbanisation and periurbanisation. Suburbanisation involves the growth of housing and population in areas contiguous with or very closely linked to existing built up areas of urban cores. Periurbanisation refers to similar growth but in settlements separated from urban cores and their suburban ring by intervening land still in less intensive use (farming, parks, mineral workings).

Four agglomerations demonstrated remarkable growth: Montpellier, Strasbourg, Bordeaux and Rennes. In all three cases the city cores experienced slow growth (up to 5%), whereas suburban rings grew very fast, by more than 20% over 8 years. The Bordeaux and Rennes agglomerations had a few communes in the suburban ring that lost population. Slightly slower growth of the suburban ring was observed in Nantes, Toulouse, Nîmes, and Nice. These urban agglomerations could be classified, according to Klaasen, Molle and Pealinck (1981), as belonging to the third phase of development, that of relative deconcentration. The cores of urban agglomerations of Limoges, Besancon, Perpignan, Marseille, Toulon, Clermont-Ferrand and Mulhouse lost population, whereas their suburban rings grew. This category of agglomerations is labelled as absolute deconcentration. Both classes, relative and absolute deconcentration, denote that suburbanisation is in progress.

A number of cities, for example Rouen and Brest, in which the urban core grew show a mixed pattern of changes in the suburban ring, requiring the use of more refined tools than cartographic analysis to define their stage of development. The same observation applies to a

group of cities in which urban core declined and suburban ring showed a mixture of growing and declining communes, such as Amiens, Le Havre, Grenoble or Saint-Etienne.

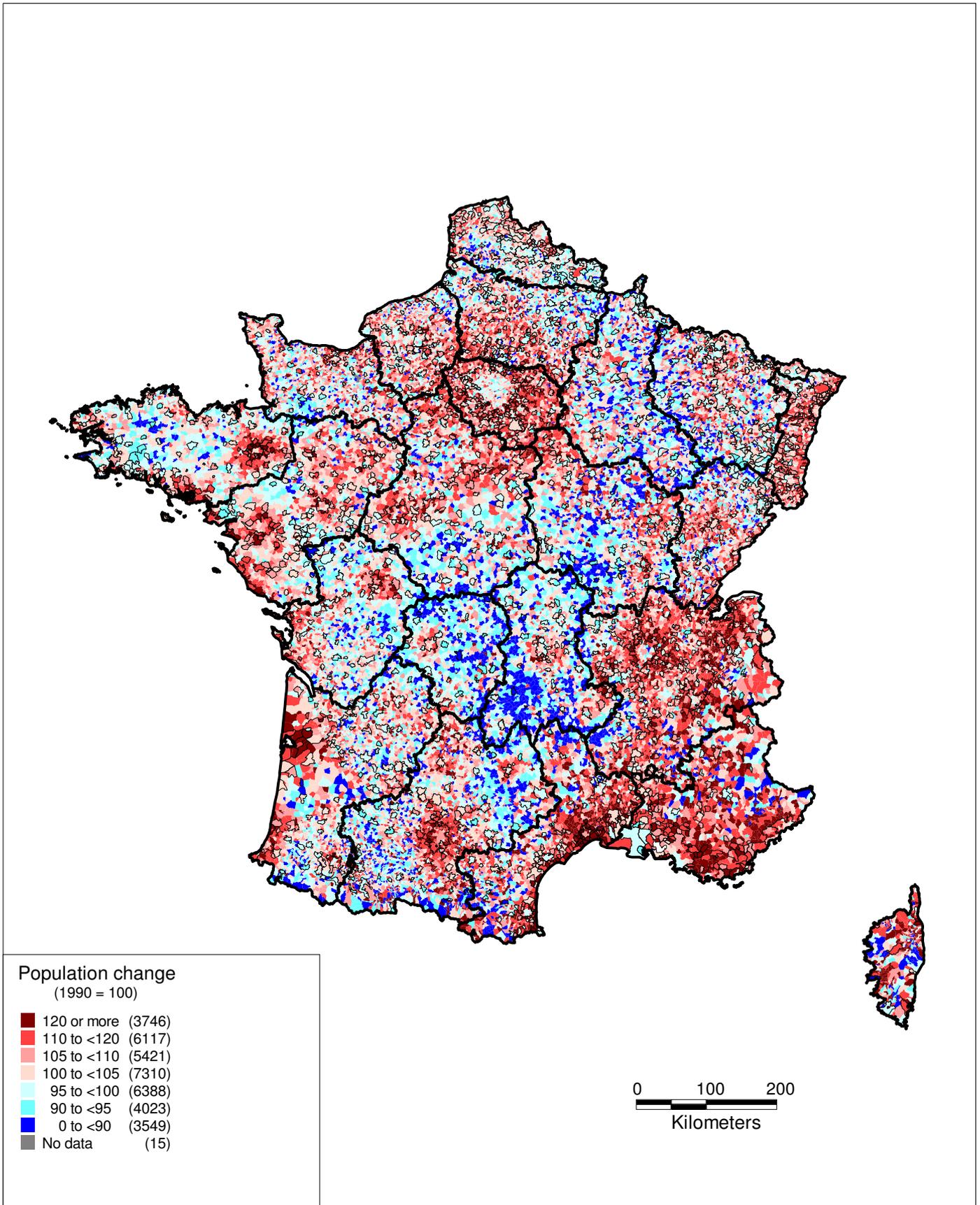
Although we did not use a strict analysis of the patterns of growth of core and suburban areas, as we did not formally delineate them, we can draw some important conclusions. Periurbanisation is evident in Paris region and in almost all large urban agglomerations. Most of other cities show suburbanisation or periurbanisation at various stages of development. Urbanisation, although infrequent, can still be seen in some cities and in most cases could be attributed to its mature form - reurbanisation. The overall picture is quite complicated, but we can state that the prevailing pattern is a steady process of urban deconcentration.

5.2 Population change in France by communes 1990-1999

Well over two thirds of all communes in France increased their populations between 1990 and 1999 (Figure 6). That is a higher proportion than this in the 1982-1990 period, meaning the spatial scope of depopulation is smaller. The pattern of population change observed in the intercensal period 1990-1999 is remarkably similar to that observed between 1982 and 1990. Depopulation was concentrated in central France, in eastern Mid Pyrénées, in Bretagne (with the exception of coastal communes) and in the belt extending from Limoges to Nancy and between Lille and Metz. The depopulation of non-coastal Corse has to large extent been reversed, with only a small minority of communes losing population.

The city centre of Paris has suffered moderate population losses, as have the city centres of Le Havre, Marseille or Nice. The suburban communes of Paris experienced mixed fortunes, with moderate growth was most common, except for communes west of the capital. The periurban communes of Paris demonstrate high growth. The impact of Paris extends as

Figure 6: Population change by communes, France 1990-1999



far as 120-150 kilometres from the city. Le Havre, Marseille and Nice have their suburban rings growing with varying intensities. May be the best example of periurbanisation taking over from suburbanisation is Nice, whose first, inner ring of communes increased population by between 5% and 20%, whereas in the outer ring of communes increase over 20% was prevalent. Marseille has a similar, but less regular pattern with a very strong increase only east from the city.

St. Etienne, Pau or Toulon experienced much higher losses in their cores. The first two cities have mixed pattern of the population change in the suburban ring. Toulon demonstrates very high growth in the surrounding communes, particularly north from the city.

Population increase is the most intense around Paris, which has a 'volcano shape': a crater formed by the depopulating capital city, high growth of periurban communes and quite steep decrease in growth starting some 120-140 km from Paris. The Alsace and Alpine regions as well as Mediterranean and Atlantic coasts attract population. A number of city centres – Nantes, Toulouse, Montpellier, Orléans, Aix-en-Provence, Lyon, Angers, Lille, La Rochelle – experienced all population increase in excess of 5%. Smaller increases could be seen in Rennes. The agglomeration of Lyon shows an example of the mature phase of development with re-urbanisation of the core, depopulation in the suburban ring and growth in the periurban ring. In all these cities one may identify suburban and periurban rings growing with different levels of rapidity. An excellent example is provided by Toulouse or Montpellier. Clermont-Ferrand noted marginal gains of population, despite rather bleak picture of population decline in the surrounding Massif-Central.

