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INTERNAL MIGRATION AND
REGIONAL POPULATION
DYNAMICS IN EUROPE:
Romanian Case Study

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

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SUMMARY

The report analyses population migration and change in Romania over the period 1984-1994. The analysis of population change is conducted for 2948 communes and towns, the finest administrative division for which population data are available. The lack of migration data on the level of communes and towns makes in-depth analysis of the migration for small spatial units impossible. For that reason analysis of the patterns of migration is conducted for 40 Judete (also referred to as counties or regions) and the capital city of Bucharest, i.e. 41 units altogether.

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1. CONTEXT

Among all countries of Central and Eastern Europe covered by this research programme, Romania underwent in December 1989 the most fundamental change of all. Ceausescu's Romania was a closed, fenced off, terrorised country, with an autarchic economy and perennial bread queues. The period of transition after the fall of Ceausescu was, undoubtedly, very difficult and the reforms occurred at a very slow pace by comparison to other East-European countries. However, the most recent economic data show some limited improvement in the Romanian economy. It is a well known phenomenon that it takes time to transmit such changes from macro level, on which they are measured, to the household level, where they impact on both human well-being and all sort of decisions households take. In this study we will look at whether and how the migration behaviour of the population has changed over the last decade and try to link identified changes to the political and economic developments.

Little is known about migration patterns in Romania and even less about more recent developments. We chose to investigate the period 1984-1994 as it covers both the last years of socialism and the transition from a state-socialist society to a market-economy based, democratic society.

How have the shortage and the "soft-budget constraints"-driven economy of the 1980s influenced the spatial movements of Romania? What has the liberalisation of the society in the early 1990s meant for the people's freedom to move in space? These are the main questions investigated in this study. Geographical movements are strongly determined by changes in the political and economic sphere. We have studied in detail the influence of internal migration upon the population distribution at various geographical scales and the links with the urbanization and the unemployment. At the same time, the demographic indicators used provide an excellent framework for international comparative analyses of Romanian patterns of migration and population change and the situation of other transition countries.

For convenience of the readers, main cities and regions of Romania, together with their names are shown in Figure 1. Throughout the study the term *Judete* will be synonymous with the term county.

2. INTERNAL MIGRATION AND POPULATION CHANGE REVIEWED

Romania's demographic development cannot be correctly understood without mentioning its political, social and economic history of the last 50 years. During 1948-1989 Romania was a totalitarian state, with an overcentralised socialist economy. At the beginning of that period, Romania was a basically agrarian country, with a predominantly rural population.

In 1948, almost four fifths of the country's population lived in the countryside. The process of industrialisation in Romania was based to a large extent on the transfer of capital and labour from agriculture. The transfer of resources was organised in two ways: first, rural areas provided cheap labour. Between 1970 and 1989 the labour force in the agriculture has declined by 1416 thousand people, that is by 29 percent of the original value (Ronnas 1991). Secondly, agricultural labour and products were substantially underpriced. Peasant income in 1970 stood at 46 percent of the average income. By 1989, workers in the state-run agricultural farms were still paid a meagre 63 percent of the average wage (Ronnas 1991). The decrease of Romania's population between 1941 and 1948 was an outcome of the Second World War, which caused population losses of 1.25 million (Tarca, 1993) and of the years of drought that immediately followed. The drought prevented the return of the post-war birth rate back to the normal figures, which would have filled some of the war deficit.

Due to economic stagnation and drastic reduction of industrial production over the period 1945-48, the large urban centres were no longer able to attract migrants from rural areas, and consequently the urban population decreased, in particular in the towns of Moldavia, which lost as much as 13.5 percent (Measnicov 1968). In towns like Timisoara, Arad, Craiova, Brasov, Sibiu and Bucharest, major industrial centres, the population increased. The predominant pattern of the mobility in this period was from the East to the West part of the country, the rural-urban flow being only of secondary importance (Measnicov 1968).

The 1948-1956 period was characterized by deep political, social and economic changes in Romania. The socialisation of the means of production - a step

of strategic importance for the communist regime, was achieved in two phases: first, by nationalisation of the industry, secondly, by collectivisation of the agriculture. The loss of the properties initiated an exodus of Jews, Germans, Hungarians and Romanians, who emigrated to non-communist Europe. A parallel movement from rural to urban areas had started, the newcomers to towns being offered housing in the nationalised houses of the earlier bourgeoisie.

The average annual population growth rate reached 1.2 percent in this period - the highest since the beginning of the century, which is indicative of the optimism of the population (Drocan 1971). The crude birth rates exceeded on the average 23 *pro mille* per year and natural increase oscillated between 8.3 *pro mille* in 1946 and 17.3 *pro mille* in 1951 (Tarca 1993). About 675 thousand inhabitants migrated to urban areas in the intercensal period 1948-1956 and helped build up a new economy.

Consequently, the urban population in Romania went up by 809 thousand in 8 years, with the natural increase making but a small contribution. The towns in Southern Transylvania and the industrial areas of Brasov and Hunedoara, in particular, represented the main attraction for the rural population (Measnicov 1969). In parallel with the population's concentration in some major towns (Brasov, Sibiu, Cluj, Constanta, Iasi, Bucharest), there also occurred a dispersal of the urban population through the development of industry in the small towns, which registered the highest average annual growth rates of the population (Measnicov 1969).

The reform of the agriculture aimed to rationalise the production through putting together small farming plots, thereby enabling the mechanisation of agricultural work and thus a higher productivity. In this process, the peasants were forced to give up their land to state-owned cooperatives and expected to move to towns. However, their migration to towns had to be delayed because of housing shortages at the receiving places.

During the next intercensal period 1956-1966 the most mobile group was the rural population, made redundant in the rural economy - the movement was directed towards both urban areas (52 percent) and rural areas (Candea and Baranovsky 1985). Migration from villages to towns was twice as high as migration within the urban system; there was also a reverse migration flow from towns to villages, less important in size but nevertheless substantial at 21 percent of rural immigration. The largest part

of the internal migration had a sub-regional character, that is most of the moves took place inside the regions. However, one should be reminded that the regions were in this period much fewer in number (17 instead of 41) and much larger in size. The vast majority of the migrants (85 percent) were in the age group 15 to 59, out of whom 53.5 percent were younger persons (below 30 years). In this period, although showing a trend towards stagnation, internal migration did make a contribution to the increase of the urban population.

The average annual population growth rate was lower (0.9 percent) than in the previous interval, due to the much lower birth rate, rather than due to the higher mortality of the population. One explanatory factor could be the 1957 decree liberalizing abortion, leading to a decline of the birth rates from 22.9 *pro mille* in 1957 to 14.3 *pro mille* in 1966 (Tarca 1993). Another explanation is provided by the remarkable achievements in health care. Infant mortality, which remained at a level of more than 15 percent until the late 1940s was brought down to 4.4 percent in 1965. Inoculation programs and much improved access to health care, not least in rural areas, accounted for much of this fall in infant mortality (Ronnas 1995:4). As a result, people reduced their fertility, as their children had higher chances to survive to adult ages than previously.

The period 1966-1977 featured a strong pro-natalist policy. In reaction to very low birth rates in early 1960s, that could not provide sufficient human resources to sustain the planned economic growth, Ceausescu has decided in 1967 to make abortions illegal and forbid all contraceptives. His drastic regulations almost doubled the period fertility rate from that year to the next, and resulted in a large number of unwanted children (Ghetau 1992, Muresan 1996). The increase in live births led to a high average annual growth rate of the population (1.1 percent), though, only for a short period.

In the sphere of spatial movements, we note the successful attempt of the local government to stop the immigration to towns by official restrictions. In 1967, a decree against migration into the largest towns of Romania was adopted. Similar attempts at closing the cities to unwanted migrants were made in the USSR in the 1930s and later on, by using the system of *propiska* - internal passports (Matthews 1993). That these attempts proved unsuccessful in Romania can be shown by the continued increase of

the largest towns after 1967, independent of their natural increase. At the census of 1977, the urban population proved to be 824000 or 10 percent larger (and, respectively, 14 percent larger for the largest cities) than the officially estimated urban population (Ronnas 1982:34).

In this period, the highest migration occurred from 1971 to 1974 and then between 1976 and 1978. The long distance internal migrations were dominant but at the end of the period, inter-county migration slowed down and intra-county migration increased. Again, the most distinctive pattern is the long-distance migration from the undeveloped East to the more developed West region.

Between 1977 and 1992 the crude birth rates (CBR) have declined from 19.6 *pro mille* in 1977 to 11.9 *pro mille* in 1991. In the seventies, the CBR were close to 19 *pro mille* and the crude death rate below 10 *pro mille*, which resulted in a natural increase of 9 *pro mille*. In the eighties, the CBR dropped further, down to 13.6 *pro mille* (1990). The economic crisis of the 1980s is an explanation for this dramatic decline in fertility. At the same time, mortality increased to 10-11 *pro mille* which reduced the natural increase substantially - to as low a level as 1 *pro mille* in 1992 (Tarca 1993). Population growth has dropped dramatically to 0.4 percent per annum in 1992 and had a negative development in 1994 (-0.1 percent).

The evolution in the age structure confirms the continuation of the process of population-aging: the proportion of children under age 15 has declined from 20.2 percent in 1995 to 17.4 percent in 1996, while the share of elderly (65 years and over) slightly increased from 12.1 percent to 12.4 percent of the total population. The aging process is, however, much less advanced in Romania than in Western Europe and some Central European countries.

Since 1990, when the restrictions against abortion were lifted, the number of live births has decreased every year, despite the large increase in the female population in reproductive ages. The TFR (total fertility rate) has declined from 1.5 in 1992 to 1.2 children per woman in 1997, which is currently one of the lowest levels in Eastern Europe. Low birth rates are observed throughout Eastern Europe and can be explained by the difficult economic conditions for the families with children in the transition period. In the recent years, women in ages 20 to 24 have reduced their share of births and those in ages 25 to 29 have a higher share of births than other women,

which suggests a strategy of delaying childbearing to later ages. These two age groups also recorded over 50 percent of legal abortions notified in 1996, indicating that women have now much higher control of their reproductive behaviour, even when they lack modern contraceptives.

Life expectancy at birth in 1992-1994 was 65.9 years for men and 73.3 years for women, showing a decrease of 0.2 years for men and an increase of 0.1 years for women compared with the levels estimated in 1991-1993. The rapid demographic aging of rural population, more difficult access to qualified health services and poorer sanitary education are factors that have continued to determine large differentials in death rates between urban and rural areas. The infant mortality rate has continued to stay at a high level after 1990 (23.9 per 1000 live births in 1994), being one of the highest in Europe. We could have expected a certain decline in infant mortality rates after 1990, the free abortions reducing considerably the number of unwanted children, who had the highest infant mortality rates (Ghetau 1995). Further improvements could arise only from improving living conditions in both rural and urban areas. To all these factors is added the unhealthy living style of many people (diet high in fat, high alcohol consumption and smoking habits), which contributes substantially to the low values of life expectancy.

Over the last four years, the population of Romania decreased by 100 thousand inhabitants. Since 1992, Romania has a negative population growth rate of 0.2 percent. Both negative natural growth and high emigration flows in early 1990s have contributed to an overall decrease of population.

In 1990, the internal migration rate reached its highest level as a result of the cancellation of some restrictive legislation on residence in towns having more than 100 thousand inhabitants. In fact, many of the newly registered migrants in 1990 were *de facto* residents in these towns, who now took the chance to legalize their residence.

Internal migration underwent certain changes in 1990: first, the rural-urban flow has reached the high share of 70 percent of all migrants, and declined later to only 30.5 percent (1994). Secondly, a new pattern has developed, urban to rural migration, which has increased from a very low level (3.5 percent) in 1990 to 18.4 percent in 1994. Urban unemployment has induced a large forced return to agriculture. A reversed pattern of long-distance migration was noticed, from Western

towns to the Eastern regions, following the decollectivization of the agriculture. Over all, the share of agriculture in the active population has increased from 28.3 percent in 1990 to 35 percent in 1994, a rise and a share which are unique for a European country. Not all shifts of labour between sectors are related to a change of residence from town to village: massive lay-offs of rural-urban commuters working in urban industries could involve some temporary and involuntary return to agriculture (Ronnas 1995). Some of these “involuntary” self-employed farmers may later return to non-agricultural employment and decide to move to town.

In 1990 and 1991 more than half of those who migrated moved to another county, while beginning with 1992 migrants who changed residence without leaving their county prevailed. It can therefore be said that the geographical distance of the moves has become shorter. Keeping in mind that migration to a neighbouring county also may involve shorter distances, it appears that the distances over which people migrate has decreased substantially (Zamfirescu, Teodorescu 1996).

Between 1990 and 1994, the most mobile population segment was the working age group 15 to 59, representing between 72.4 percent and 74.9 percent of all residence changes, followed by the age group 0 to 14 years with between 19.8 percent and 24.9 percent, while the share of the elderly population (60 years and over) was small (2.7 to 5.3 percent) (Zamfirescu, Teodorescu 1996).

The cohort between 20 and 29 years stood out from all other age groups. Although the share of the cohort in the total population is only 15 percent, their migration accounted for more than one third of all residence changes. As elsewhere after the age of 35, the number of residence changes goes down significantly, getting lower and lower towards the age of 60. One can conclude that migration trends in Romania replicate earlier findings that migrants tend to be young people, more often single than married, and more often better educated and prepared to take higher risks than the stayers. The consequences for areas losing population are devastating in the long term, as the effects are magnified by the loss of reproductive capacity for the original community, transferred by the young people to the benefit of other communities.

3. METHODS USED AND DATA EMPLOYED

3.1 Geographical scale and geographical units

Romania's current administrative organization is set up according to the Decree no. 38/1990. The territory is broken down into the following types of administrative units:

Level 1 - Counties, Bucharest Municipality

Level 2 - Municipalities, Towns, Communes

Level 3 - Localities, Villages, Capital's sectors

The spatial scale, as in other studies, was, to a large extent, predetermined by the availability of data. The investigation was conducted on two levels: first, for communes, municipalities and towns, which is an equivalent of NUTS (*Nomenclature des Unités Territoires Statistiques*) level 5-units in the EUROSTAT schema for territorial units used in reporting EU statistics, and secondly, on *Judete* level, which is an equivalent of NUTS level 3-units. For the analysis of population change and sex structure the former geography was used. The investigation was conducted for 2948 communes and towns. A commune is an administrative unit including one or several villages, organized by an administrative centre, usually selected as the largest and most centrally located village (Ronnas 1982). At the regional level we analyze migration patterns by age and sex. Later on in this study *Judete* will be referred to as region or county. It should be noted that regions are not the most appropriate units for the study of population migration as they are too large. Therefore some sections of the study will suffer from the "averaging effect".

3.2 Variables

3.2.1 Population and population change data

Stocks of population for communes and towns in 1984 and 1994 have been made available by the National Commission for Statistics of Romania. The data on the stock

of population came from National Censuses of Population held in 1977 and in 1992 and from current registration of births, deaths, internal and international migration.

Following the fall of Ceausescu's regime, the flows of international emigration were substantial for the following three to four years. It was estimated that net international migration was 156000 people during the period 1990-1993 (Muresan 1996:832). The emigration waves were so important that they resulted in the decline of the population in 1990 and 1991, their share in the population decline accounted to 89 percent in 1992, being still sizable in 1993, at 56 percent. The main source of emigrants were the German and Jewish minorities, gradually replaced by Romanians and Gypsies, as the first two groups exhausted their stock in Romania (Berinde 1994). The areas from which most international emigrants originate are geographically concentrated and basically cover administrative units with high percentages of population of German origin, who migrated to Germany as *Aussiedler*. This category of migrants accounted for 246.3 thousand people during the period 1984-1994 (Statistisches Jahrbuch 1991, 1992 and 1995). However, the emigration counts cannot be regarded as precise: the figures reported by Romania and receiving countries, Germany in particular, differ to some extent (compare for example CoE 1995 and 1996). The difference is, however, in tens of thousands, not in hundreds of thousands as in the case of Poland (Kupiszewski, Durham and Rees 1996). The combination of two factors: concentration of international departures and the differences in the reporting of the number of migrants may have substantial impact on population count on communal level resulting in the overenumeration of population in the nineties in areas of high international emigration.

Another complex problem in our estimation of the population movements is derived from the controlled migration into 14 of the largest towns of Romania. The restricted access to the largest towns could have resulted in some people living in large cities without administrative permission and therefore not being included in the population register. After the fall of Ceausescu at the end of 1989, such obstructive rules have disappeared, leading to practically "over-night" gains of tens of thousands new residents in the largest cities.