The above analysis relied on the cartographic presentation of rates. More exact analysis is offered with relation to five largest urban agglomerations in France. Table 3 shows annualised growth rates in these agglomerations over two inter-censal periods – 1982-1990

and 1990-1999. In all cases suburban communes have been growing, in the case of Marseille and Bordeaux quite rapidly in the first intercensal period. There is, however, a very marked

Table 3: Annual population change of five largest urban agglomerations: city centres and suburban communes

Urban agglomeration	1982-1990	1990-1999
Paris		
Centre	-1.140	-0.140
Suburban communes (<i>banlieue</i>)	0.740	0.290
Lyon		
Centre	0.070	0.780p
Suburban communes (<i>banlieue</i>)	0.590	0.230
Marseille		
Centre	-1.100	-0.030
Suburban communes (<i>banlieue</i>)	1.173	0.870
Lille		
Centre	-0.110	0.350
Suburban communes (<i>banlieue</i>)	0.380	0.180
Bordeaux		
Centre	0.130	0.260
Suburban communes (<i>banlieue</i>)	1.230	0.750

decrease of the growth rate of suburban rings between the 1980s and 1990s, suggesting a slow down of the process of deconcentration around the largest cities. City centres show a variety of patterns. Lille turned from slow decrease in 1980s to medium increase in 1990s, the rate of increase of Bordeaux doubled and that of Lyon increased more than eleven times. Population decrease of the city centres of Paris and Marseille diminished remarkably. This picture suggests a slow recovery of central parts of the largest agglomerations through reduction of losses, through a turnaround from losses to gains, or through an increase in gains. The 1990s are characterised by a much flatter pattern than 1980s but deconcentration of population is still apparent but less powerful.

The overall pattern is of periurbanisation, moderate suburbanisation and mixed urbanisation. French *savoir-vivre* apparently expands to cover geography, as places with

strongest growth are unspoiled, with pleasant environment, warm, sunny climate and often with good access to urban centres.

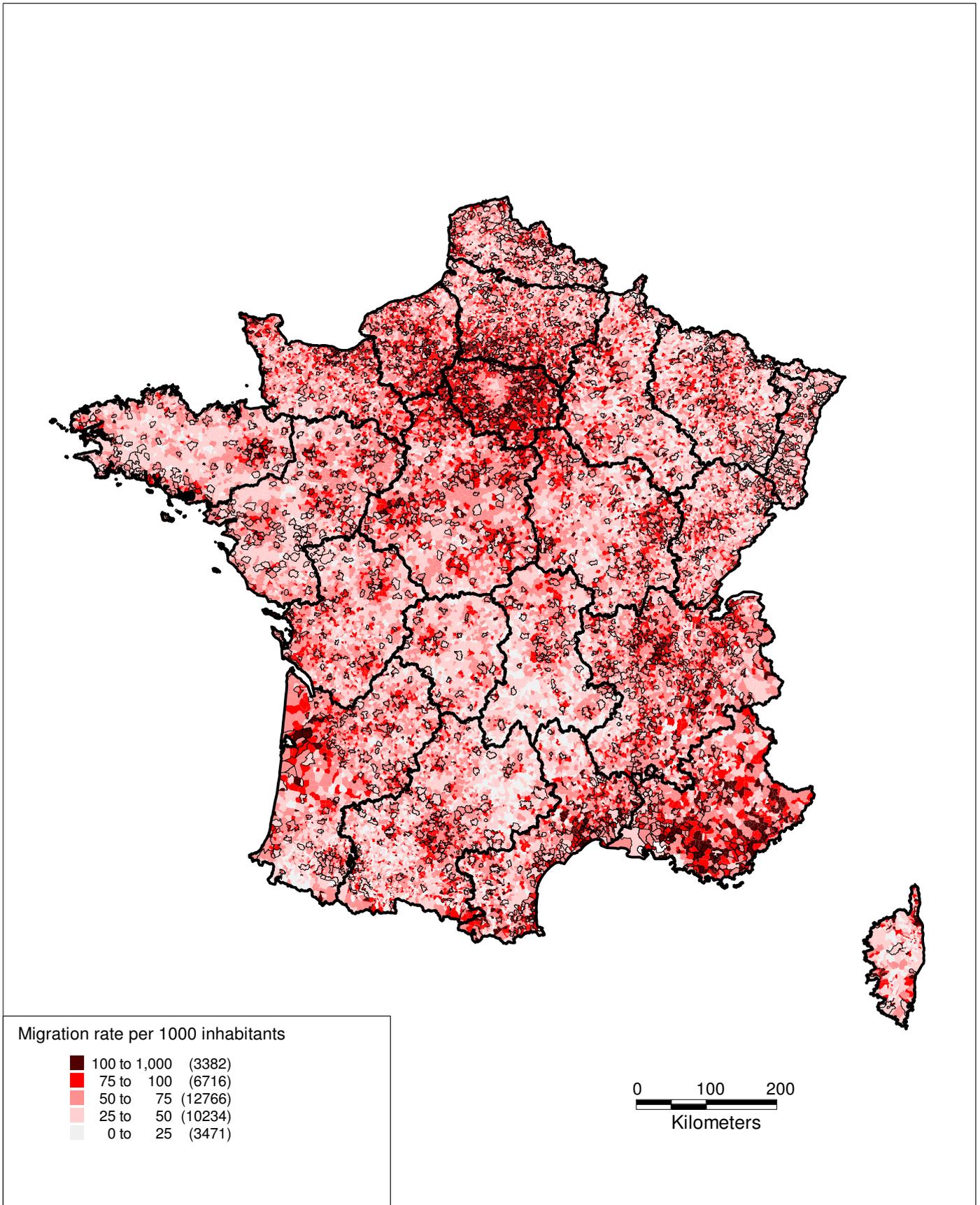
5.3 In-migration patterns by commune 1982-1990

The annualised in-migration ratio over the intercensal period was calculated for each spatial unit, based on estimates of the number of in-migrants described in section 3.3.2 and population count at the time of the census. This is the best approximation of an equivalent in-migration ratio, which could have been obtained from migration registration if it existed in France.

Figure 7 shows the spatial distribution of the intensity of inflows calculated per 1000 of population at the destination. The lowest values, below 25 persons per thousand, can be seen in Bretagne, Massif-Central and in departments extending north-east as well as in the southern parts of Aquitaine, in Midi-Pyrénées and in Corse. In-migration ratios with values between 25 and 50 persons per thousand inhabitants are visible in all areas with the lowest in-migration, and also in Limousin, Pays de la Loire. Low in-migration is predominantly a feature of rural communes and smaller towns constituting local centres of rural population. However, some large urban centres do fall into this category.

The highest values, over 100 immigrants per thousand could be seen in periurban ring around Paris, Lille, Bordeaux, Nice and Marseille, showing the importance of the periurbanisation process around the largest urban agglomerations in the migration system of France.

Figure 7: In-migration patterns by commune 1982-1990



5.4 Out-migration patterns by commune 1982-1990

Out-migration rates were calculated in the same way as in-migration ratios. Their spatial distribution is dictated by both geography and, to a lesser extent, by the urban agglomerations (Figure 8). There is a fairly clear division of the country into a northern part, including the Paris agglomeration, within a radius of some 30 kilometres from the city centre, characterised by higher out-migration, over 50 persons per 1000 inhabitants and central and southern part of the country with lower out-migration, below 50 *pro mille*. This simple pattern is modified by higher out-migration from some cities as Lyon or Clermont-Ferrand and from isolated rural communes scattered all over the country.

5.5 Net migration patterns by commune 1982-1990

Net migration rates were calculated as the difference between in-migration ratio and out-migration ratio for each commune (Figure 9). Slightly over 10 thousand communes had negative net migration, being a minority of all communes in France. Negative net migration concentrates in the centre of Paris, surrounded by a ring of suburban communes with moderate and low negative migration losses. The Massif Central, non-coastal Bretagne, a cluster of communes east of Rennes, the city centres of Rouen, Dunkerque, Grenoble, La Rochelle, Brest, Clermont-Ferrand, Lille, Nancy, Versailles, Bordeaux and Orleans have all negative net migration, sharing fortunes of most of the 60 largest communes in France. The largest concentration of communes with high positive net migration occurred in the periurban ring around Paris, in the Alpine regions of Provence-Alpes-Côte d'Azur and Rhône-Alpes and in Aquitaine. Suburban rings around a number of cities such as Rennes, Nantes, Fontainebleau, Bordeaux, Clermont-Ferrand and Montpellier also showed high migration gains.

Figure 8: Out-migration patterns by commune 1982-90

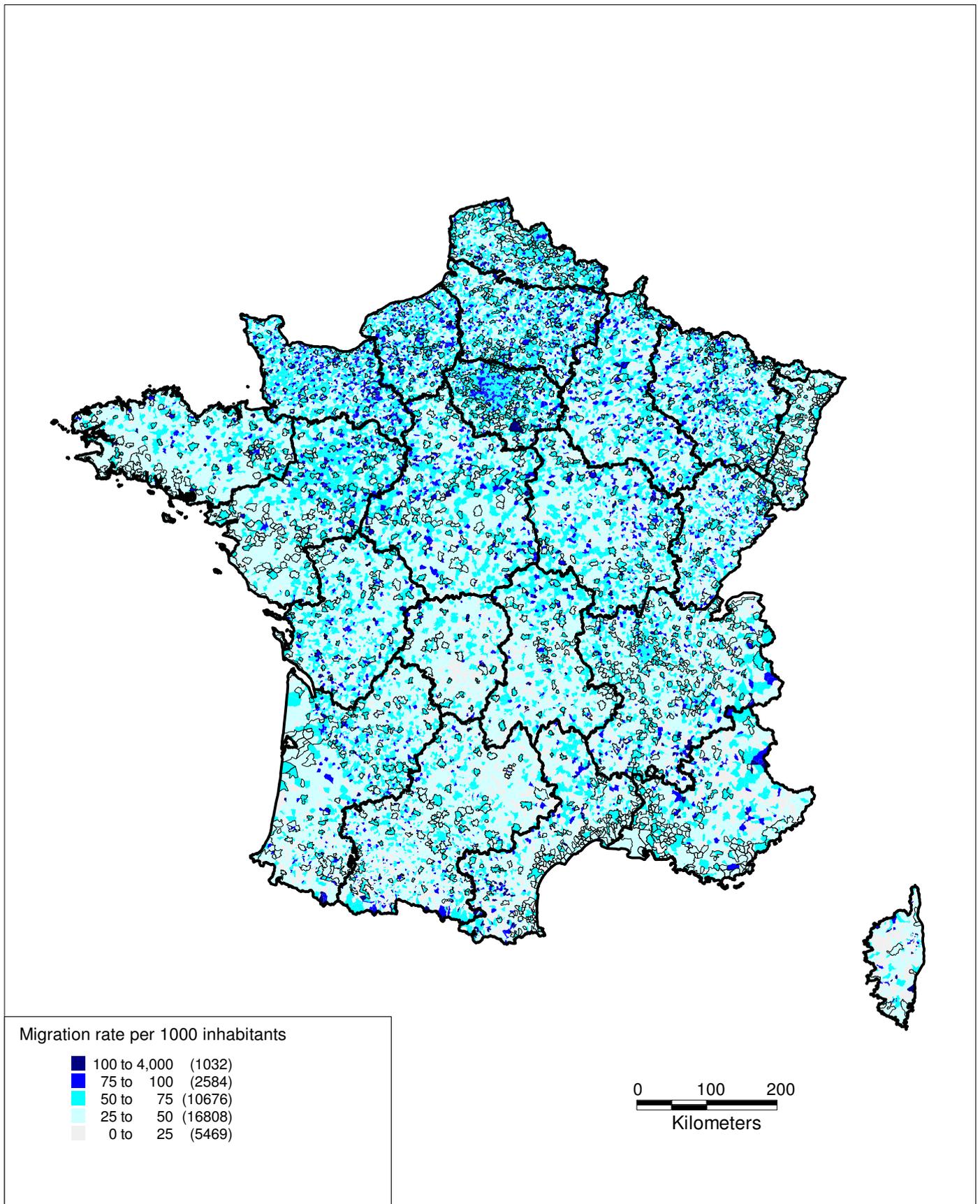
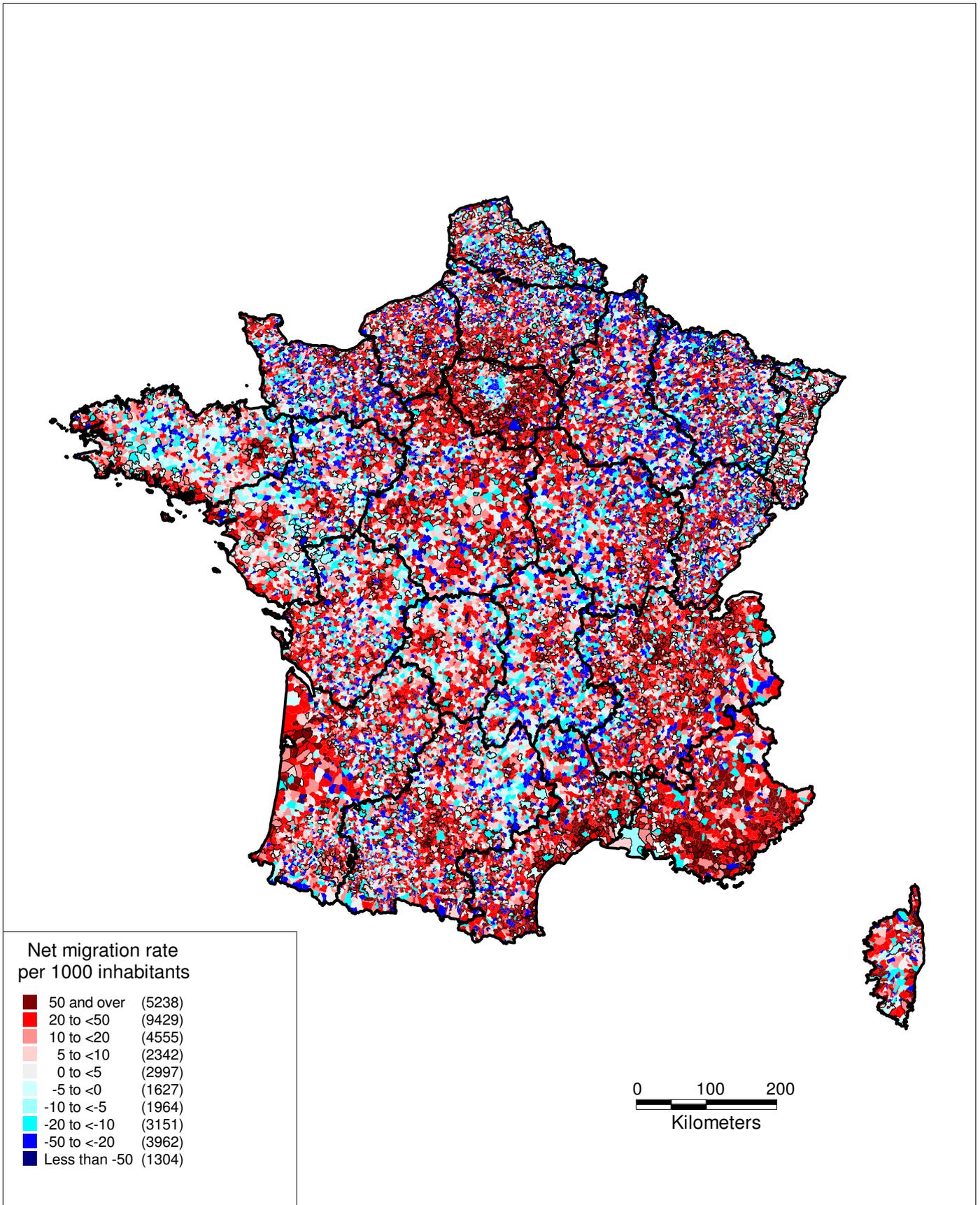


Figure 9: Net migration patterns by commune 1982-90



Migration gains and losses show quite complicated pattern of depopulation of city centres combined with slow suburbanisation and advanced periurbanisation. On top of these subregional changes interregional shifts towards more attractive areas, in particular Alpine and Mediterranean and Atlantic coastal regions are observed.

5.6 The demographic sources of population change

Webb (1963) devised a simple classification of types of population dynamic based on an analysis of the interplay between the natural growth and net migration. The classification is based on relationship between net migration and natural increase (see Table 4 for details of the eight classes). The Webb classification allows us to select various combinations of key demographic features, such as the direction of population change, the sign of net migration and natural growth, requires limited amount of data and is conceptually very simple. Note that net migration in the Webb classification refers to the balance of both internal and international migration flows, whereas the analysis up to this point has focussed on net internal migration only.

Figure 10 shows the map of Webb classification of communes in France, based on census data for the period 1982-1990. Four classes of communes have always attracted demographers' attention: Classes B and C, for which both components (net migration and natural change) are positive and classes F and G for which both components are negative. The former two classes denote stable and secure demographic growth the latter two – demographic decline and often undesirable socio-economic consequences, such as rapid ageing, distortion of age structures or depopulation.