3.2.2 Migration

Origin-destination-age-sex matrices of migration have been provided for county and 5 years age groups for 1984 and 1994. The data were collected through current registration of migration by the National Commission for Statistics. The analysis has focused on the 1994 data set.

3.2.3 Births and deaths

Data on births and deaths in 1994 have been provided by the National Commission for Statistics for counties. They were used to construct Webb typology of population change.

3.3 Key indicators

In order to make findings for many European countries comparable it was necessary to use simple and easy to compute indicators which are meaningful virtually everywhere. The indicators used in this study are population density, unemployment and distance to the nearest urban centre.

3.3.1 Distance to the nearest urban centre

The relation between population change and the distance of a commune/town to the nearest town of 10000 inhabitants and distance between communes and towns or cities over 25000 has been used. This variable shows how the geographical accessibility to the basic amenities influences population dynamics. Technically the distance was measured between the centroids of communes and towns and expressed in km. The topography, and consequently more refined measures of distance, such as travel cost or time, have not been taken into account due to the problems with the estimation of their values. In mountainous Romania this may introduce some errors which would not exist in the case of predominantly plain countries, such as the Netherlands or Poland.

3.3.2 Population density

Population density was calculated in persons per km² for each region, and constitutes an index which is probably the most comparable one for all European countries. In the case of Romania, the units used for the analysis of population change differed from the units used for the analysis of net migration, the latter being quite large. This could have introduced some distortions in our results.

3.3.3 Unemployment

Data on unemployment were available at regional level as a percentage of unemployed in the total labour force and measured at the end of the year. We use this information as an explanatory variable for inter-regional migration. The measurement of unemployment suffers from perennial problems of dependency on local legal regulation, as the registered count is based on the legal definition of unemployment, which in turn has profound economic consequences for the social budget. Therefore the results obtained cannot be easily compared with the results obtained for other countries. Nevertheless trends identified remain valid.

3.3.4 Functional classification

We used urbanisation level measured as a percentage of urban population in regions as a functional classification. A place is defined as a town by the Romanian urban planners when it can provide an adequate economic and social infrastructure (such as employment opportunities in non-agricultural sectors, housing, schools, hospital, an administrative and cultural centre). International comparisons are, however, limited, as definitions of urban places vary largely from one country to another.

3.3.5 Altitude

The population change was measured against altitude of communes and towns. Each commune or town was attributed by the Institute of Geography in Romania to one of 5 classes: lowlands, plains, uplands, hills and mountains. The classes were defined

based on two factors: altitude and relief of a commune. Population change over the decade 1984-1994 was measured for each of these classes what allowed us to have an insight into the population change against the terrain's relief. We used knowledge brought from an Italian case study (Rees *et al.* 1997), in order to identify relevant similarities with the Romanian case.

3.4 Mapping methods

Mapping methods have been described in Rees, Durham and Kupiszewski (1996). The rules set out there are used in this study. For communes we constructed a data set of "geographical centres" using place name gazetteers made available by the US Department of Defence via the World Wide Web. The gazeteer gave latitude and longitude for the principal settlement within a commune. Statistical variables for communes were then represented by a shaded symbol plotted at commune centres. This technique overcame the lack of affordable digital boundary data. For Counties, digital boundaries were available from the World Health Organisation (WHO) and conventional shaded maps could be employed.

4. SPATIAL PATTERNS

4.1 The pattern of population change: 1984-1994

At the regional level the spatial pattern of the changes of population of Romania we observe a two-tier system with population growth in the regions of the outer Carpathian ring, Moldova, Dobrogea as well as in the Satu Mare (highest increase) and Maramures (Figure 2). These regions have traditionally had high birth rates, are less economically developed and have been more conservative in preserving the family values. The decrease in population occurred in the regions constituting the inner Carpathian ring, Transylvania, and plains south of Carpathian mountains. The only county which experienced a population decrease larger than 10 percent was Sibiu, obviously an

outcome of traditionally low birth rates, combined with an aging population, left behind after a massive emigration to Germany and Austria by the numerous ethnic German community.

Much more enlightening is the analysis of population change by communes and towns. As it is demonstrated in Table 1 the main determinant of population gain is the type (rural *versus* urban) of administrative unit and then its size. The map of population change by commune over the period 1984-1994 (Figure 3) fully confirms this finding. In 1994 there were 2082 communes (rural administrative status) and 11 towns (urban administrative status) with less than 5000 inhabitants. Some 1912 out of 2093 units witnessed negative population growth over the period 1984-1994. The pattern of extensive rural depopulation observed in Poland (Kupiszewski, Durham, Rees 1996) is also present in Romania. Communes with over 10 percent losses of population concentrate in Dobrogea, Transylvania and North-Eastern Romania (Brasov, Sibiu, Cluj, Alba, Salaj and Botosani regions), and on the Moldavian and Wallachian plains. Different mechanisms could be in place here: first, the first three counties have each very large towns, which may be very attractive for potential migrants within the same county. Secondly, the last three counties are representative for rural areas with an aging population and having a depressing social infrastructure, which may further induce outmigration to communities better endowed with employment opportunities and social services. A few small communes gaining population are located mostly on the foothills of Carpathian mountains - again a picture known already from Poland.

At the other end of rural-urban continuum, out of 90 towns and cities over 25000 inhabitants, only 10 demonstrated negative population growth. Towns and cities gaining population are located in the belt between Brasov and Lugoj, whereas the cities with higher population increase (over 20 percent) are located in the Southern and Eastern foothills of Carpathian mountains and on the Moldavian and Wallachian plains. Both extremes - that is high growth and high decline can be seen in Satu Mare and Maramures regions (Figure 4 which replots the urban communes of the previous map by themselves for easier identification).

The overall geographic picture of the population changes shows a turbulent pattern of rural depopulation and urban concentration on the plains and in central part of Romania and more balanced pattern in the mountains and uplands.

4.2 The pattern of internal migration between regions in 1984 and 1994

The number of migrations between counties in 1984 was 231 thousand, one of the lowest in the post-war period.. The picture shows low interregional mobility with inflow and outflow rates being in most cases over 10 *pro mille* (Figure 5). To better understand the low mobility of people in the 1980s, one is reminded of the economic crisis of that period, felt by the citizens by shortages in everyday life's commodities. Food deficiencies and energy shortages may have led to a slow-down in rural-urban migration, as many people preferred to keep a foothold in the countryside, as well as a job in the urban area. This may have encouraged rural-urban commuting and helped avoid an unwanted inflow of workers into large cities (Ronnas 1984).

A notable example is the low inflow of migrants to Bucharest, very effectively blocked by administrative regulations. Figure 6 and Figure 7 reveal the losers and the winners of the migration process: Bucharest is the only administrative unit showing losses in excess of 5 *pro mille*. Central and Western parts of Romania and Constanta in the South-East were losing population, whereas the Moldovian and Wallachian plains and Northern Romania have positive net migration.

In Romania in 1994 there were 267 thousand migrations, a small majority of them by female (144 thousand). Over the period from 1968 till 1994 the number of migrations oscillated between 375 thousand in 1973 and 193 thousand in 1989. The notable exception occurred in 1990 when the number of migration exceeded 786 thousand (33.9 *pro mille*). This migration explosion was due to the removal of administrative and legal restrictions on the access to cities and large towns which was abolished after the fall of Ceausescu's regime. After 1990 the number of internal migrations stabilised over a quarter of million per year. that is considerably higher than in the second half of the 1980s.

The intensities of migration by age and sex present a very familiar Castro-Rogers bi-modal curve (Figure 8) with the first maximum for small children migrating with their parents and the second maximum for labour-related migration or for marriage reasons. This maximum is shifted 5 years in time for males in comparison to the migration of women, whom we know to be more prone to migrate. People in their twenties who have recently finished their education and are not tied by a family are more likely to migrate to places with more opportunities; this is well reflected by the peak in mobility for this group. There is no a peak of migration at retirement ages, although migration rates of the oldest people are slightly higher than those of people in the ages around 50 years.

The introduction of the age dimension (Figure 10 and Figure 11) does not reveal any substantial variation in the spatial patterns of migration. Even in the most mobile age group 15-29 years net changes exceeding in absolute terms 1 person per 1000 are few and far between. There is a notably low migration rate for population over 45 years. This is not unexpected, as the family ties and social-network assets are well established at this age, making this group immobile geographically. None of regions experience either in- or outmigration over 1 per thousand inhabitants in these age groups; for the last age group (above 60 years old), the migration is reduced to less than 0.25 *pro mille*. Overall total origin and destination independent mobility is below 5 *pro mille* for all age groups between 45 and 74 and rises for the oldest population.

At the regional level, in terms of total sex-specific in- and outmigration rates, we identify population receiving counties in the South-Western part of the country, more specifically in Bucharest and Ialomita, as well as in Dobrogea. Two of the counties in the Eastern part of the country, traditionally known for sending migrants to other regions, Vrancea and Botosani, have experienced a higher share of immigration than other counties. We suspect that a large number of these migrants are return migrants, who lost their jobs in the towns after the rise of unemployment in 1991 and decided to return to their region of origin. However, in general, the Moldavian plain and Eastern slopes of Carpathian Mountains as well as Transylvania are not preferred destinations (Figure 9). High outmigration rates are observed in regions of Southern and Eastern slopes of Carpathian mountains and on Wallachian and Moldavian plains. This differentiation is more pronounced for women than for men. Total net migration for

most regions is within ± 1 per thousand (Figure 10 and Figure 11) and maximum absolute values in Timis do not exceed 3 *pro mille*. The majority of the migration (56.3 percent for men and 58.9 percent for women) is intra-regional (and therefore not shown in the number of migrants quoted above) indicating the preference for a low-risk migration strategy, with the possibility of frequent visiting of the original family and an easier return to the community in case of an unsuccessful move. The intra-county moves are more pronounced in Bucharest (which continues to be very attractive because of its primacy in Romania), also in Arges and Bihor, where their share exceed 70 percent of all moves. This type of migration could be investigated only at the commune level.

Migration efficiency (the ratio of net migration to gross migration expressed as a percentage) varies strongly from region to region (Figure 12 and Figure 13). It is higher for males than for females. The lowest efficiency is observed for broad age groups 0-14 and 30-44 years, the highest for the most mobile broad age group 15-29 years as well as for 45+ age groups. The geographical pattern of efficiency of migration is patchy and difficult to describe in a synthetic manner. Generally lower efficiency occurs in the south, particularly on the Wallachian plain, higher in the western, central and eastern regions. Large regions for which data on migration are available makes it difficult to offer a meaningful analysis.

It should not go unnoticed that the regions which lost population due to migration in 1984 have become destination regions of migration by 1994 and *vice versa*. One explanation of this phenomenon is that the artificially-supported mechanism of migration ceased to exist after the 1989 revolution. The liberalization of the movements in space has led to moves determined mostly by economic reasons. We suspect also that some form of counter-action might have occurred. This hypothesis would have to be checked by more detailed research.

4.3 The demographic sources of population change

To understand properly the mechanisms behind simple population change it is worthwhile to investigate the interplay of fertility, mortality, immigration and outmigration, using the Webb (1963) classification, a full explanation of which is in Kupiszewski, Durham and Rees(1996). The classification is summarised in Table 2. For Romania a full account of population change was available only for counties, that is at regional level (Figure 14). The vast majority of regions (26) have been losing population. Particularly worrying is a strip of regions covering a large part of the Carpathian Mountains and extending to the East to the state boundary and to the South, covering a large section of Wallachian Plain and the Northernmost part of Romania, where both natural increase and net migration are negative (classes F and G). Negative natural increase is the driving force for population decline in 14 out of 17 regions in these two classes. Only four regions, three of which are in Transylvania, have both components positive. This pattern suggests that Romanian regional demographic policy will have in the short term a challenging task of balancing the components of population growth in order to avoid large scale depopulation. As we observe in 27 regions a natural decrease of population, it is clear that wise pro-natalist policy may be appropriate. The policy should refer both to encouraging fertility and to improving the chances of survival for live births. The gap in the living standard between urban and rural areas is illustrated by a synthetic indicator: the infant mortality rate, where the urban-rural differential in 1993 was 6.7 *pro mille* (NCS 1996). The formulation and implementation of such a policy will be difficult, as Ceausescu's brutal demographic policy (Davin 1991) has compromised the whole idea.

4.4 The impact of migration on the distortions of demographic structures

It is well known that migration is a very selective process. One of the most important variables influencing migration is the age of migrants. The sex of migrants also plays some role though much less prominent than that of age. Consequently the age and sex structures of population are being deformed as a result of migration. The Polish case study (Kupiszewski, Durham, Rees 1996) and an earlier study by Kupiszewski (1992) have clearly shown how far reaching these deformations might be. A study by Muntele (1994) demonstrates that long term intensive (brutal as Muntele put it) exploitation of human resources of rural areas brought disastrous demographic results. A concise measure of the degree of population aging is the share of the 60 and more years old. This is presented in Figure 15. Clearly in 1930 only a small share of Romanian territory, located in Transylvania, the Bihor Mountains and the Western Plain had more than 9 percent of population 60 years old or over. As reported in 1992, there were only a few areas, mainly in the North of the country where the share of 60 and over population is below 18 percent. The elderly (above 60 years old people) made up 21 percent more of the populations in the West and the South of the country. The process of the aging of the rural population, very much due to massive outmigration, bring rather gloomy prospects for Romanian agriculture (Ronnas 1991) and cannot be attributed to the maturity of the demographic structures. The development of modern, competitive, market orientated agriculture, capable of surviving and developing in an united Europe, requires young, educated and energetic labour. The current demographic developments show that the human factor may be one of the main obstructions in the improvement of the agriculture. The reform of agriculture requires more than labour supply. As we discussed earlier, the contraction of urban employment has determined a forced extension of self-employment in agriculture, which indicates that what is needed is investment in modern production facilities and marketing skills which could make the farmers and their products competitive internationally.

The process of depopulation in Romania is in parallel with the similar processes occurring in other countries of the region and causing much concern amongst researchers (Stasiak and Mirowski 1990).

The second important issue is the distortion of sex structures. In Romania there are 104 females per 100 males (Table 3). The rural areas suffer from a deficit of females, showing between 97% and 97.7% of the national values (Figure 16). There is very little variation between rural communes of different size. Urban locations up to 100 thousand demonstrate a small deficit of females, with sex ratios just below the national value. Large cities, with over 100 thousand inhabitants, and in particular Bucharest, are areas of concentration of female population, the latter having 112 females per 100 males. These values are distorted by relative longevity of females in comparison to males. The comparison for the age group which are most prone to migration - 20-29 years would be much more informative. Unfortunately we did not have the age and sex specific data for communes. We will attempt to illustrate the impact of the age structure on the sex ratio using much larger spatial units (Figure 17). In Bucharest in the youngest age groups there is a small deficit of females, whereas the surpluses start from the 20-24 age group. The female surplus grows with age, as a result not only of migration but also, in the oldest age groups, due to higher male mortality. We suspect that this surplus is also a result of a large transfer of women from the countryside, and one can indeed identify a corresponding large deficit of women in the same age group in rural areas. We do not have the age- and sex- specific data population for communes, but the sex structure by age charted for the least urbanised county in Romania - Dimbovita (Figure 17), with 31 percent of urban population, offers some indirect evidence in agreement to our observation. The number of females per 100 males is lower than in Bucurest, in particular in crucial 25 to 44 years age group.

5. RELATIONSHIP TO THE URBAN SYSTEM

5.1 Gaining and losing urban systems

The number of towns has increased from 237 in 1984 to 260 on 1 July 1994; the share of the urban population went up, during the same period, from 49.2% to 54.7% (Figure 18). Little over half of the country's population therefore lives in urban settlements. Also worth noting is the fact that although more than half of the country's population lived in towns in 1994, the percentage of the population that was urban in East European countries was much higher and stood at 63.1% in 1992. The low level of urbanisation is complemented by a spatial inequality of the distribution of population: the lowest figures were in Giurgiu county (17 percent in 1984 and 30 percent in 1994).

One of the characteristic features of the Romanian urban system is primacy. The difference between the size of Bucharest (2067 thousand in January 1995; Table 4) and the second largest town (Constanta, 349 thousand) is almost sixfold. There is a gap with no city in the size range between 2 million and 400 thousand population. As a result Bucharest has a very dominant and attractive position in the settlement system. Until 1990, the increase of the population of Bucharest as well as of other large cities was controlled artificially by administrative measures. In the case of Bucharest these measures were highly ineffective. Between 1956 and 1966 censuses the population of the capital grew by 1.6 percent *per annum*, in the next intercensal period ending in 1977 by 2.9 percent *per annum*, to decline to 1 percent *per annum* in the last intercensal period ending in 1992.