Table 4: The Webb classification of demographic regimes in French communes (1982-1990)

Webb Class	Population change	Natural change	Migration direction	Relation	Number of units in each class	% share of units in each class
A	Population Increase	Natural Increase	Net Negative Migration		759	2.08
B	Population Increase	Natural Increase	Net Positive Migration	NI>NPM	1314	3.59
C	Population Increase	Natural Increase	Net Positive Migration	NI<NPM	12514	34.22
D	Population Increase	Natural Decrease	Net Positive Migration		8809	24.09
E	Population Decrease	Natural Decrease	Net Positive Migration		1924	5.26
F	Population Decrease	Natural Decrease	Net Negative Migration	ND<NNM	5218	14.27
G	Population Decrease	Natural Decrease	Net Negative Migration	ND>NNM	1016	2.78
H	Population Decrease	Natural Increase	Net Negative Migration		5015	13.71

Notes:

NI = Natural Increase, i.e. (Births - Deaths) ≥ 0

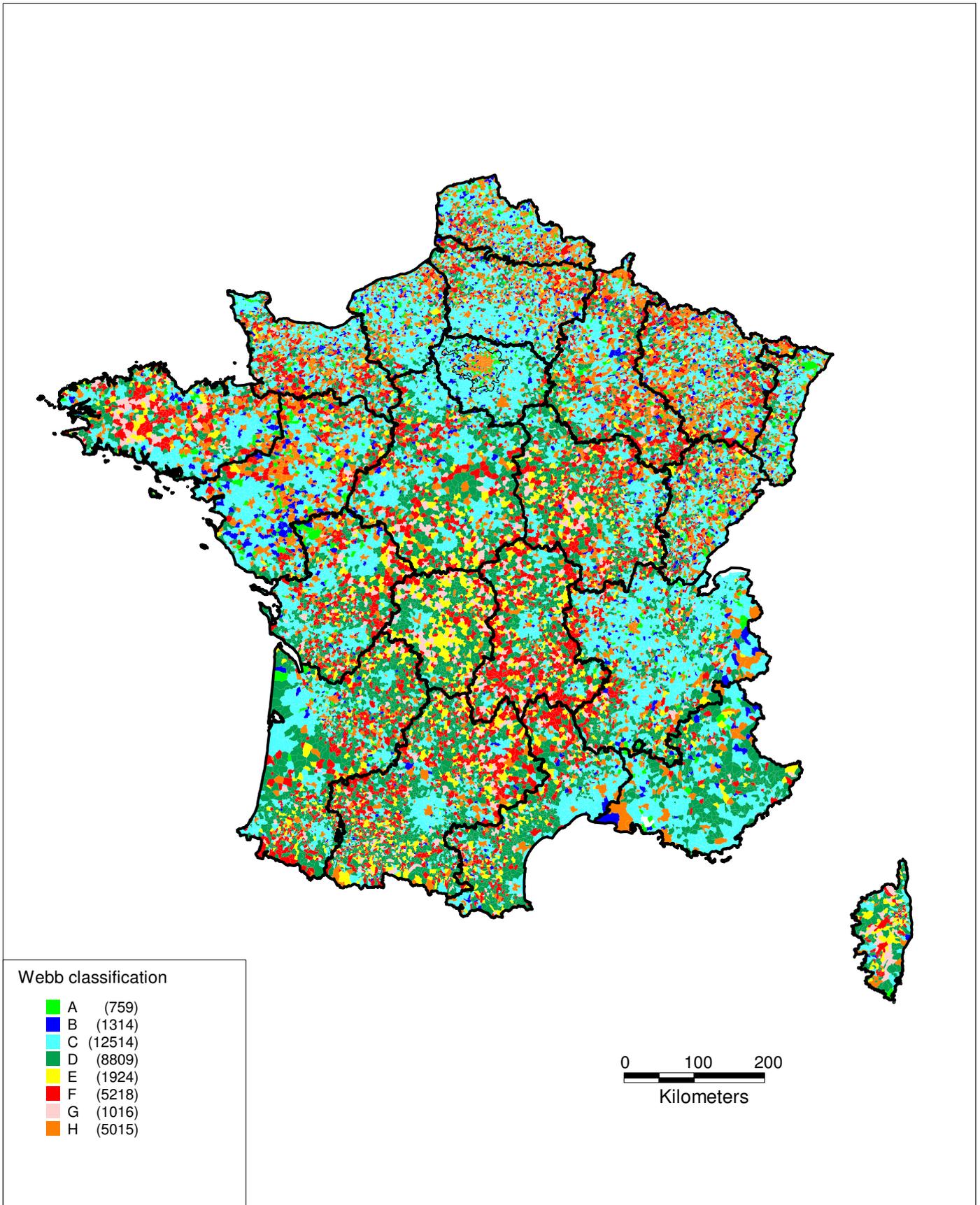
ND = Natural Decrease, i.e. (Births - Deaths) < 0

NNM = Net- Negative -Migration, i.e. (In-migration - Out-migration) < 0

NPM = Net-Positive-Migration i.e. (In-migration - Out-migration) ≥ 0

Source: Webb (1963) and statistics from INSEE.

Figure 10: Webb classification of French communes 1982 - 1990



Classes B and C, the most desirable from the point of view of demographic development, account for 37.8% of all communes. Migration-driven increase (class C) is far more frequent than natural-change-driven increase (class B). Class C communes are characteristic of the Paris periurban ring, extending towards the north-west as far as 220 kilometres. The majority of the communes in the core of the Paris agglomeration experienced population decrease due to migration losses exceeding natural gain (class H). Such combination of class H in the core and class C in the periurban and suburban rings is a landmark of French pattern of population change and can be seen almost in all large French urban units: Lyon, Montpellier, Bordeaux, Toulouse, Le Mans, Rennes, Nantes, Tours, Poitiers, Pau, Fontainebleau, Nîmes, Le Puy, Clermont-Ferrand, Dijon, Amiens, Strasbourg and many others. Also the Atlantic coast, the Mediterranean coast and the Alps have many communes belonging to class C.

In 3.6% of cases natural increase is the stronger force of two positive forces contributing to population increase (class B). Their geographic distribution is to a large extent complementary to the distribution of communes of class C, sometimes located in places more remote from regional or sub-regional city centres.

Class A, in which population increase due to natural increase exceeds negative net migration, characterises only 2.1% of all communes and does not form any particular pattern. Class D (natural decrease smaller than migration gain) is quite popular (24.1% of all units) and concentrates in the area between the valleys of the Rhône, upper Seine and Loire as well as in regions Bourgogne, Provinces-Alpes-Côte d'Azur and Corse.

Remaining four classes lose population. Class E in which natural decrease is not compensated by positive net migration is weakly represented with only 5.6% of all communes belonging to this category. Communes with such characteristics may be found in Massif Central, Limousin, non-coastal Bretagne and the central part of Pyrénées. Class H with

positive natural increase smaller than negative migration accounts for 13.7% of all communes and is visible in almost all city centres, as well as north and west of Paris in the ring reaching from over 100 kilometres away from the capital to the coast and state borders.

Class F and G signals some serious structural demographic problems as both components of population change are negative. Class G is very infrequent (2.8% of all communes), characterised by both negative natural increase larger than negative net migration. The majority of such units are located in the Massif Central. Class F losing population due to both components of growth being negative but mostly due to negative net migration is fairly frequent (14.3%) and coexists with communes belonging to class H.

The Webb classification of French communes confirms again the existence of a strong process of periurbanisation and weaker process of suburbanisation as well as demographic activation of areas which are attractive from environmental point of view

We turn now from the cartographic description of the local population dynamics in France to an analysis of how well various classifications of communes account for the patterns that have been identified. In the next section, we use several urbanisation classifications. In section 7 we then employ a socio-economic classification of communes and conclude in section 8 by examining the relationship between internal migration and unemployment levels.

6. RELATIONSHIP TO THE URBAN SYSTEM

The analysis of relationship between various measures of the degree of urbanisation and migration is presented below. We used three different measures or classifications of the degree of urbanisation. The first is the size of settlement measured in terms of number of inhabitants. The second is the population density of communes and the third is the classification of communes according to the role a commune performs as an urban centre. This role was defined by INSEE based on employment and commuting patterns and was described earlier in the paper. The measures used refer to various characteristics or features of urbanisation and are complementary.

6.1 Relationship to the settlement size

Communes were classified into ten classes based on the populations in the 1990 Census of the functional unit they belong to. The classes consisted of a band containing rural units, eight bands of urban agglomerations of various sizes, from small, below 5000 to large, over 500000 and finally Paris. A detailed definition of the classes is shown in Table 5. The size of communes is defined based on the size of functional unit (urban agglomeration) a commune belongs to rather than the size of commune itself. INSEE provided relevant information allowing identification of which commune belonged to which functional unit and the population of all communes belonging to given functional unit were summed. Figure 11 shows the distribution of communes by size calculated in the way described above.

The flows of population between size bands is shown in Table 5. The most significant phenomenon is the urban to rural exodus, accounting for well over half of all migration within the system. Within the urban system there is a clear flow down the hierarchy. Two bands of smallest towns – up to 5000 inhabitants and between 5000 and 10000 inhabitants also enjoy

net gains of population. All other bands are net losers, but notably in the bands below 25000 inhabitants, larger towns and cities lose population to smaller ones.

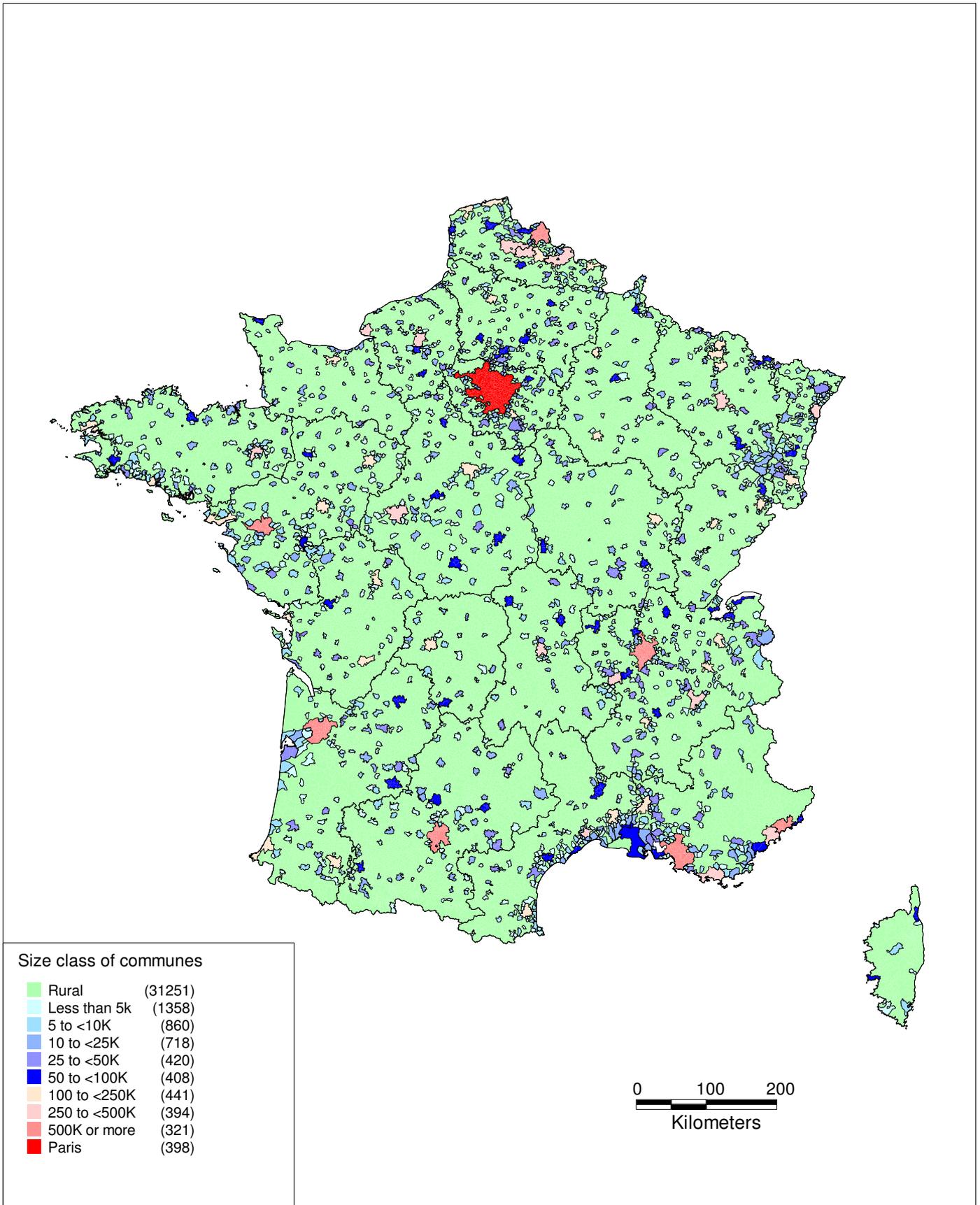
Table 5: Net migration and migration effectiveness ratio by size bands of towns and cities, France 1982-1990

Origin size band	Destination size band									
	Rural	Urban, less than 5000	Urban, 5000- 10000	Urban, 10000- 25000	Urban, 25000- 50000	Urban, 50000- 100000	Urban, 100000- 250000	Urban, 250000- 500000	Urban, over 500000	Paris
Rural		6	10	16	20	21	22	20	18	21
Urban, less than 5000	4330		3	9	13	13	15	12	11	14
Urban, 5000-10000	7519	590		6	10	10	12	9	8	11
Urban, 10000-25000	14649	1938	1230		5	5	6	4	2	5
Urban, 25000-50000	17199	2695	2032	1055		0	2	1	2	1
Urban, 50000-100000	20691	3177	2400	1260	24		2	1	2	1
Urban, 100000-250000	31877	5186	4048	2483	631	698		3	4	1
Urban, 250000-500000	26180	3865	2849	1298	-298	-385	-1477		1	2
Urban, over 500000	25082	3647	2595	924	-699	-856	-2199	-600		3
Paris	59186	9378	7204	4106	606	631	-1031	1904	3252	
Net migration	206713	26145	14248	-6691	-22717	-27464	-49629	-30729	-24643	-85235

Note: 1. Net migrant numbers are displayed below the diagonal in the table. 2. Effectiveness ratios are displayed above the diagonal. 3. Effectiveness = absolute value of net migration divided by gross migration and expressed as a percentage.

For bands 25000-50000 and 50000-100000 inhabitants lose population to the band over 250000 except Paris but gain from the band between 100000 and 250000 inhabitants. Particularly unpopular is the band of cities between 100000 and 250000, losing population to all other bands including Paris. Similarly unpopular is Paris losing population to all bands but the 100000-250000 band. Efficiency of migration is high, in particular in the exchange with smaller settlement units. This picture shows a significant deconcentration process, but not strictly hierarchical, due to misfortunes of urban units in the 100000-250000 band.

Figure 11: Size class of communes in France, 1990



6.2 Relationship to the population density

The pattern of population density in France in 1990 is shown in Figure 12. On European standards France is a country with a low density of population, with nearly half of communes below 30 persons per square kilometre. Low density areas, below 15 persons per square kilometre are located in the mountains and south and west of Bordeaux (the Les Landes region in which forests occupy very poor sandy soils). A belt extending from the Massif-Central through Champagne up to the boundary with Luxembourg also has low population density, mostly below 30 persons per square kilometre. The Mediterranean coast, Rhône valley, the valleys of large alpine rivers, the Rhine valley, the Atlantic coast north of Bordeaux, coastal Bretagne, the English Channel coast and suburbs of urban agglomerations are densely populated. The highest density of population is seen, of course, in urban centres.

Table 6 shows the net migration of population between density bands. The two most densely populated bands, over 1000 persons per square kilometre have negative net migration in total and lose population to all bands with lower density. All other bands gain population. With exception of the two lowest bands, which experience flows from lower to higher bands, the general movement is down the density band hierarchy, from higher to lower density band. Deep rural areas are not attractive and excluded from the process of counterurbanisation.