How could people bypass the official restrictions to move into the large cities? They could obtain a residence permit for a closed town by marrying an urban resident, or by bribing corrupt local officials (Berinde 1994). Another mechanism was to use individual resources to build privately. An example was the illegally built cottages along

the highway between Pitesti and Bucharest (Hunya 1989). Although viewed as irrational by the planners responsible for the rationalisation of the settlements, this action made sense for the man seeking inexpensive housing close to his working place. Rykiel (1986) showed, on the example of Polish cities, that the administrative restrictions prevent outmigration from rather than in-migration to cities with restricted access and enforce the selectivity of immigration. What the administration was unable to do was quite successfully achieved by the introduction of the free market. Between 1992 and the end of 1994 the population of Bucharest declined by more than a thousand, that is at 0.01% *per annum*.

This change may be attributed to two factors: the increasing pecuniary cost of a move to the capital, including the cost of buying of accommodation on a free market, as well as the reduced number of completed housing units in the recent years. Ianos (1994) noted that between 1972 and 1992 the correlation between population change and the stock of housing (presumably new, this is not stated explicitly in Ianos' paper) was nearly perfect at 0.99.

The whole post-war period was characterised by a rapid increase in urban population, from 23% in 1948 to 55% in 1996 (Figure 18). In parallel, within the urban system the concentration of the population in larger cities occurred. The share of urban population in cities within the band between 100 and 400 thousand increased between 1977 and 1995 whereas the share of medium and small towns (below 100 thousand) and the capital city decreased over the same period.

Over the decade 1984-1994 the greatest rates of increase of population occurred in cities in the 25 to 250 thousand band (Table 1) with the size band between 100 and 250 thousand growing by 17 percent, 16 percent faster than the total population. Medium size towns (25-50 thousand 50-100 thousand) also grew very fast (12 percent 16 percent). Bucharest and small towns (10-25 thousand) witnessed moderate increase (5 and 6 percent), whereas the smallest towns (below 10 thousand) and large rural communes (over 10 thousand) noted either stagnation or very slow growth. In the case of Bucharest the growth over the decade was solely due to the growth in the first part of the decade as in the most recent years the population of the capital has been decreasing. The whole urban system and large cities were supplied with new inhabitants by small rural communes, in the 5 to 10 thousand and above all below 5 thousand bands. The

losses of the latter band equal 832 thousand, that is almost minus five times national increase of population over this decade. Rural communes in the 5 to 10 thousand band lost almost as much population as the nation gained. The overall picture shows a rapid concentration in urban areas in the middle of the rank size hierarchy at the expense of rural population.

It is always interesting to examine the changes in the neighbourhood of the largest urban agglomerations. We looked at Bucharest. Within a 20 km radius from the capital there are 29 communes and towns of which 22 are losing and 7 are gaining population. Some units, as Otopeni and Bragadiru have very high increases (41 percent and 34 percent respectively for 1984-1994), some, like Dobroesti have high losses (15 percent). There is no sign of population increase around Bucharest; the size of community seems to have more impact on the population change than the proximity of the large urban agglomeration. A similar pattern of growth and decline was observed around other large cities: Constanta, Iasi, Timis, Cluj or Brasov.

A decrease of the share of young urban population (0-14 years) from 23.8 percent in 1984 to 22.1 percent in 1994 is noticed, with the most significant decrease registered in the age group 0-4 years (from 7.9 percent in 1984 to 5.6 percent in 1994). At the same time the share of the elderly population (60 years and over) went up from 10.5 percent in 1984 to 12.3 percent in 1994, showing the biggest growth in the 65-69 age group years (from 2.0 percent in 1984 to 3.4 percent in 1994). These two findings demonstrate that the population aging process in the urban environment is somewhat lower than the all-country average, but this sort of fluctuation is usually difficult to interpret, in particular over a short period of time. There are no structural variations (65.7 percent in 1984 as compared to 65.6 percent in 1994) in the adult town population (15-59 years), but the biggest growth is noticed with the 40-44 age group years (from 5.9 percent to 8.5 percent in 1994) and the biggest decrease with the 30-34 age group years (from 10.4 percent to 7.2 percent).

5.2 Transformation of the significance of the rural - urban migration

During the period of study, 2.3 million persons have migrated from rural to urban areas. This has led to net gain for the urban population of 1389 thousand people. The rural to urban flow was the main direction of migration. In the last 5 years of the analysis (Table 5) its significance diminished markedly and dropped below the 50 percent threshold. Migration in 1990, which was a record high, also had an unprecedented share of rural to urban migration - over two thirds of the total migration. This wave of migration represents the 'explosion' effect consequent to the lifting of limitations on migration to towns with population over 100000 imposed by the Communist regime. The year 1992 marked a significant alteration of the structure of migration with the increase in the flow from urban to rural areas. This was stimulated by legislative measures in regard to the ownership of land and by difficult economic conditions. People were less inclined to establish their residence in the large urban agglomerations and big towns, preferring instead to settle in small and medium - size towns, where the living conditions are less stressful and especially housing is cheaper.

The importance of the urban subsystem increased with the share of all migration within the urban subsystem rising from 18 percent in 1990 to 26 percent in 1994. Over the same period the share of urban to rural migration increased over 5 times, but from a very low level. The pattern of forced urbanisation and industrialisation, typical for all communist economies, slowly disappears, or at least loses its significance, and is replaced by more balanced multidirectional redistribution of population between rural and urban areas. The phenomenon described above is similar to the one observed in Poland (Kupiszewski, Durham, Rees 1996) and is probably characteristic of many economies in transition.

In Romania, one of the important effects of rural to urban mobility in the past is that younger families, who had migrated from villages to towns and had received dwellings in town within the new programme of urban construction, left the older generation in rural areas. Rural households consisting only of the older generation have

often disappeared due to the death of partners, while rural buildings and agricultural land have been inherited by younger generation. This led to a situation where the buildings remained unoccupied and arable land unfarmed. The new migration trend, observed since 1992, of urban households returning to rural areas, was enhanced by the law on returning the ownership of agricultural lands and by economic reform which reduced employment in urban industries. If wisely exploited by the central and local governments, this momentum could be transformed to rejuvenation for the rural community.

6. RELATION TO THE DISTANCE FROM URBAN CENTRES

Distance to the nearest town or city may be interpreted as a crude indicator of accessibility to higher level services and amenities. In underdeveloped economies, with poor transportation and communication infrastructure, we may expect that the friction of distance will be larger than in well developed countries. As the data on net migration by communes were not available, we concentrated on the investigation of what impact the distance to towns and cities of a given size has on the dynamics of population.

Rural areas in Romania have been losing population at an alarming pace. The distance to towns of 10000 inhabitants or more (Table 6, Figure 19) has a negative linear impact on the growth of rural population. Rural areas up to 15 km from towns noted losses between 5.3 percent (up to 5 km) and 8.2 percent. All more distant areas suffered from losses exceeding 9 percent, in the extreme case of bands between 20 and 25 km and over 30 km - even over 11 percent. Similar results are disclosed in Table 7 which describes population change in small towns and in rural areas by distance from nearest town over 25000 inhabitants. The distribution of the population change has a bi-modal shape with maxima for the smallest distance and for 70-100 km bands. Overall changes fluctuate between values of 94.6 percent (up to 10 km band) and 90.7 percent (over 100 km band). It seems that the population change is to some extent sensitive to the distance from nearest towns of different (10000 and 25000)

sizes. Accessibility does make a modest difference to the pace at which population changes but it is rurality which plays the most profound role.

7. RELATION TO POPULATION DENSITY

The data on the area of administrative units are typically derived from digital administrative maps. We have access to a digital map of counties only, and no digital boundaries for smaller spatial units. Analysis of population density at this scale is not extremely enlightening. Romania has very uniform population density measured on the regional level (this certainly does not apply for the level of communes and towns), with 28 counties having between 50 and 100 persons per square kilometer, and another 10 counties having between 100 and 250 persons per square kilometer (Figure 20).

A simple analysis presented in Table 8 reveals, as expected, that the population change is sensitive to the population density both for men and women. Male population has been more sensitive to low density as a push factor, whereas female population has been more sensitive to high density as a pull factor. The largest change - a decrease of over 6 percent - occurred for male population in scarcely inhabited areas (less than 50 persons per square kilometer) and - a gain of 5 percent - for female population in densely populated areas.

Table 9 shows the net migration and effectiveness of migration between density bands. The lowest density bands loses to all other bands. However, the losses to the highest density band, formed by the capital city of Bucharest, are marginal. The density band, of 50-100 persons per square kilometer, is the main winner, and is in fact the only density band which has net gains from migration. This strong position results in negative migration balance of the two highest density bands. The effectiveness of migration is quite high, with staggering 47 percent for female

migration between the lowest and the highest bands. As in the Polish case (Kupiszewski, Durham, Rees 1996) and in Wilkin (1989) this shows the traditional survival strategy of a rural household, where girls are educated and sent to marry away and boys are typically expected to inherit the family's plot (Ronnas 1984).

Finally, it should be underlined that the significance of the results obtained is limited due to the size of units for which the measurement was done and due to very flat distribution of population density in the country (the effect of the large size of units used). The first class with the population density below 50 has only two units. The last band with the population density over 250 consists of just one unit: the capital city Bucharest. In general the relationship between population change and migration on the one hand and population density on the other is similar to the changes identified in the Poland case study (Kupiszewski, Durham, Rees 1996); but very different from that identified in the United Kingdom report (Rees, Durham, Kupiszewski, 1996).

8. UNEMPLOYMENT, INTERNAL MIGRATION AND POPULATION CHANGE

Under Communism, the concept of "unemployment" was only used in association with the capitalist economies. Nevertheless, unemployment existed but was hidden, visible only in the form of low productivity, labour hoarding and huge, inefficient administration. The transformation of Romania's economy after 1989 resulted in the streamlining of enterprises and the laying-off of the redundant labour. Undoubtedly this was a major shock for the Romanian society, which was not used to the insecurity of jobs in a market economy.

An analysis of the relationship between migration and unemployment must take into account the fact that compared to the very low level of the average salary the costs of housing have become very high in the transition period and have a prohibitive influence on mobility.

The following section presents the geographical pattern of unemployment in 1995 and the relationship between the mobility of the population and the mobility of the jobless.

The unemployment rate increased rapidly from 3 percent in 1991 to 11 percent in 1994 and down again to 9.5 percent in 1995, indicating the very slow pace of privatisation chosen by Romania. Parallel to the increase in unemployment, the share of active population occupied in agriculture has gradually increased, from 28.2 percent in 1990 to 35.6 percent in 1994 (NCS 1996:77).

To better understand the regional aspects of unemployment, we need to step back in history for a moment: The effort aimed at homogenisation of economic development in all regions of Romania were initiated in the 1970s and continued in the 1980s. Despite these efforts, the gap in investment attraction between regions continued to be large. In 1985, for example, one of the least developed counties, Botosani, had a mere 213 waged jobs per 1000 population, whereas the most developed county (excluding the capital), Brasov, was providing twice as many, 413 waged jobs per 1000 population. The impact upon migration was a continued "pull" factor exercised by the more developed regions, expressed in further migration in the traditional direction, from less developed to more developed places. This pattern can be very well distinguished also in the regional differences of unemployment. The highest unemployment rates were recorded in the Eastern and North-Eastern parts of the country, where the economic development level is low (Table 10). The highest unemployment rates in 1995 - much higher than the average - were recorded in counties Neamt (17 percent), Botosani (17 percent), Vaslui (15 percent) and Valcea (15 percent); the unemployment rate among women in these counties reached alarming levels: 20 percent in Bistrita-Nasaud, 19 percent in Neamt and 19 percent in Vaslui. Most of these counties had been endowed with heavy industry within the regional development programme, according to artificial locational criteria, that proved unviable in the transition from a soft-budget constraints economy to a hard-budget constraints situation.

In counties with high economic development, unemployment was much lower than the average: Gorj (4 percent), Arad (5 percent), Timis (4 percent), Bihor (6

percent), Brasov (7 percent), Mehedinti (6 percent) and Bucharest (5 percent). All these counties, located in the Western and Southern parts of the country, have large urban centres, characterised by a diverse economy, that adapted easily to the new requirements of the free market.

No correlation can be established between unemployment levels and population growth between 1984 and 1994 (Table 11). This is hardly surprising, given the fact that the population change was measured over a decade and the unemployment for a single year. However, net migration is quite sensitive, in particular for extreme values of unemployment. Areas with low unemployment (less than 6 percent) attracted almost 3 migrants per 1000 inhabitants, whereas areas with the highest unemployment lost over 2 persons per 1000, which suggest that, contrary to expectations, the unemployed people are not very mobile geographically.

The cross-sectional analysis by age-groups and rural-urban criteria offers us more insight on the identity of the unemployed people. Young people in ages 15 to 29 without jobs are found to be more numerous in the countryside than in towns. The opposite is true for the age-group 30-54, that is, they are more numerous in towns (NCS 1996:47). Taking just the age criterion into consideration, the first group should be among the most likely to migrate elsewhere. Their rigidity could be explained by their skills and education that may not match the requirements for available jobs (structural unemployment), or that Romania lacks sufficient job vacancies (business cycle unemployment).

Table 12 demonstrates the net migration flows between unemployment bands and migration effectiveness. In general, the effectiveness of migration increases as the unemployment rises. However, the effectiveness of migration between the two highest bands is low. The lowest unemployment band is unexpectedly losing population to the second lowest band. Otherwise, migration is as expected from high to low unemployment. Earlier research has shown that migration in Romania is restricted by housing shortages (Ronnas 1984, Berinde 1994). Rises in housing costs could be an important obstacle to migration towards areas with better employment opportunities, because the attractive towns have also higher housing costs than other places.

Apparently, unemployment plays some role in the migration decision making but is not the main factor.

9. FUNCTIONAL CLASSIFICATION, INTERNAL MIGRATION AND POPULATION CHANGE

We are not aware of a multicriteria functional classification of communes or regions in Romania. However, the level of urbanisation, measured as a percentage of urban population in each region, may serve as a rough indicator of the functions of regions. Agriculture and forestry are prevalent in regions with low levels of urbanisation, whereas regions highly urbanised are dominated by industry and in some cases by administration (Rey 1996).

Romania, on European standards, has low but growing level of urbanisation. While in 1984 there was just one other city with a population over 300000 inhabitants besides Bucharest, in 1994 there were 7 such cities. The growth of the urban population in the last 10 years furthered the process of concentration of population. More than 30 percent of the country's population lives in the 25 cities with over 100000 inhabitants (considered large cities). At the same time, the share of inhabitants in towns with a population under 100000 in the total population is also growing, but at a much lower pace (from 22 percent in 1984 to 23 percent in 1994).

During the period of time investigated, 23 new towns were established throughout the country, with the largest number of newly set up towns located in counties Calarasi and Constanta (three each). The counties with a large number of towns are: Prahova (14 towns), Hunedoara (13 towns), Constanta (11 towns), Alba (9 towns), Harghita, Brasov and Sibiu (9 towns each).

At the end of 1994, the largest proportion of urban population in the total population of the county was registered in the following counties: Brasov (76.5 percent), Hunedoara (75.8 percent), Constanta (73.8 percent), Sibiu (68.5 percent), Cluj (68.0 percent), Braila (66.4 percent), Timis (61.7 percent), Galati (60.1 percent), and the municipality of Bucharest (88.9 percent). These are all counties with well

developed industries. In counties Giurgiu and Dambovita, the share of the urban population was less than one third at 30.3% (Figure 21). The share of the big cities is now higher. In 1994 nearly three fifths of the urban population of Romania lived in cities with populations of over 100000. The number of very small towns (under 5000 inhabitants) and the share held by their population shows a very slight decrease over the period of time in question.

There are some differences in population growth by level of urbanisation and gender (Table 14). The female population was more sensitive to the level of urbanisation, with gains in the extreme bands and losses in the central bands. The male population increased in all bands, in particular in the most urbanised areas. This may be attributed to the sucking effect of heavy industry, under Communism permanently requiring extensive labour supply, predominantly male.

Due to the large regions adopted and crude identification of the functions of regions the analysis presented above is far from conclusive.

10. ALTITUDE, RELIEF, INTERNAL MIGRATION AND POPULATION CHANGE

It is interesting to know if altitude and relief have any impact on population change. It is clear that the impact of altitude itself could be quite limited. However, it has an impact on socio-economic and cultural conditions, which in turn influence in important ways the demographic behaviour. We have used a classification of communes according to their altitude and relief, prepared by the Institute of Geography of the Romanian Academy of Science. Five classes have been identified, ranging from lowlands to mountains. In two cases, where the classification of communes was not available, the authors classified the communes according to the classification of neighbouring units and the inspection of topographic maps.