Figure 12: Population density by communes, France 1990

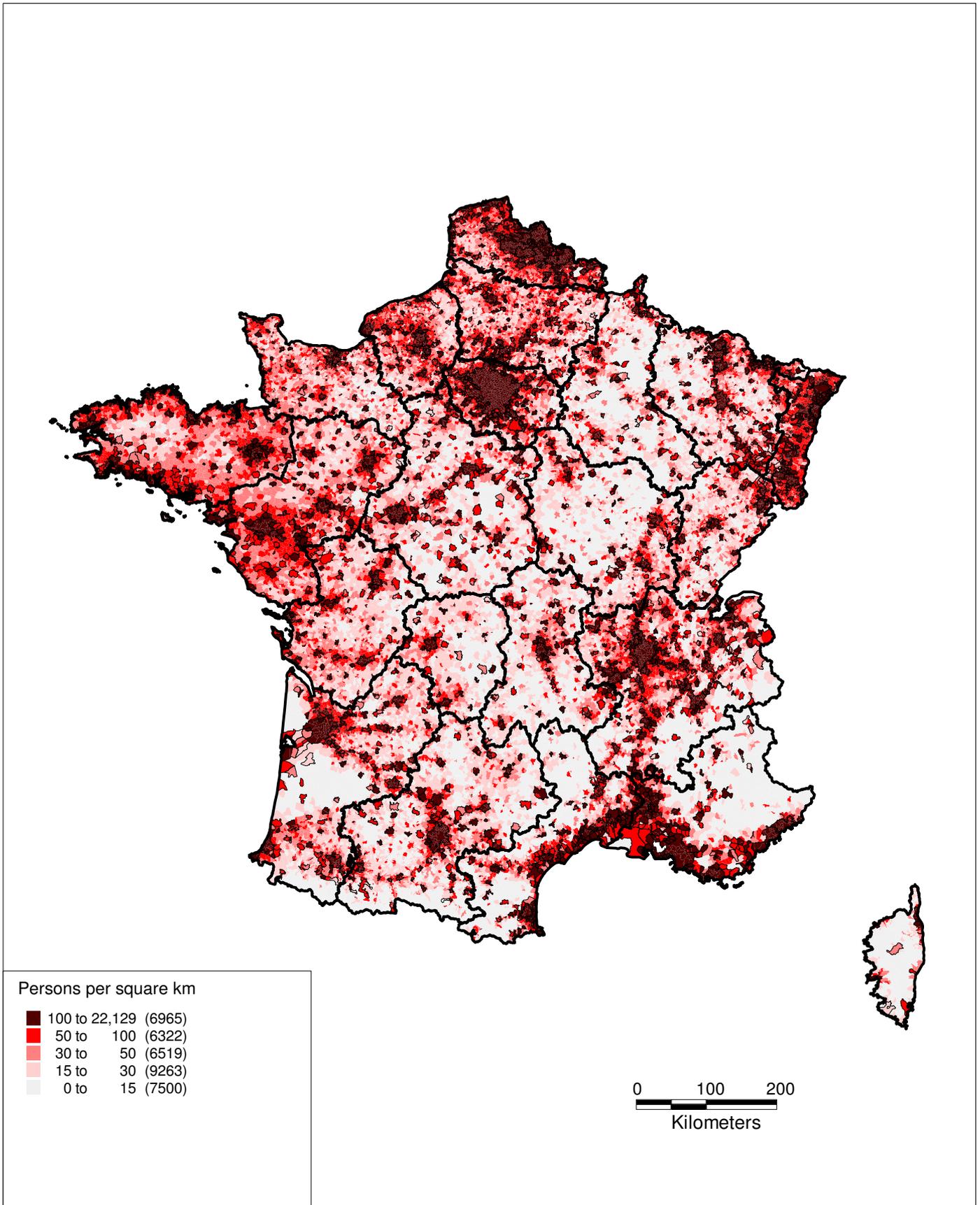


Table 6: Net migration and migration effectiveness ratio by population density bands, France 1982-1990

Origin band of population density 1990	Destination band of population density 1990						Greater than 5000
	<50	50-100	100-150	150-300	300-1000	1000-5000	
Less than 50		<i>1</i>	<i>2</i>	<i>0</i>	<i>10</i>	<i>21</i>	<i>27</i>
50-100	-343		<i>1</i>	<i>3</i>	<i>12</i>	<i>23</i>	<i>29</i>
100-150	-681	-205		<i>3</i>	<i>12</i>	<i>24</i>	<i>30</i>
150-300	215	1462	1085		<i>9</i>	<i>21</i>	<i>27</i>
300-1000	12224	12901	8124	10156		<i>12</i>	<i>18</i>
1000-5000	49956	45660	28168	41101	44543		<i>6</i>
Greater than 5000	28936	25427	15545	23370	29690	17670	
Net migration	90306	85588	53808	71866	30828	-191757	-140638

Note: 1. Net migrant numbers are displayed below the diagonal in the table. 2. Effectiveness ratios are displayed above the diagonal. 3. Effectiveness = absolute value of net migration divided by gross migration and expressed as a percentage.

6.3 Relationship to the functional class

Three functional classes have been used as described in section 3.3.6 and mapped in Figure 13.

The flows between urban areas, periurban areas and rural areas are shown in Table 7. Urban areas have been declining by almost a quarter of a million people over the 1982-1990 period..

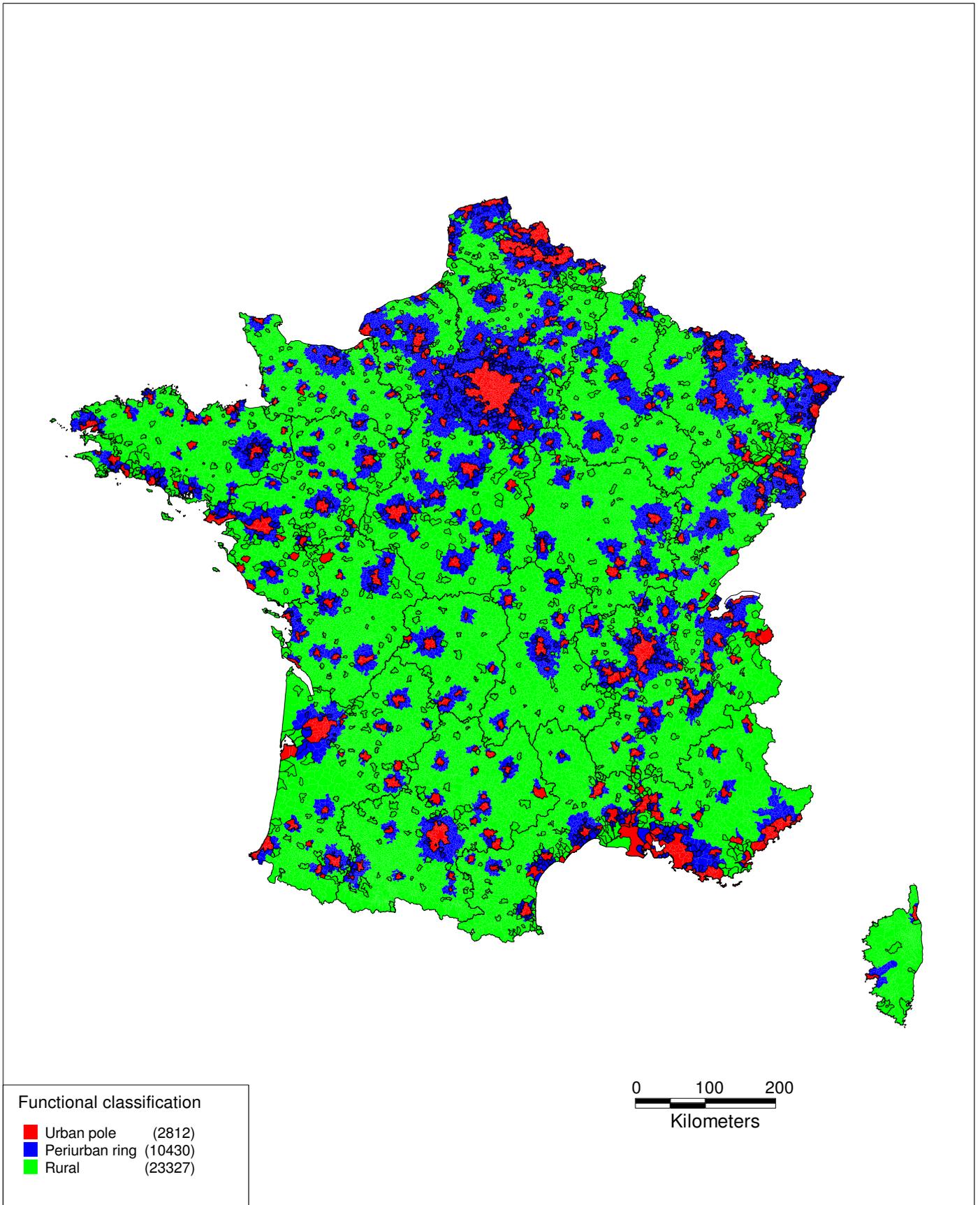
The majority of this population went to periurban areas and some to rural areas. A very high effectiveness of migration between all classes means that these migrations have a high impact on population redistribution.

Table 7: Net migration and migration effectiveness ratio by functional classes, France 1982-1990

Origin by functional class	Destination by functional class		
	Urban	Periurban	Rural
Urban		<i>27</i>	<i>11</i>
Periurban	-156321		<i>18</i>
Rural	-81599	23435	
Total	-237919	179756	58163

Note: 1. Net migrant numbers are displayed below the diagonal in the table. 2. Effectiveness ratios are displayed above the diagonal. 3. Effectiveness = absolute value of net migration divided by gross migration and expressed as a percentage.

Figure 13: Functional classification of communes, France 1990



7. MIGRATION BY SOCIO-ECONOMIC CLASS

The geographical pattern of distribution of communes by their socio-economic class is shown on Figure 14. Over 15 thousand communes are agricultural in nature and approximately that many communes are industrial. Agricultural communes form a gigantic Y with a base in the south of the country and the fork extending to Bretagne in the west and region of Champagne-Ardenne in the east. Industrial communes lie in between the fork of the Y, south-west of Paris, along the German-French border, in the region Rhône-Alpes and south of Bordeaux. Communes inhabited by the middle class working in the tertiary sector or in industry account for more than 4 thousand units. The largest concentration of such units is in the Paris agglomeration and in and around large towns and cities. Upper middle class communes are very few – 139 altogether and are heavily concentrated in Paris and in or around large cities such as Bordeaux or Grenoble.

Redistribution of population by socio-economic class of communes is presented in Table 8. Four socio-economic bands of communes were losing population: *blue collars employees in dominant industries; middle class working in tertiary sector, provincial towns; small business, high tech, Paris agglomeration; and teaching, information communication, individual services*. The remaining five bands noted migration gains over the period 1982-1990.

Figure 14: Socio-economic class of French communes based on data from the 1990 Census

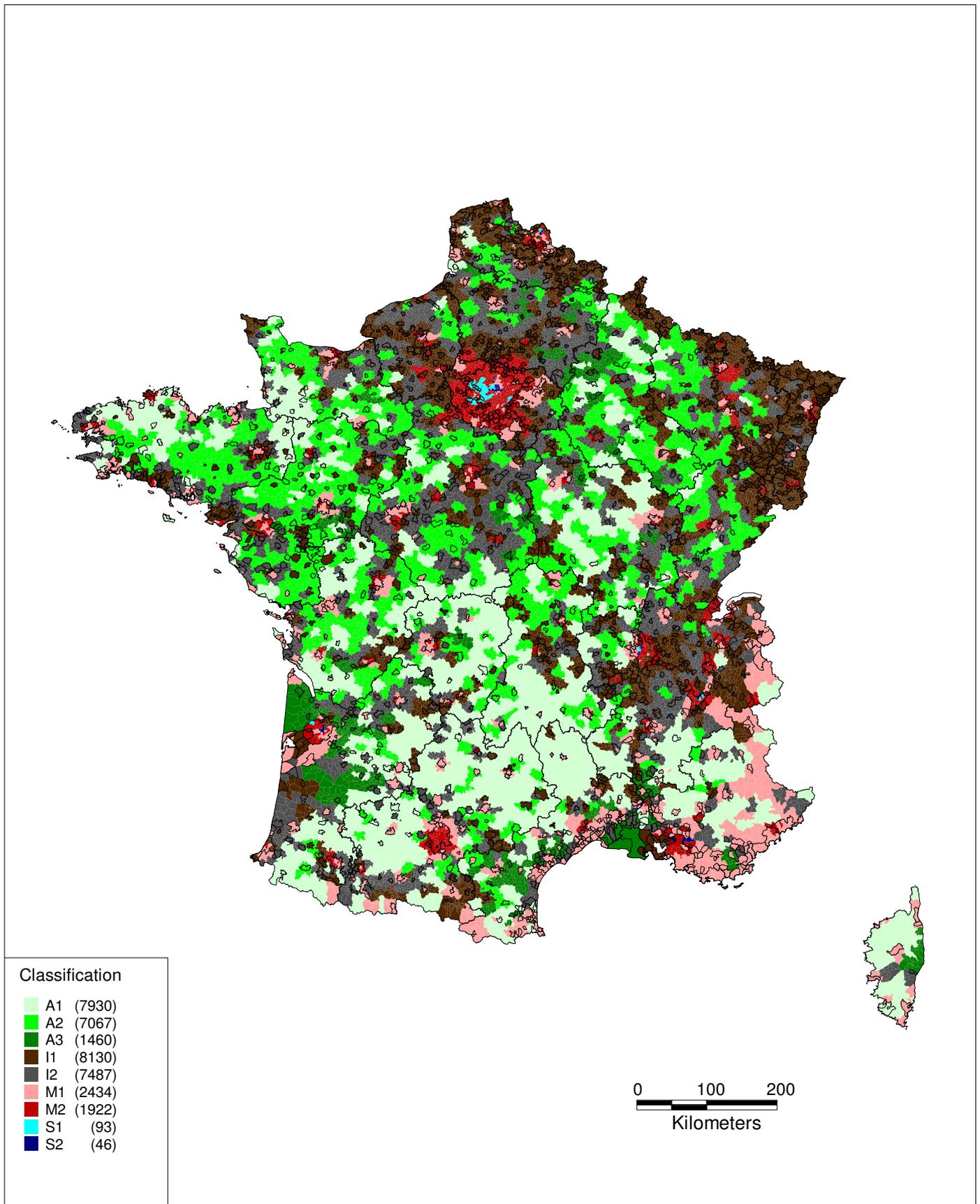


Table 8: Net migration and migration effectiveness ratio by socio-economic type bands, France 1982-1990

Origin band of socio-economic type	Destination band of socio-economic type								
	Agriculture and rural crafts A1	Forest industry and food industry A2	Salaried employees in food and wine industry A3	Blue collar employees in dominant industries I1	Blue collars associated with agriculture I2	Middle class working in tertiary sector, provincial towns M1	Middle class employees in periurban and expanding cities M2	Small business, high tech, Paris agglomeration S1	Teaching, information, communication, individual services S2
Agriculture and rural crafts (A1)		3	6	10	5	10	2	8	28
Forest industry and food industry (A2)	416		8	8	9	8	0	6	26
Salaried employees in food and wine industry (A3)	-260	-402		16	0	16	9	14	34
Blue collars employees in dominant industries (I1)	7474	6958	4149		17	0	8	2	18
Blue collars associated with agriculture (I2)	-1125	-2111	-36	-21479		17	9	14	34
Middle class working in tertiary sector, provincial towns (M1)	6857	6276	3731	956	19982		8	3	18
Middle class employees in periurban and expanding cities (M2)	1435	200	1850	-28525	10062	-26060		5	26
Small business, high tech, Paris agglomeration (S1)	534	479	319	-869	1786	-868	1791		20
Teaching, information, communication, individual services (S2)	4151	4494	1667	15807	9187	13198	18138	1483	
Totals	19481	15478	12342	-52691	65767	-51533	60969	-1689	-68124

Note: 1. Net migrant numbers are displayed below the diagonal in the table. 2. Effectiveness ratios are displayed above the diagonal. 3. Effectiveness = absolute value of net migration divided by gross migration and expressed as a percentage.

The three classes of agriculture based communes gained population from all other non-agriculture based classes with exception of mixed class comprising of *blue collars associated with agriculture*. The two blue collar bands enjoyed very contrasting fortunes. The class of *blue collars associated with agriculture* was attractive to all other classes of communes, whereas the *blue collar employees in dominant industries* class was unattractive to all other classes with exception of *middle class working in tertiary sector* and *provincial towns, small business, high tech, Paris agglomeration* class.

Middle class communes also demonstrated different migratory patterns. The areas with *middle class employees in periurban and expanding cities* category gained strongly from all but agriculture-related classes, whereas areas with *middle class working in tertiary sector, provincial towns* class lost to all other categories except the *teaching, information, communication, individual services* class.

Both upper class groups (*teaching, information, communication, individual services* and *small business, high tech, Paris agglomeration*) lost population, the former being the less fortunate among all classes and losing population to all of them.

The winners of the population redistribution process are periurban and agricultural areas, confirming already observed pattern of spatial deconcentration of population.

8. RELATIONSHIP OF MIGRATION TO UNEMPLOYMENT

Unemployment in France was concentrated in 1990 on the Mediterranean and Atlantic coasts and north of Paris. These areas have large number of communes in which unemployment rate exceeded 12% (Figure 15). To a lesser extent this applies also to the south of the Centre region and in the Bourgogne and Auvergne regions. At the other end of unemployment scale are most of the Rhône-Alpes region, the eastern Midi-Pyrénées, communes along French-German boundary, around but not in Paris.