The population change over the period 1984-1994 was calculated for all altitude and relief classes (Figure 22, Table 13). Only population living on plains has declined decisively for both sexes. The male population of mountains has largely diminished, whereas the population of uplands, more accessible to the outer world,

has increased. With the exception of plains, the differences in the population growth between various classes are not large, and the relationships are weak. We may therefore conclude that altitude and relief are not factors with a substantial impact on population growth.

11. SUMMARY AND CONCLUSIONS

The present case study examined the pattern of residence change and internal migration in Romania, based on a wealth of information about the population dynamics. We noted that the population gains and losses were determined by both net internal migration and natural increase. The former factor was particularly important for the growth of urban areas. Population concentrated in cities, especially large cities, with a declining trend of the flow towards Bucharest. The overall geographic picture of the population changes shows a turbulent pattern of rural depopulation and urban concentration on the plains and in central part of Romania and a more balanced pattern in the mountains and uplands.

Recently, more and more people moved to and settled in small and middle-sized towns which in 1994 constituted poles of population growth. Rural to urban migration constituted the major migration direction over the period under consideration. However, from 1992 a reverse trend has been noticed - more people move from towns to smaller communes and the importance of migration between cities has increased. The distance of migrations decreased. Rural depopulation is a potentially dangerous phenomenon as are distortions of demographic structures of rural populations, caused by selective migration.

We noted that unemployment, accessibility, population density, level of urbanisation or altitude, all play some role in the migration decision making, but that the main factor behind migration is the rural to urban drive.

The post-communist period brought some fundamental changes in the migration behaviour of population. Migration is no longer driven by political policies for controlling the population movements, but by the economic motivations of

individuals and their families. To some extent, similar changes and patterns have been observed in Poland and other transition countries. A hypothesis may be set and could be tested in subsequent studies, that the period of economic transition in Central and Eastern Europe has brought to a halt or even reversed some long-lasting demographic processes.

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Table 1. Distribution of population growth 1984-1994 by urban and rural size classes, Romania

Type and size ('000) of location	Absolute population change 1984-1994	Population change distribution in % of the national value	Population change 1984-1994 %
Rural <5	-831743	-496	-12
Rural 5-10	-155056	-93	-4
Rural 10-25	11479	7	3
Rural >25	423	0	2
Urban <5	68	0	0
Urban 5-10	557	0	0
Urban 10-25	92174	55	6
Urban 25-50	165809	99	12
Urban 50-100	233425	139	16
Urban 100 - 250	355899	212	17
Urban 250-500	195174	116	8
Bucharest	99362	59	5
Total	167571	100	1

Source: Computed from the data of the National Commission for Statistics

Table 2. The Webb classification of demographic regimes

Webb Class	Population change	Natural change	Migration direction	Relation
A	Population Increase	Natural Increase	Net Out-Migration	
B	Population Increase	Natural Increase	Net In-Migration	NI>NIM
C	Population Increase	Natural Increase	Net In-Migration	NI<NIM
D	Population Increase	Natural Decrease	Net In-Migration	
E	Population Decrease	Natural Decrease	Net In-Migration	
F	Population Decrease	Natural Decrease	Net Out-Migration	ND<NOM
G	Population Decrease	Natural Decrease	Net Out-Migration	ND>NOM
H	Population Decrease	Natural Increase	Net Out-Migration	

Notes

NI = Natural Increase, i.e. (Births - Deaths) ≥ 0
 ND = Natural Decrease, i.e. (Births - Deaths) < 0
 NOM = Net-Out-Migration, i.e. (In-migration - Out-migration) < 0
 NIM = Net-In-Migration i.e. (In-migration - Out-migration) ≥ 0

Source: Webb (1963)

Table 3. Sex structure of Romanian population by type and size of location, 1992

Type and size of location	Females per 100 males	Females per 100 males as per cent of the value for Romania
Rural <5	102	97.7
Rural 5-10	101	97.3
Rural 10-25	101	97.0
Rural >25	102	97.6
Urban <5	104	99.7
Urban 5-10	103	99.4
Urban 10-25	102	98.4
Urban 25-50	103	99.3
Urban 50-100	104	99.8
Urban 100 - 250	106	102.0
Urban 250-500	106	102.0
Bucharest	112	107.7
Total	104	100.0

Source: Computed from the data of the National Commission for Statistics

Table 4. Municipalities and towns by population bands, 1977, 1992 and 1995, Romania

	The census of 1977			The census of 1992			1 January 1995		
	Number of towns	Population (000)	%	Number of towns	Population (000)	%	Number of towns	Population (thou)	%
Total urban	236	9395.7	100.0	260	12391.8	100.0	262	12469.0	100.0
1 mil. and over	1	1807.2	19.2	1	2067.5	16.7	1	2066.7	16.6
100000-399999	17	3244.1	34.5	24	5053.2	40.8	24	5081.6	40.8
50000-99999	18	1190.8	12.7	23	1723.7	13.9	23	1744.1	14.0
20000-49999	56	1672.3	17.8	61	1910.0	15.4	61	1920.3	15.4
10000-19999	68	951.1	10.1	86	1183.4	9.5	85	1167.3	9.4
under 10000	76	530.2	5.7	65	454.0	3.7	68	489.0	3.8

Source: Teodorescu 1996

Table 5. Structure of internal migration flows between 1989 and 1994

Direction of migration	1989	1990	1991	1992	1993	1994
	percentage of flows					
From urban to urban	19.2	18.2	20.2	24.3	25.4	25.6
From urban to rural	6.5	3.5	10.1	13.7	14.6	18.4
From rural to urban	55.4	69.8	50.3	39.2	35.0	30.5
From rural to rural	18.9	8.5	19.4	22.8	25.0	25.5
Total volume of migration	192900	786471	262903	293182	240231	266745

Source: Teodorescu 1996, Comisia Nationala... 1996

Table 6. Rural population change 1984-1994 by distance from nearest town over 10000 inhabitants

Distance band	1994 population expressed as a percentage of 1984 population		
	Female	Male	Total
Up to 5 km	95.9	93.4	94.7
5-10 km	93.4	94.0	93.7
10-15 km	91.1	92.5	91.8
15-20 km	89.5	91.5	90.5
20-25 km	88.2	89.3	88.8
25-30 km	89.7	90.4	90.1
30 km and over	88.7	87.8	88.3
Total	90.9	91.8	91.4

Source: Computed from the data of the National Commission for Statistics

Table 7. Population change 1984-1994 by distance from nearest town over 25000 inhabitants

Distance band	1994 population expressed as a percentage of 1984 population		
	Female	Male	Total
Up to 10 km	95.3	93.9	94.6
10-25 km	92.7	93.7	93.2
25-40 km	92.8	93.5	93.2
40-55 km	92.9	94.1	93.5
55-70 km	92.4	92.8	92.6
70-85 km	94.6	93.7	94.2
85-100 km	94.4	93.7	94.1
over 100 km	90.7	90.6	90.7
Total	93.1	93.6	93.3

Source: Computed from the data of the National Commission for Statistics

Table 8. Population change by density zone

Density Zone (persons/km ²)	Change of male population 1984-1994 in % of population in 1984	Change of female population 1984-1994 in % of population in 1984	Change of total population 1984-1994 in % of population in 1984
0-50	93.9	97.5	95.7
50-100	99.5	99.2	99.4
100-250	101.5	103.9	102.7
250-3000	103.1	105.0	104.1

Source: Computed from the data of the National Commission for Statistics

Table 9. Net population migration and effectiveness of migration by density band
1994

Origin by density band (persons per km ²)	Destination by density band (persons per km ²)			
	0-50	50-100	100-250	250-3000
Males				
0-50		13.	18.	13.
50-100	-596.		7.	20.
100-250	-187.	1255.		21.
250-3000	-5.	358.	113.	
Total	-788.	2209.	-955.	-466.
Females				
0-50		13.	19.	47.
50-100	-659.		9.	16.
100-250	-212.	1809.		18.
250-3000	-23.	316.	112.	
Total	-894.	2784.	-1485.	-405.

Source: Computed from the data of the National Commission for Statistics

Notes:

1. Net migration figures are located below the principal diagonal in the male and female parts of the table.
2. Migration effectiveness (or efficiency) measures are located above the principle diagonal in the male and female parts of the table. Migration effectiveness is the ratio of net to gross migration between a pair of areas (or area types) expressed as a percentage.

Table 10. Unemployment and migration in Romania in 1994

Counties	Average number of employees ('000)	Number of unemployed	Unemployment rate (%)	Changes of residence per 1,000 inhabitants		Balance of change of residence of unemployed
				in-migrants	out-migrants	
Total	6160	998432	9.5	12.8	12.8	0
Alba	116	13867	6.8	10.9	12.8	-37
Arad	140	11781	5.1	15.9	11.2	80
Arges	208	23943	7.3	10.2	10.8	20
Bacau	191	33632	10.5	12.4	13.1	28
Bihor	151	17040	6.0	10.6	10.2	0
BistritaNas.	66	22681	15.3	15.2	17.2	-49
Botosani	81	36306	17.2	14.0	16.0	11
Brasov	226	19840	6.7	9.7	9.8	-143
Braila	108	18378	10.8	12.8	10.6	20
Buzau	101	30380	13.4	14.0	14.5	119
Caras-	95	16374	9.9	9.9	11.4	23
Severin	69	11876	8.8	14.5	15.0	-35
Calarasi	230	34711	9.4	10.1	9.1	47
Cluj	231	29276	8.7	15.2	13.7	-136
Constanta	62	7029	7.0	10.8	11.5	-59
Covasna	129	25335	10.1	9.3	9.8	-25

Dambovită	160	43489	12.6	8.8	9.2	50
Dolj	190	34998	11.7	10.3	11.4	0
Galati	48	11234	9.8	8.0	9.8	-41
Giurgiu	133	8031	3.9	14.7	13.7	-39
Gorj	91	18316	10.8	12.2	12.8	-59
Harghita	194	34423	12.0	14.6	14.4	-96
Hunedoara	70	11387	8.6	20.1	17.9	170
Ialomița	210	49939	12.7	13.8	13.8	96
Iasi	131	17845	7.2	8.1	11.7	-61
Maramures	72	8949	6.2	14.1	13.8	8
Mehedinti	164	37087	12.5	14.1	13.0	95
Mures	125	49321	17.3	11.0	12.8	33
Neamt	109	19331	8.5	11.4	12.9	-7
Olt	277	37793	9.0	8.2	8.8	22
Prahova	98	11992	6.5	8.9	9.3	-29
Satu Mare	60	12350	10.3	14.6	16.1	4
Salaj	139	19311	9.6	10.1	8.9	-66
Sibiu	146	38395	11.9	11.4	12.1	59
Suceava	91	21695	10.0	13.7	14.1	72
Teleorman	210	13409	4.0	15.2	10.0	44
Timis	76	13788	11.0	14.7	15.2	31
Tulcea	86	30115	14.8	18.4	19.8	223
Vaslui	112	34572	15.2	11.6	12.3	35
Valcea	86	16197	8.3	15.6	17.0	66
Vrancea	878	52016	5.1	17.6	16.5	-464
Bucharest						

Source: Computed from the data of the National Commission for Statistics

Table 11. Population change 1984-1994, net migration 1994 and migration of unemployed 1995, by unemployment band 1994

Unemployment (% of unemployed)	Population change 1984-1994 in % of population in 1984			Net migration rate 1994		
	Male	Female	Total	Male	Female	Total
0-6	100.6	102.1	101.4	2.6413	2.9279	2.7903
6-10	98.8	99.7	99.3	-0.2954	-0.4324	-0.3650
10-14	101.0	102.6	101.8	-0.5783	-0.6843	-0.6319
14-18	103.3	100.5	101.8	-2.1726	-2.1835	-2.1781
Total	100.3	101.2	100.7			

Source: Computed from the data of the National Commission for Statistics

Table 12. Net population migration and effectiveness of migration by unemployment band 1994

Origin by unemployment band (% of unemployed)	Destination by unemployment band (% of unemployed)			
	0-6	6-10	10-14	14-18
Males				
0-6		3.	9.	26.
6-10	-154.		16.	24.
10-14	235.	2795.		9.
14-18	182.	1616.	353.	
Total	263.	4565.	-2677.	-2151.
Females				
0-6		7.	15.	25.
6-10	-377.		18.	24.
10-14	458.	3602.		7.
14-18	210.	1703.	306.	
Total	291.	5682.	-3754.	-2219.

Source: Computed from the data of the National Commission for Statistics

Notes:

1. Net migration figures are located below the principal diagonal in the male and female parts of the table.
2. Migration effectiveness (or efficiency) measures are located above the principle diagonal in the male and female parts of the table. Migration effectiveness is the ratio of net to gross migration between a pair of areas (or area types) expressed as a percentage.

Table 13. Population change by altitude and relief bands, 1984-1994.

Altitude and relief type	Population change		
	Male	Female	Total
Lowlands	100.4	101.4	100.9
Plains	96.3	96.7	96.5
Uplands	101.9	102.2	102.0
Hills	100.7	99.6	100.1
Mountains	97.5	100.8	99.1
Total	100.3	101.2	100.7

Source: Computed from the data of the National Commission for Statistics

Table 14. Population change by level of urbanisation 1994.

Level of urbanisation in % of urban population	Population change		
	Male	Female	Total
up to 45%	102.0	100.9	101.4
45-60%	99.7	100.6	100.1
60-75%	98.4	100.8	99.6
75-90%	100.2	103.4	101.8
Total	100.3	101.2	100.7