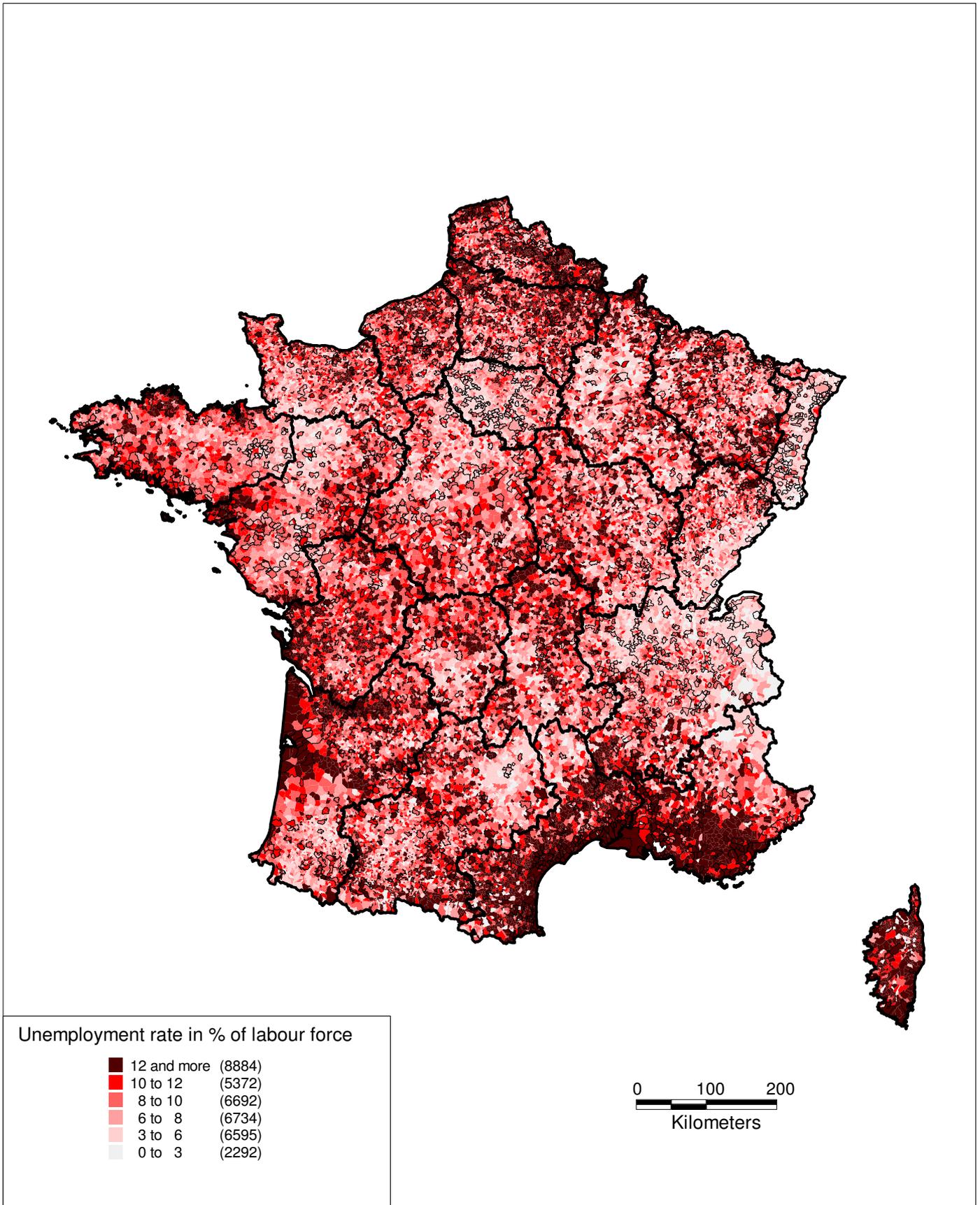
The relationship between migration and unemployment accords with neoclassical migration theories (Table 9). In all cases migrants flow from higher unemployment bands to lower unemployment bands. The bands below 12% of unemployment gain population from bands with higher unemployment. The effectiveness of migration is remarkably high and growing with the level of unemployment, reaching staggering 30% for exchanges between lowest (below 4%) and highest (over 20%) unemployment bands. In only one case, for migration between the two highest unemployment bands, does the effectiveness drops below 6%.

Table 9: Net migration and migration effectiveness ratio by rate of unemployment bands, France 1982 - 1990

Origin rate of unemployment 1990	Destination rate of unemployment 1990					
	Less than 4	4 – 8	8 – 12	12 - 16	16 - 20	Greater than 20
Less than 4		7	17	24	29	30
4 – 8	1772		12	17	23	23
8 – 12	7201	53842		7	12	14
12 – 16	7226	59966	36829		6	7
16 – 20	3417	31305	26500	8314		2
Greater than 20	1048	9614	8611	3073	251	
Net total	20664	152954	10898	-92635	-69285	-22596

Note: 1. Net migrant numbers are displayed below the diagonal in the table. 2. Effectiveness ratios are displayed above the diagonal. 3. Effectiveness = absolute value of net migration divided by gross migration and expressed as a percentage.

Figure 15: Unemployment rate by communes, France 1990



9. SUMMARY AND CONCLUSIONS

The post-war development of French population was characterised by a rapid growth: over 50 years the population increased by 18 million. This rapid increase was due to both natural increase and positive net international migration, decreasing since early 1970s. In most recent years national population change has been controlled predominantly by the number of births, as mortality has levelled off and immigration is significantly reduced. Regional population change is controlled by both natural increase and internal migration. There are two differing patterns of natural increase: north and east France with higher natural increase and south and east with lower increase. Internal migration has been playing a more important role, reaching a maximum between 1968 and 1975. The geographic pattern of internal migration has changed substantially over the last 50 years, most dramatically in the Île-de-France, which switched from the highest gains between 1954 and 1962 to the highest losses between 1975 and 1982. This was also the fate, but not to such dramatic extent, of other large urban agglomerations. Urban growth which was strong in the 1950s and 1960s, reversed in 1970s favouring small towns. It recovered slightly in the last 20 years. With over 4 million of foreigners and another 6 million of their offspring (Schor 1996), the French population growth is dependent on international migration. Net international migration has fluctuated over time. There were strong gains until early 1990s but recent years have seen a substantial decrease.

Migration gains and losses show quite complicated patterns of depopulation of city centres combined with slow suburbanisation and advanced periurbanisation. Periurbanisation is evident in Paris region and in almost all large urban agglomerations. Most of the other cities show suburbanisation or periurbanisation at various stages of development. Urbanisation, however infrequent, still can be seen in some cities and in most cases could be attributed to its mature form - reurbanisation. The highest immigration could be seen in periurban rings around

Paris, Lille, Bordeaux, Nice and Marseille, showing the importance of the periurbanisation process around the largest urban agglomerations in the migration system of France. Out-migration shows a clear division of the country into Northern part with higher rates, and central and Southern part of the country with lower out-migration, below 50 *pro mille*. This simple pattern is modified by higher out-migration from some cities such as Lyon or Clermont-Ferrand and from isolated rural communes scattered all over the country. Out-migration brings a regional dimension of population relocation: shifts towards more attractive areas, in particular Alpine region and Mediterranean and Atlantic coasts are observed. The largest concentration of communes with high positive net migration occurred in the Alpine regions of Provence-Alpes-Côte d'Azur and Rhône-Alpes and in Aquitaine. French *savoir-vivre* apparently expands to cover geography, as places with strongest growth are unspoilt, with a pleasant environment, a warm, sunny climate and often with good access to urban centres. This finding corroborates earlier research (Baccaïni, Pumain 1996).

The limited analysis conducted for the period 1990-1999 makes it possible to identify slight modification of this picture: a slow recovery is visible in the populations of the central parts of largest agglomerations. The 1990s are characterised by much less differentiated patterns than the 1980s with still apparent but less powerful deconcentration of population.

The Webb classification of French communes confirms again the existence of a strong process of periurbanisation and weaker process of suburbanisation as well as demographic activation of areas which are attractive from environmental point of view.

Analysis of migration between size bands of rural and urban units shows a significant deconcentration process, but not strictly hierarchical, because urban units in the 100000-250000 band lose population. A similar pattern is revealed between population density bands: the general movement is down the density hierarchy, from higher to lower density band. Deep rural areas are not attractive and are excluded from the process of counterurbanisation.

Finally, we found that unemployment has a strong and very efficient impact on migration behaviour.

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