Source: Computed from the data of the National Commission for Statistics

Figure 1. Counties (Judete) in Romania



Scale 1:4000000

Figure 2: Population Change in Romania by county, 1984-1994

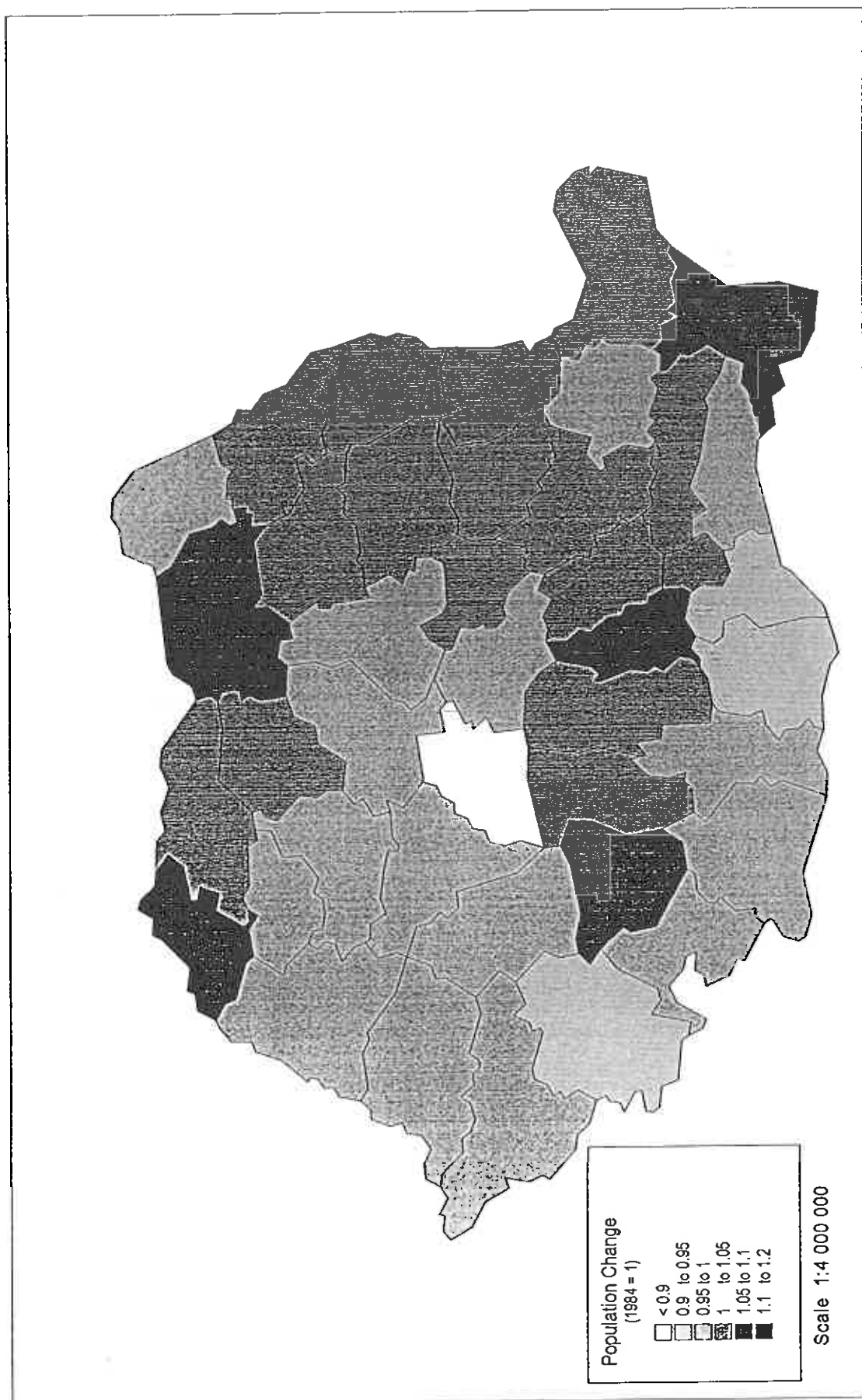


Figure 3: Population change by communes in Romania, 1984-1994



Figure 4: Population growth of Romanian towns and cities, 1984-1994

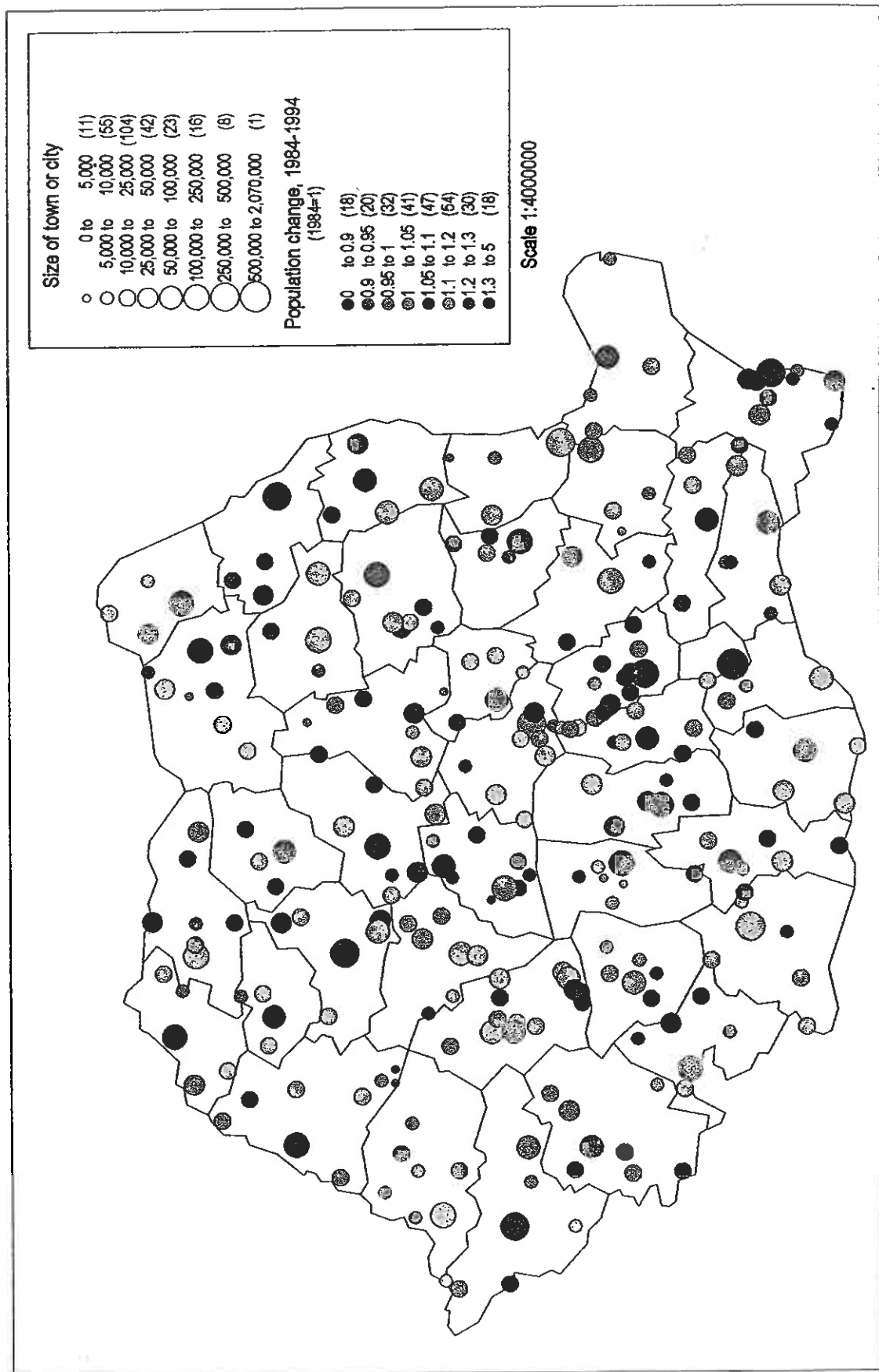


Figure 5: In- and outmigration rates by sex and county, Romania 1984

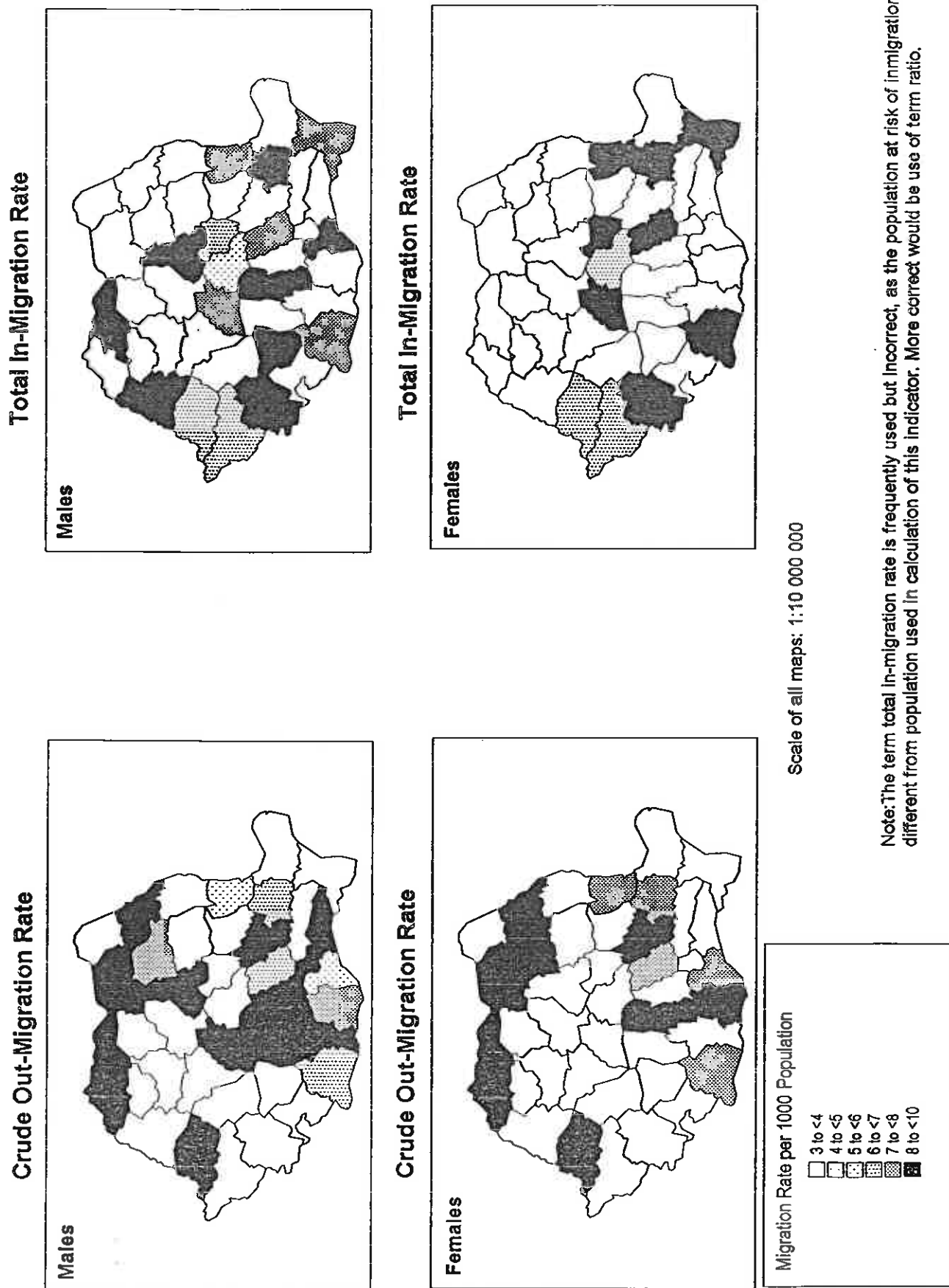


Figure 6: Net migration of male population of Romania by county in 1984

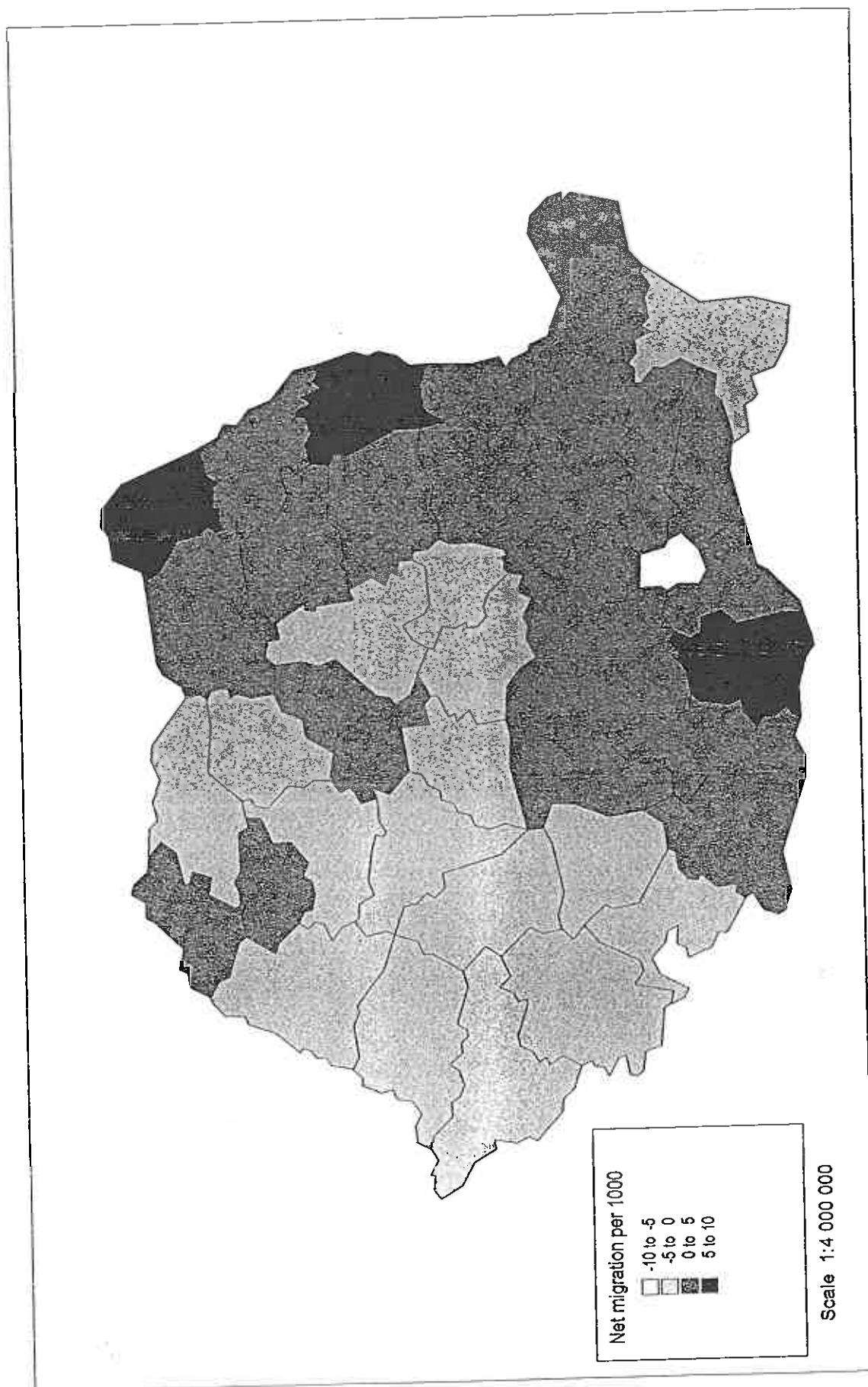


Figure 7: Net migration of female population in Romania by county in 1984

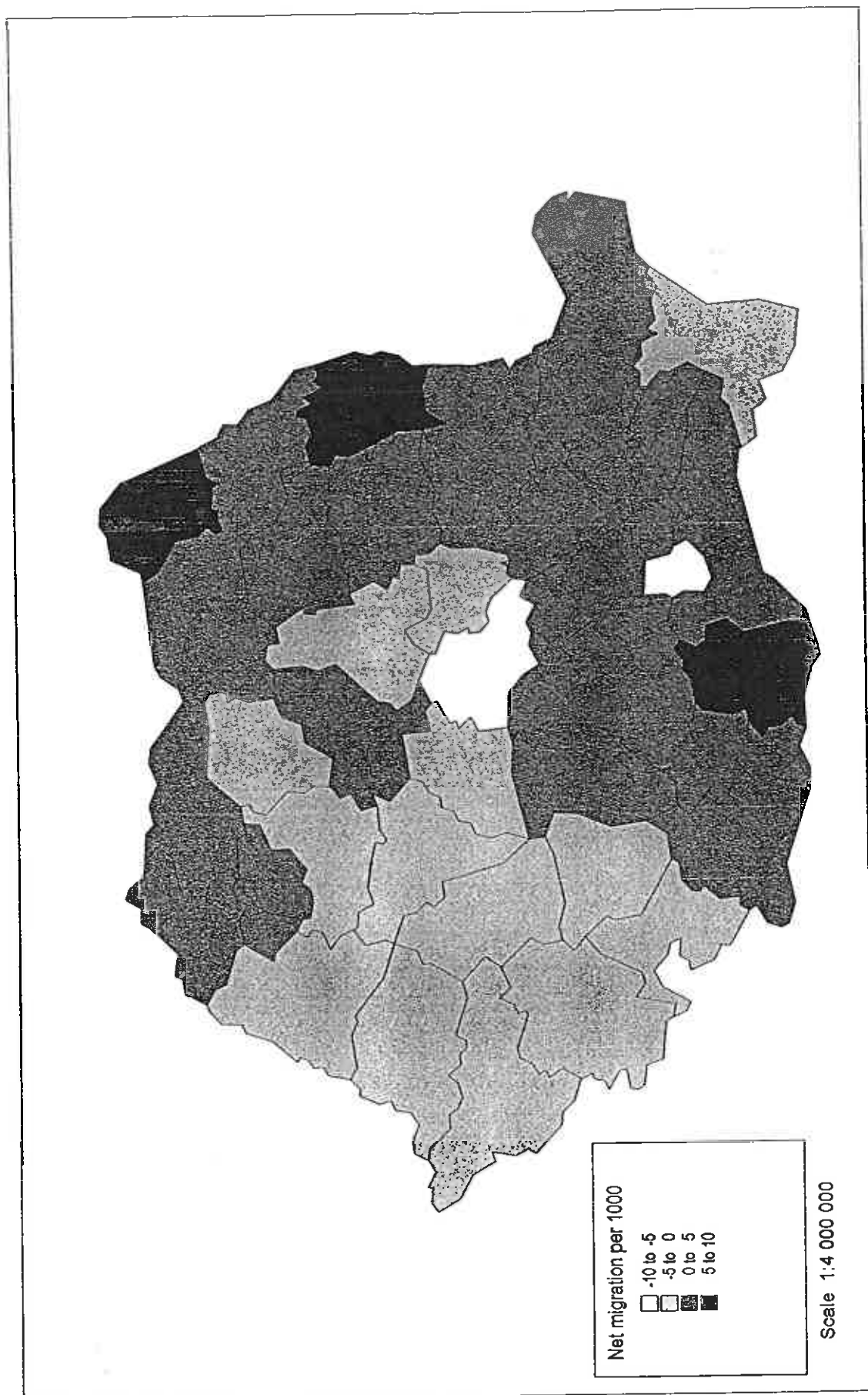
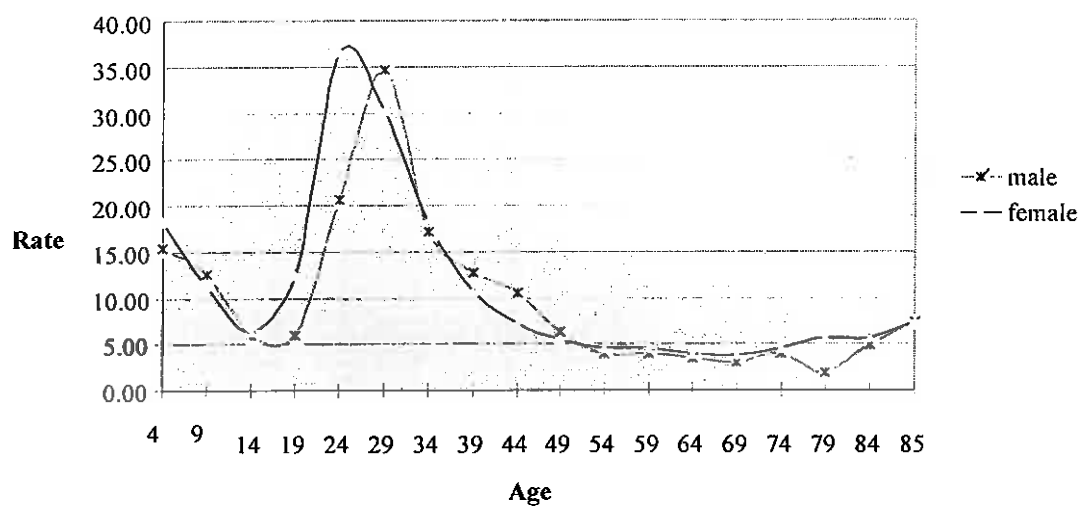
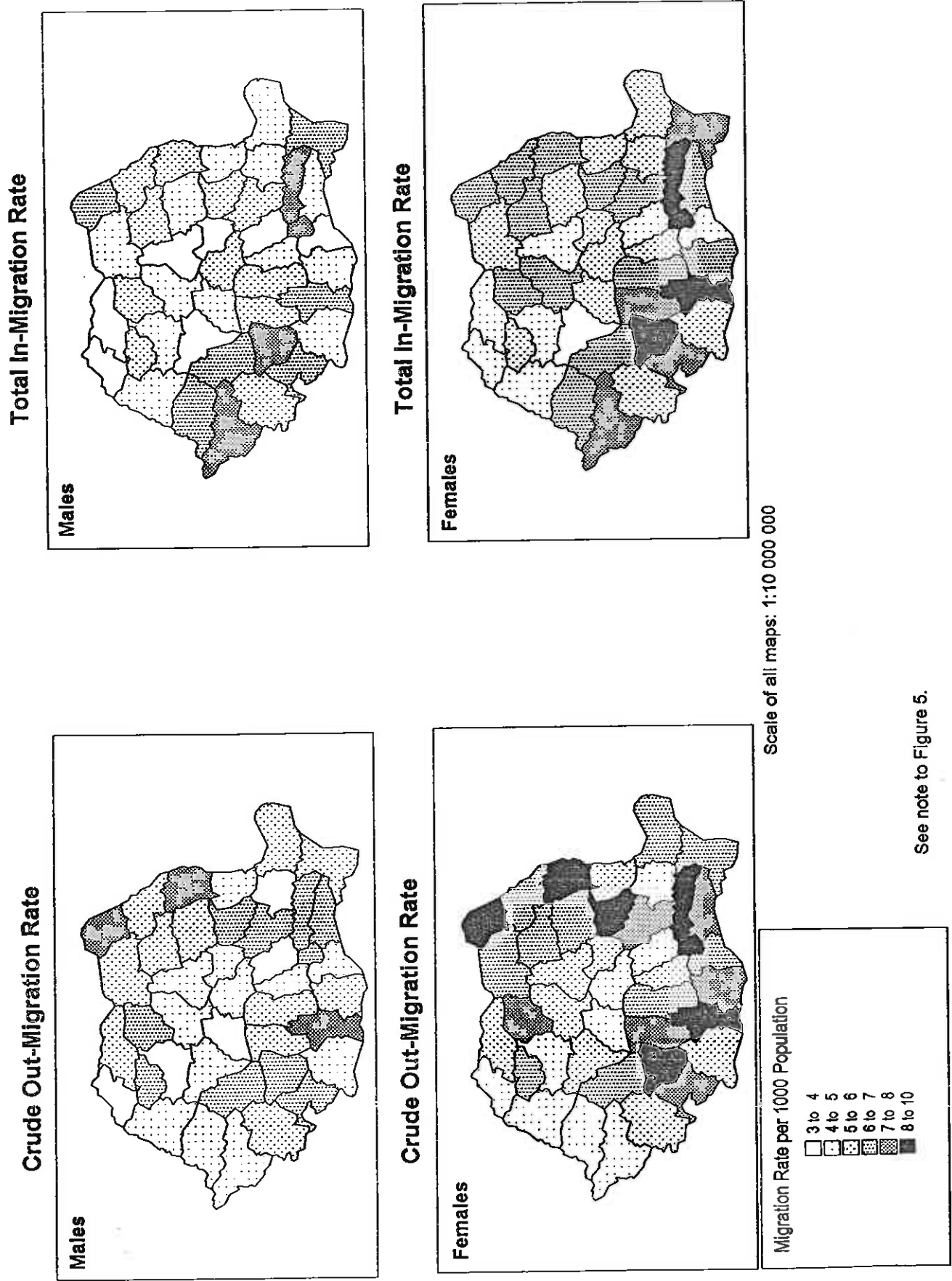


Figure 8: Age distribution of migrants in Romania 1994



Source: Computed from the data of the National Commission for Statistics

Figure 9: In- and outmigration rates by sex and county, Romania 1994



See note to Figure 5.

Figure 10: Net migration rates per 1000 population in males by county, Romania, 1994

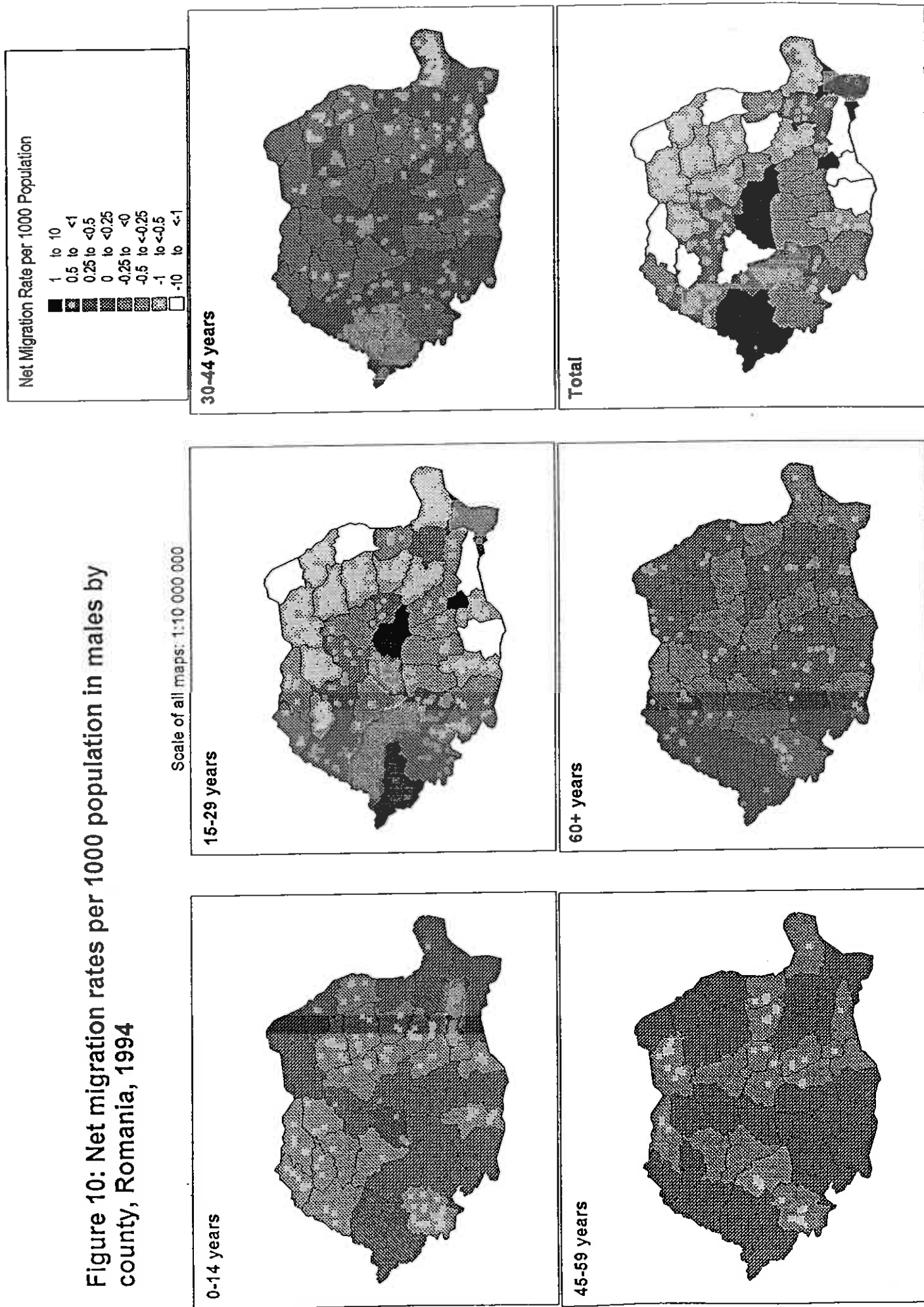


Figure 11: Net migration rate per 1000 population in females by Judetel, Romania 1994

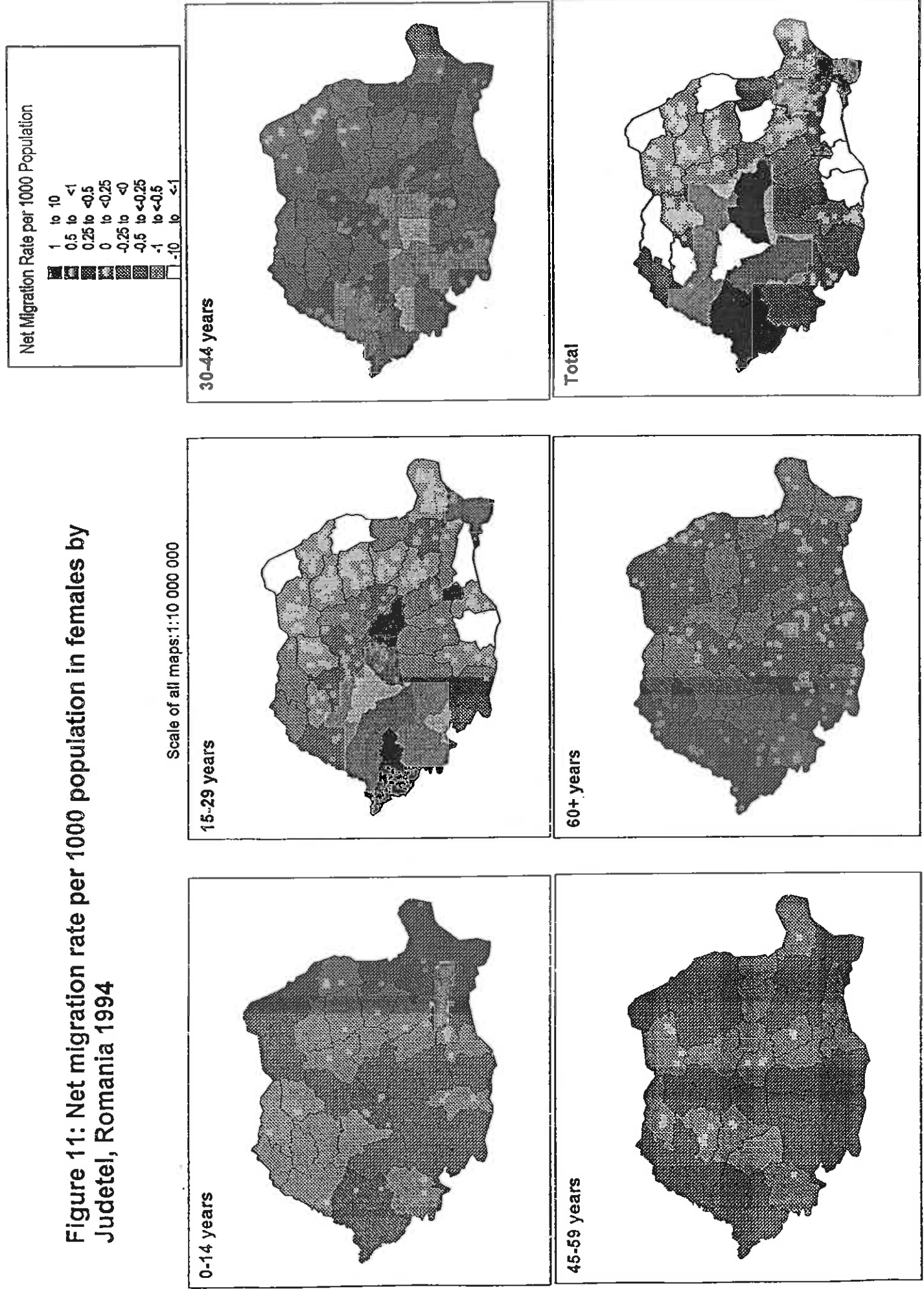


Figure 12: Migration efficiency of males by county, Romania 1994

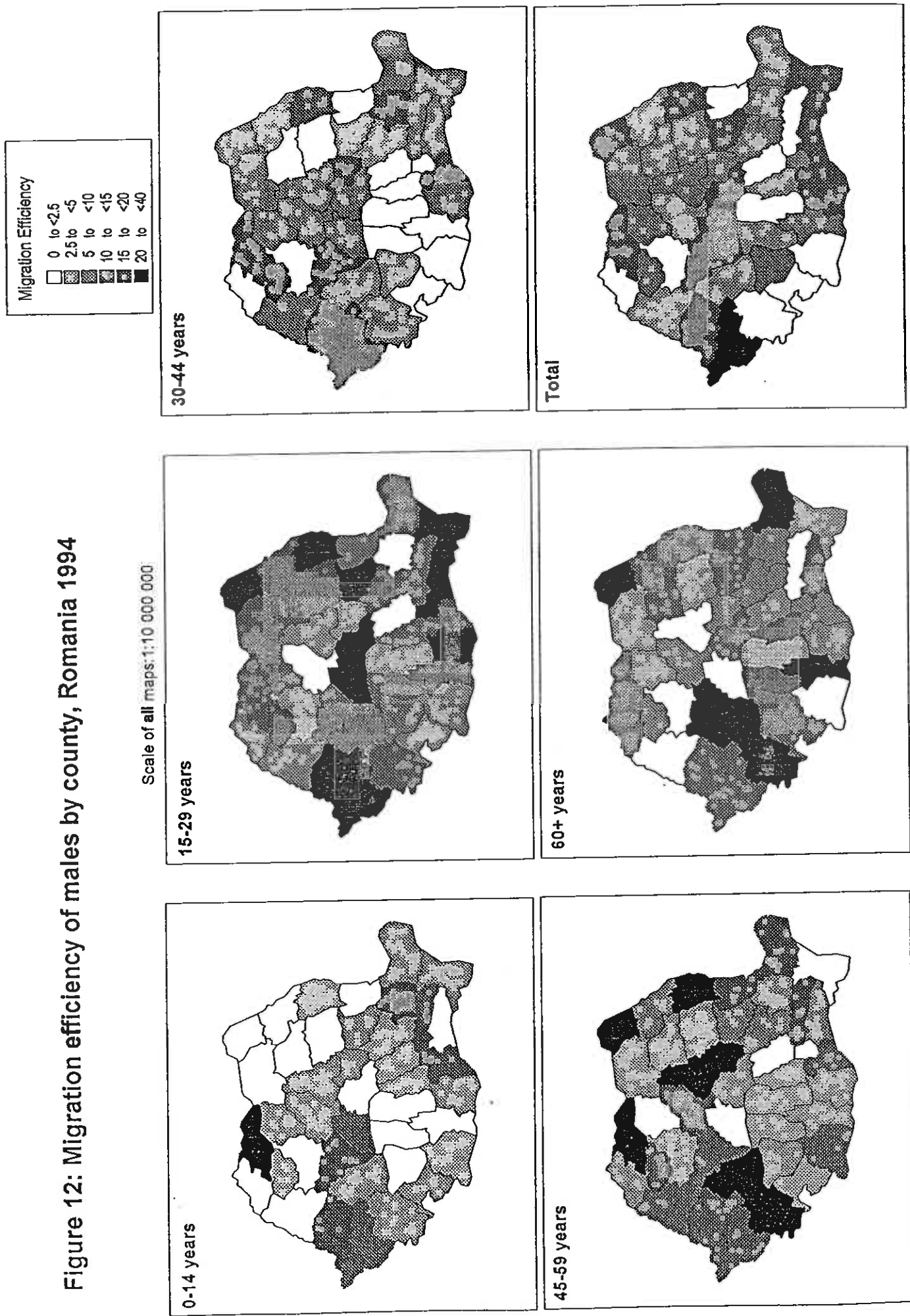


Figure 13: Migration efficiency of females by county, Romania 1994

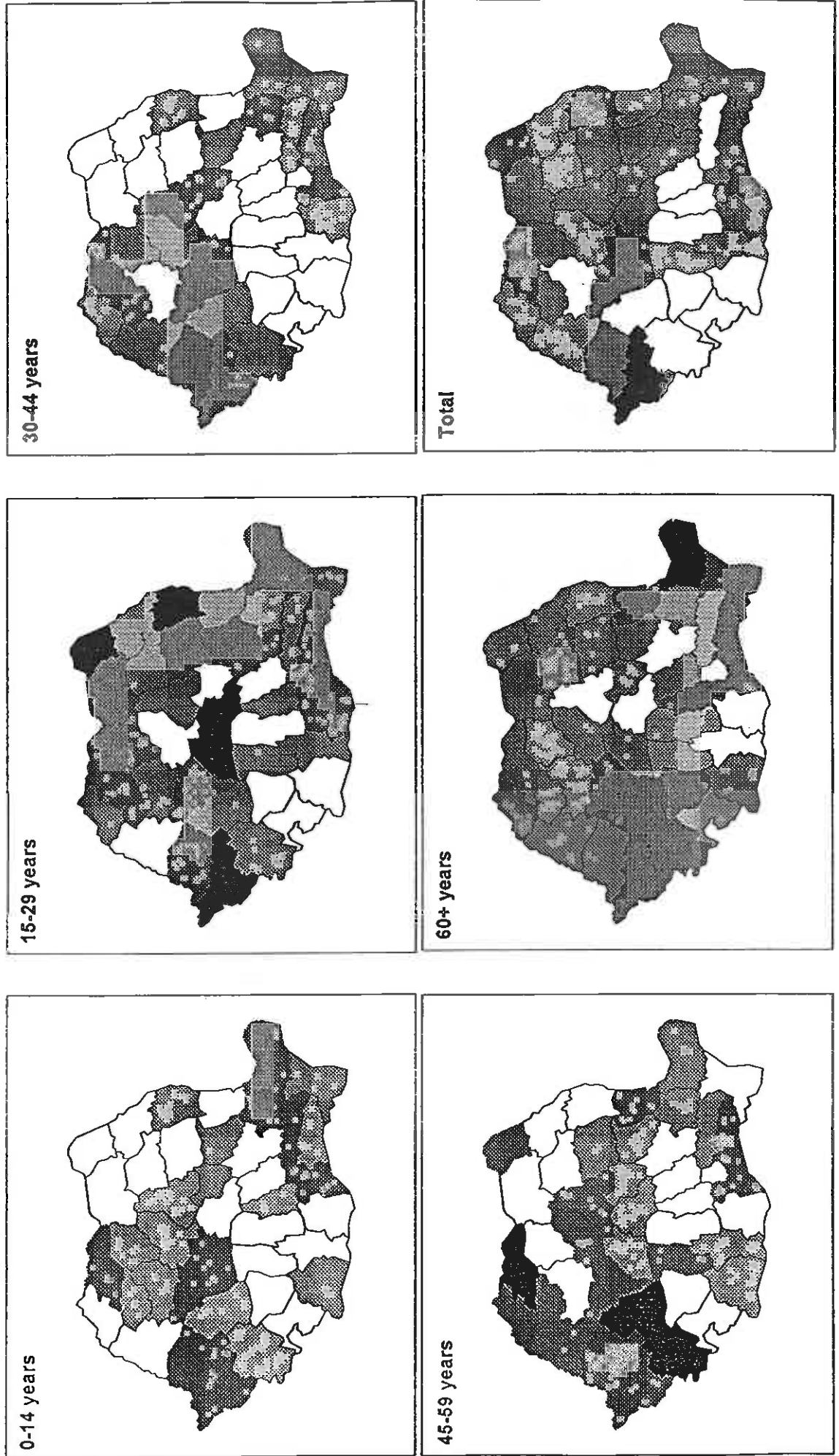
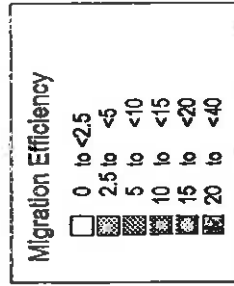
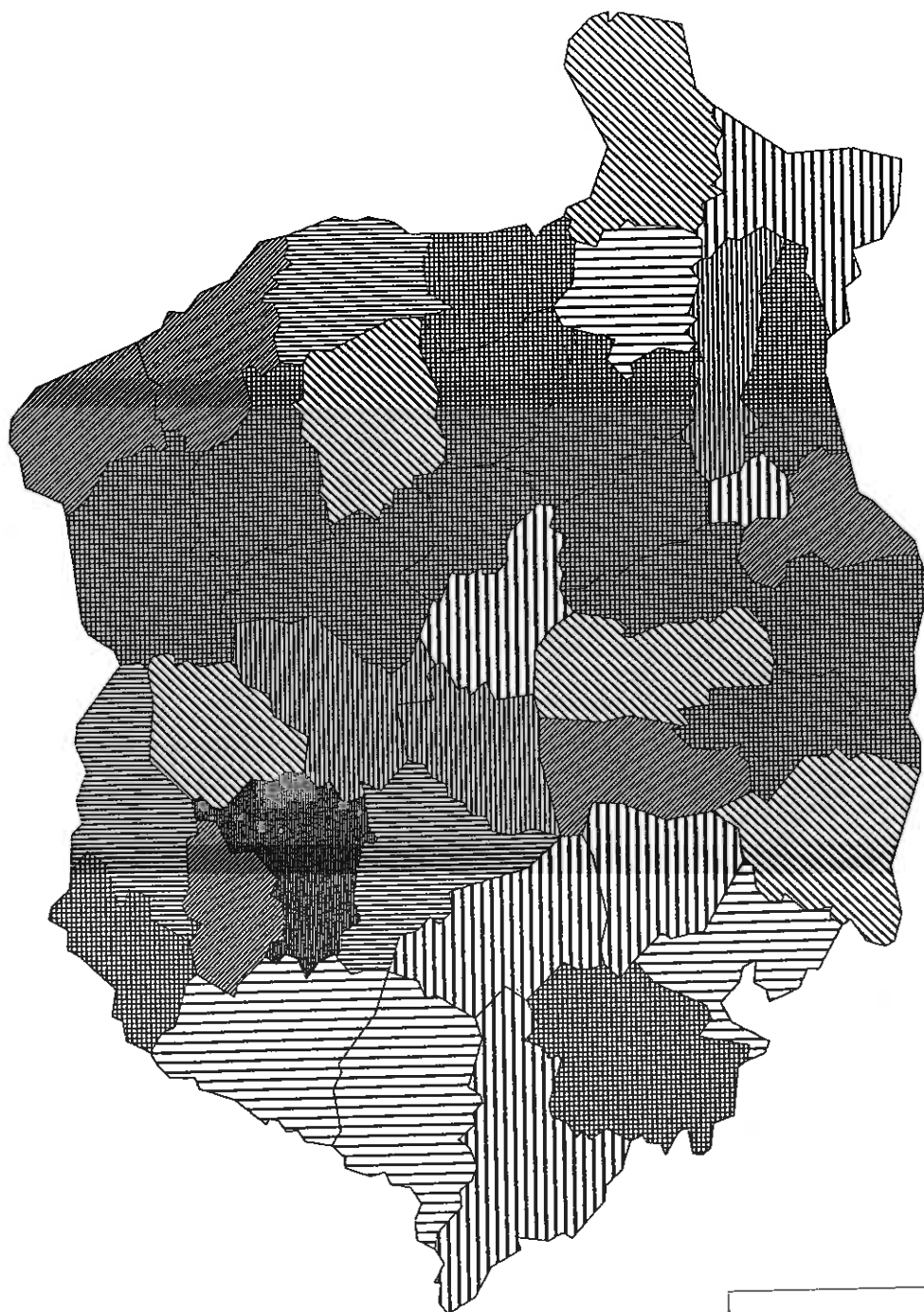


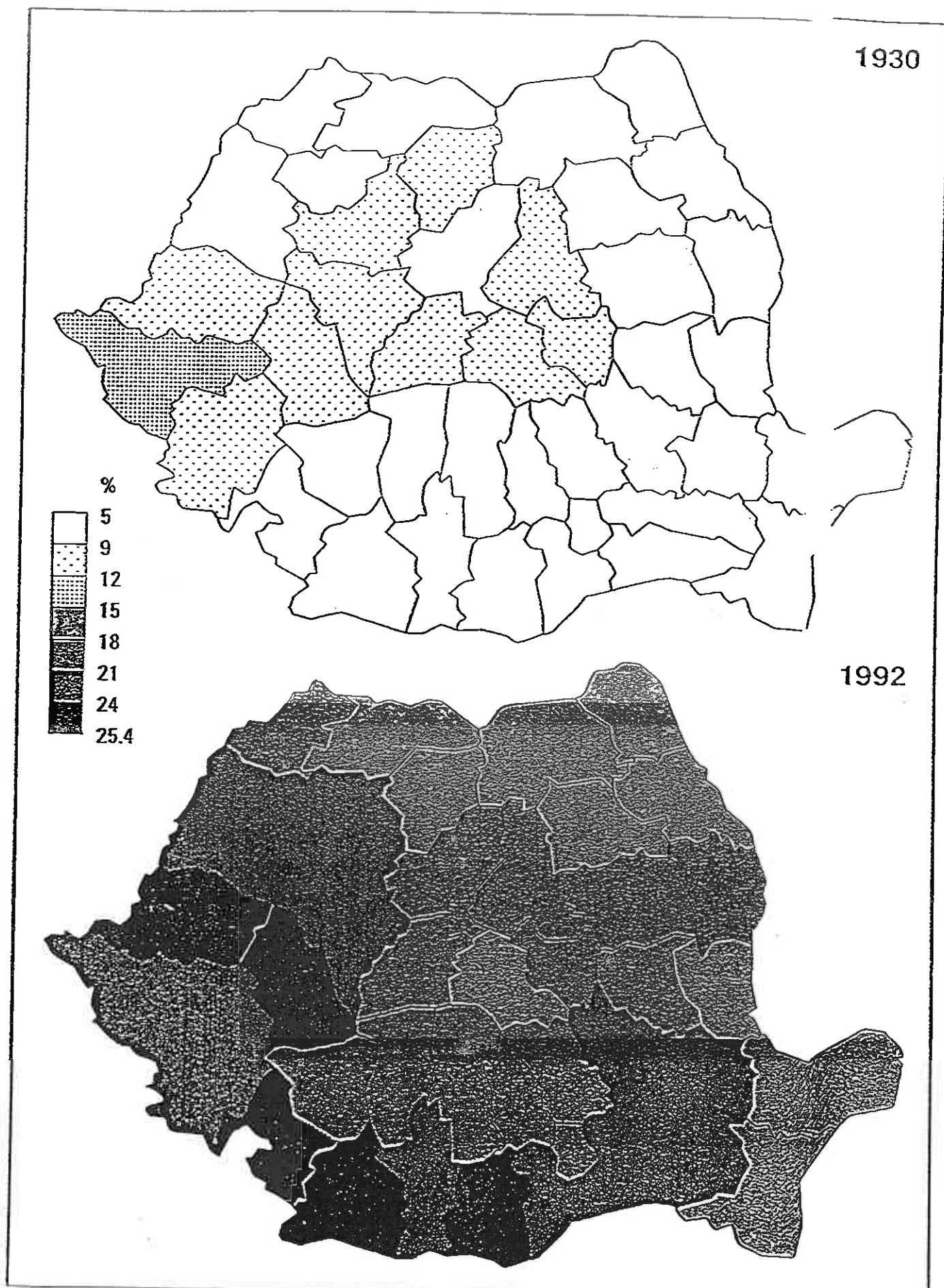
Figure 14. Webb Classification of counties in Romania, 1994



Webb Classification	
A	(5)
B	(3)
C	(1)
D	(6)
E	(4)
F	(14)
G	(3)
H	(5)

Scale 1:4000000

Figure 15: Share of 60 and over years old in the rural population of Romania 1930 and 1992



Source: Adapted from Muntele 1994

Figure 16: Sex structure of population by communes in Romania, 1994

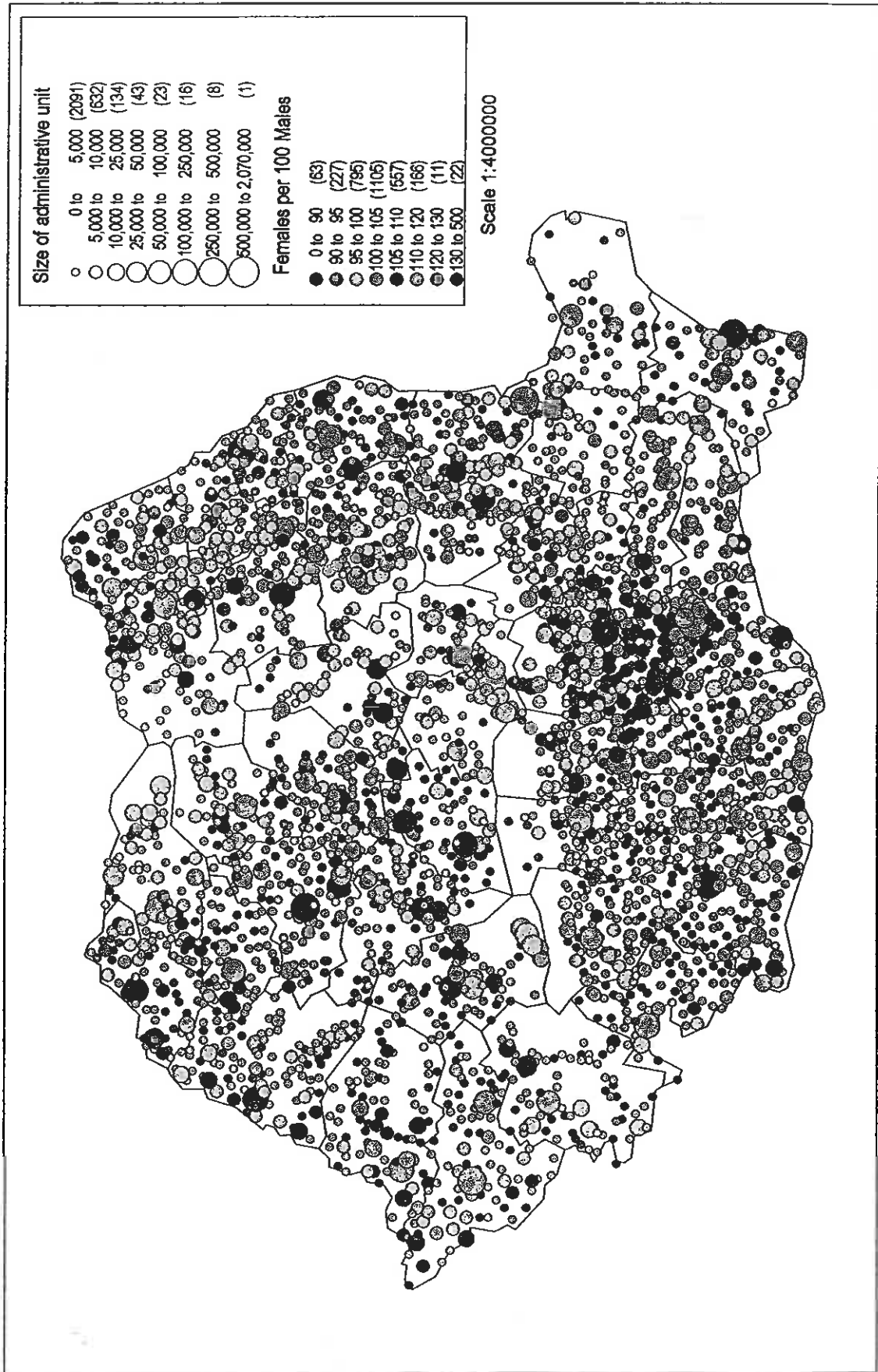
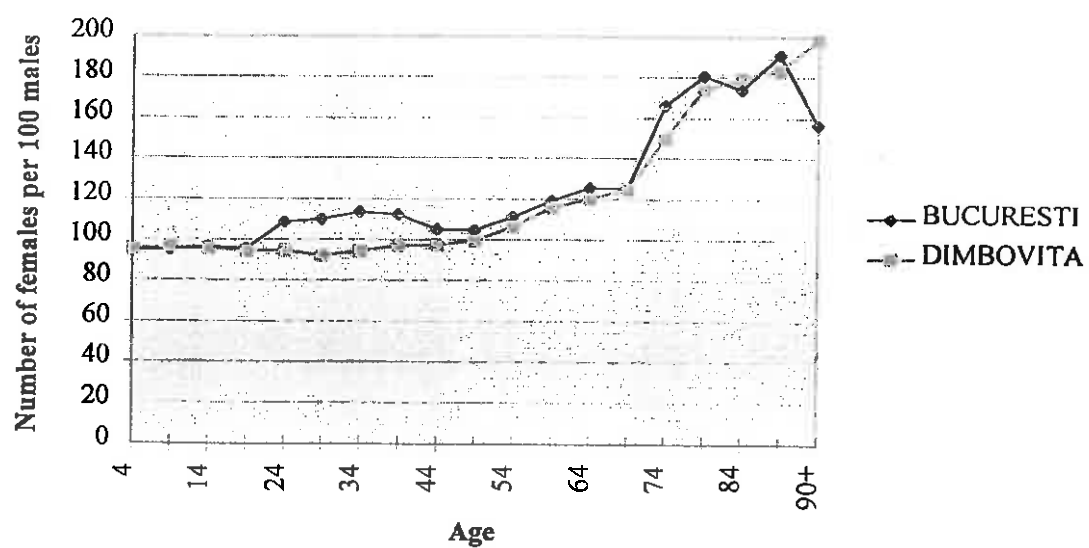
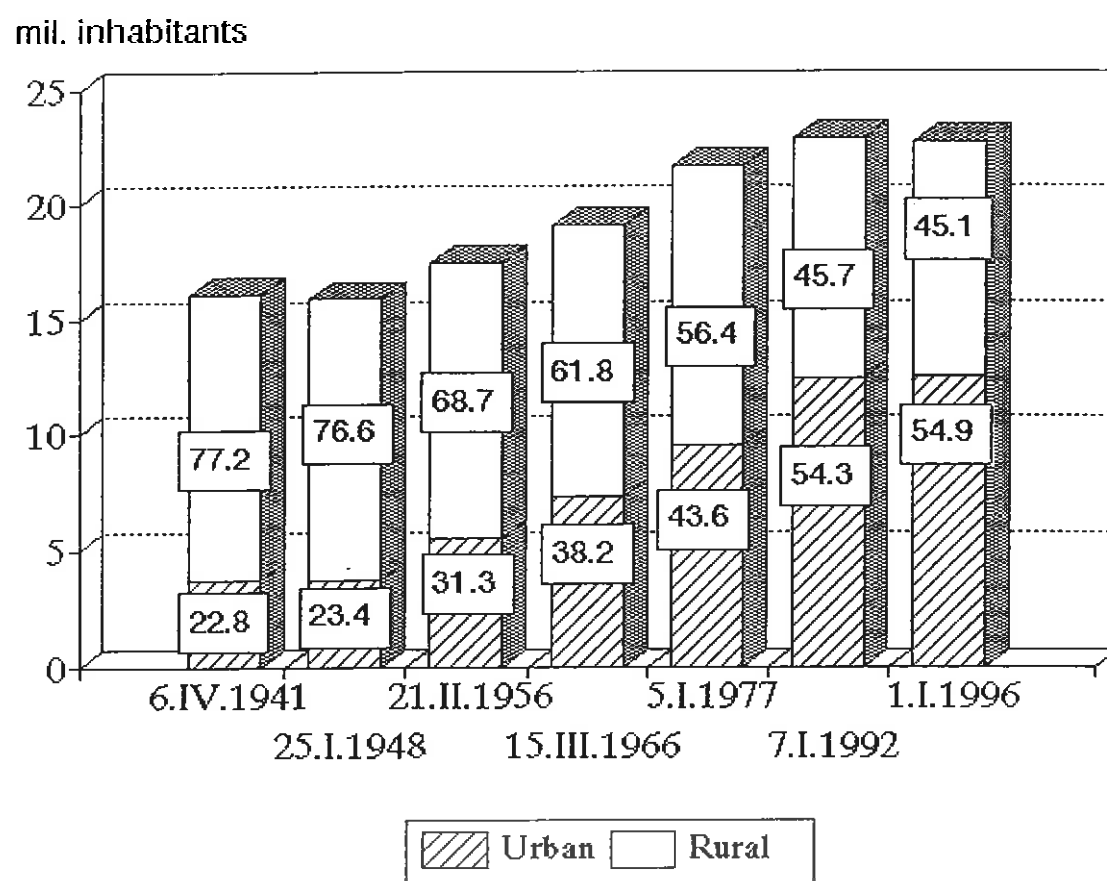


Figure 17: Sex structure of the population of Bucharest and Dimbovita county, 1994



Source: Computed from the data of the National Commission for Statistics

Figure 18: Urban and rural population growth in Romania, 1941-1996



Source: Teodorescu 1996

Figure 19: Distance zones of rural communes to the nearest town of 10000 and more inhabitants

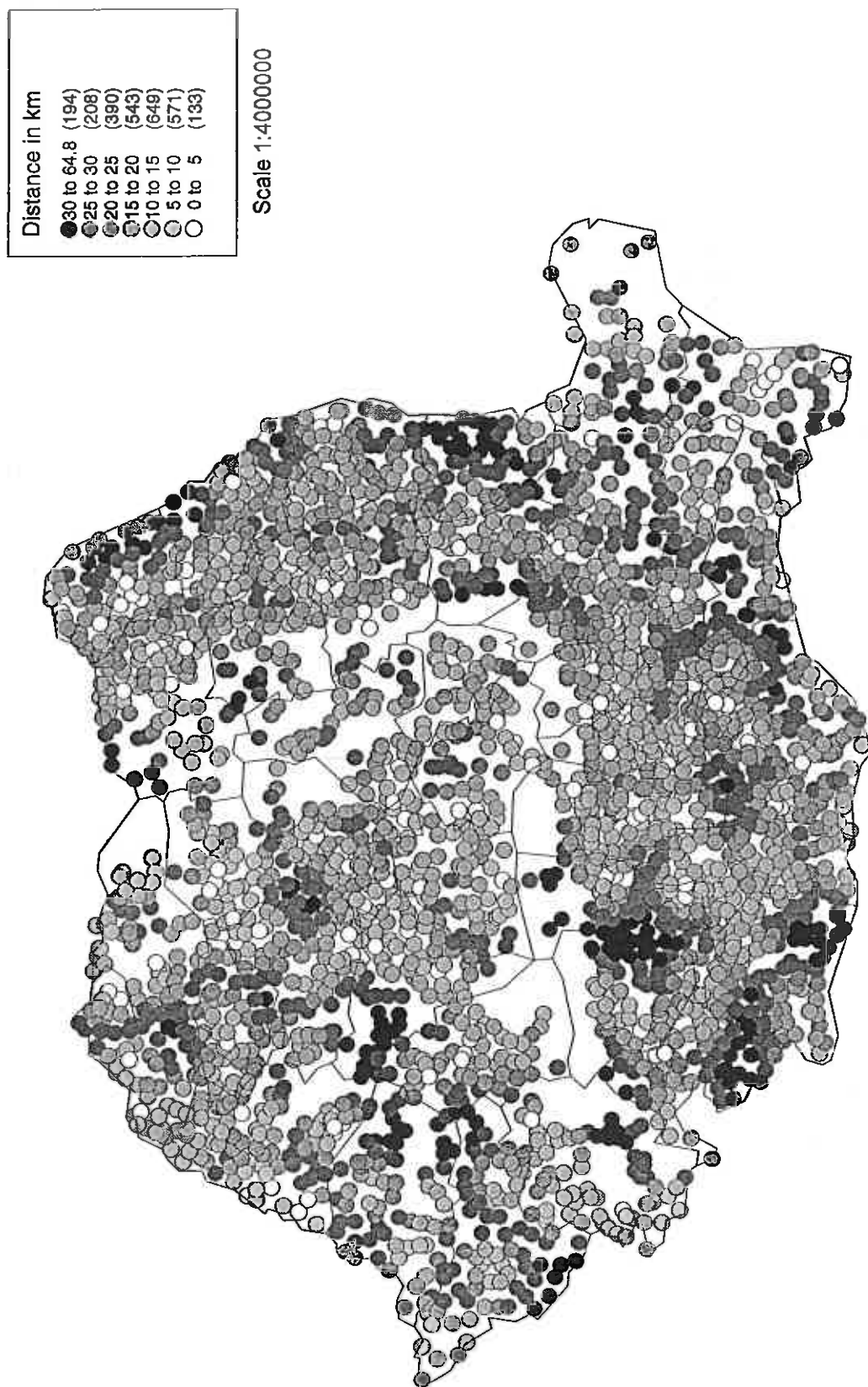


Figure 20: Population density in Romania by county, 1994

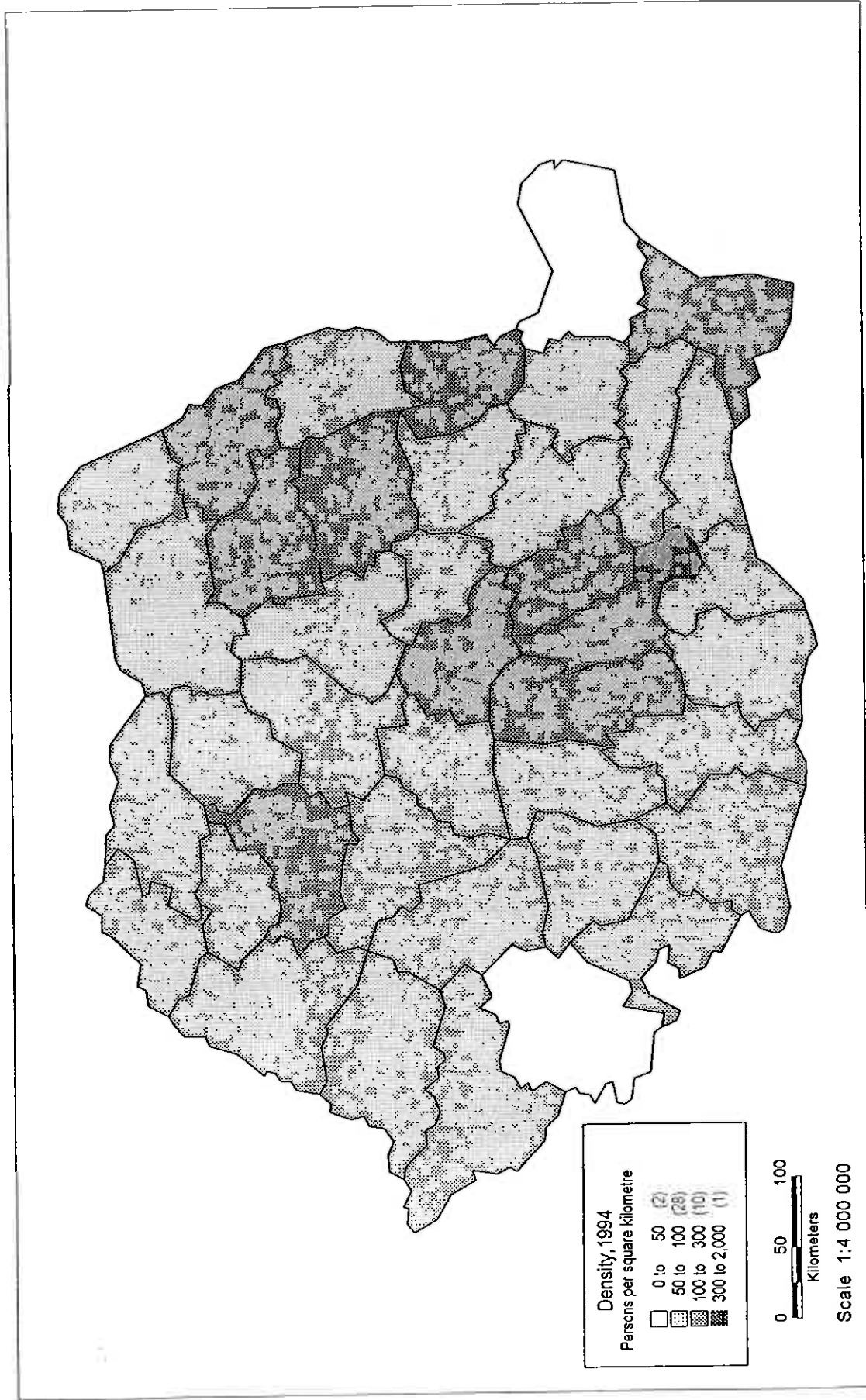


Figure 21: Level of urbanisation in Romania, 1994

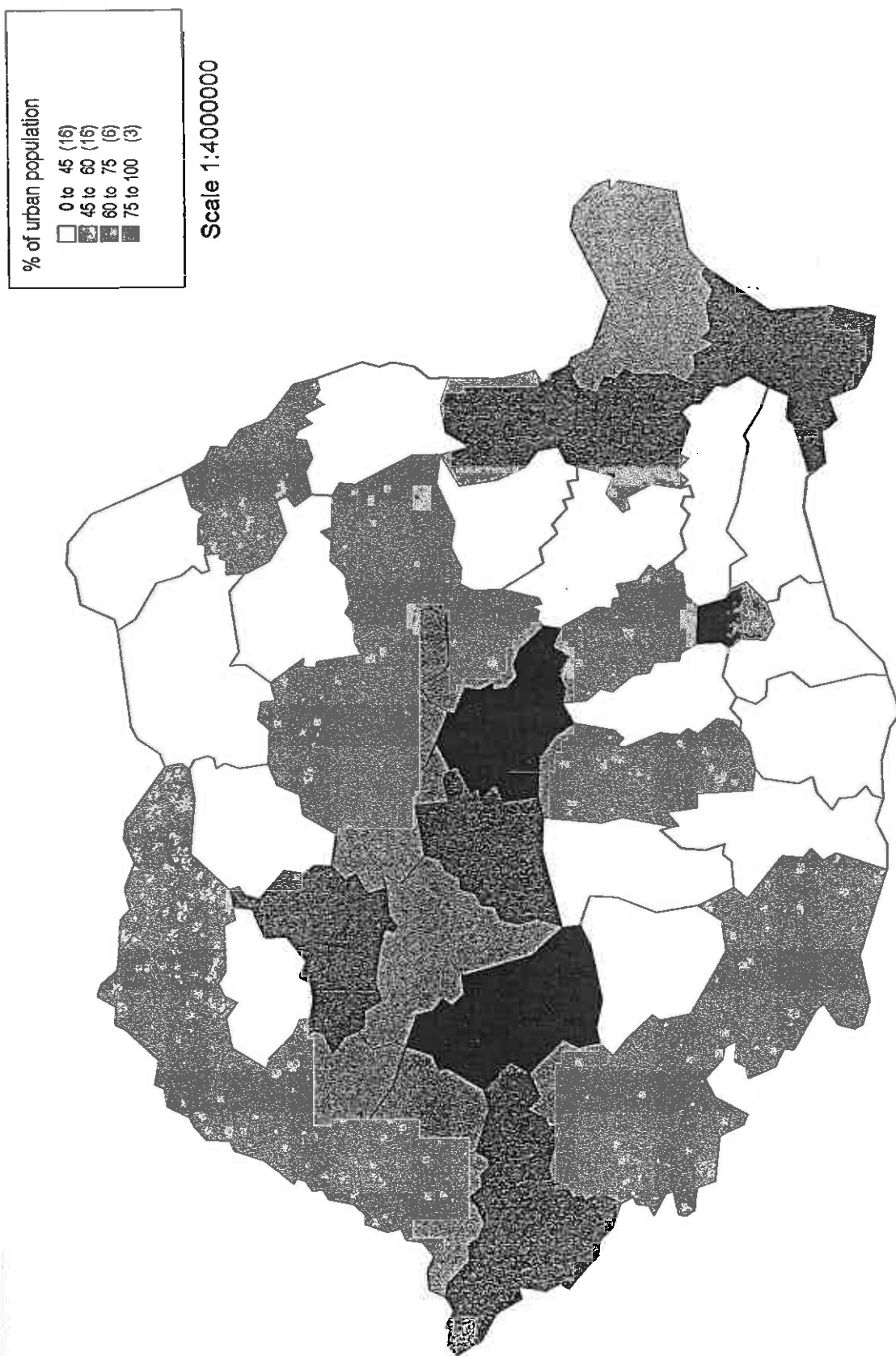


Figure 22: Romanian communes by altitude and relief class

