



*Changing Population Distribution
in Sweden*

*– Long Term Trends
and Contemporary Tendencies*

Johan Håkansson

Changing Population Distribution in Sweden –Long Term Trends and Contemporary Tendencies

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Changing Population Distribution in Sweden –Long Term Trends and Contemporary Tendencies

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Abstract: The aim of the thesis is to describe and analyse the population redistribution in Sweden at different geographical levels from the beginning of the 19th century to the end of the 20th century. The analysis is approached in three different ways. First, the redistribution at different geographical levels is analysed (papers I and II). Second, the changing accessibility between people (interpersonal accessibility) is analysed from the beginning of the 19th century to the end of the 20th century (paper II). Third, the impacts of fertility, mortality, internal migration, international migration and geographical variations in age composition on population distribution are analysed for the last decades (papers I, III and IV).

Measurements of concentration have been used in order to analyse the changing population distribution. For the analysis of changing interpersonal accessibility the average population within the daily reach has been calculated for different times. In order to analyse the impacts of fertility, mortality, migration and geographical variations in age composition the actual redistribution of the population is compared with the redistribution generated by a number of counterfactual scenarios. To analyse the impact of international migration the changing distribution of the population in different immigrant groups is compared to the distribution of the Swedish population.

Some conclusions drawn from the thesis are:

1. There is no overall trend in the population redistribution towards either concentration or dispersion. The redistribution pattern depends on the time perspective and the geographical level chosen. The population has been both concentrated and dispersed since the beginning of the 19th century. This applies to all investigated geographical levels. In the five identified phases of the redistribution the most common pattern is that concentration and dispersion of the population exist simultaneously on different geographical levels. The total effect of the redistribution between 1810 and 1990 is that today the population is more dispersed at macro-regional level, while it is more concentrated at local and regional level.

2. Based on assumptions about the daily reach, an average person today has access to about 100 times more people locally compared with the beginning of the 19th century. The most important process for the increased accessibility has been the redistribution of the population. The process that has had the least impact is the assumed increase in daily reach. However the importance of the investigated processes changes over time. Since 1950 the increasing reach has been the most important process. However, the rate by which interpersonal accessibility increases has slowed down since 1950.

3. The main demographic factor behind the redistribution since 1970 is the geographical differences in age composition and its effects on the natural population change. It is demonstrated that this factor lies behind the trend towards increasing concentration in Sweden, while the impact of migration affects the fluctuations from this trend to a greater extent.

4. The study shows that immigration concentrates the population, while the internal migration during the 1970s and periodically during the 1980s dispersed the population. However during the 1990s the internal migration has had a concentrating effect on the spatial distribution of the population.

Keywords: Population distribution, redistribution, Sweden, geographical levels, concentration, dispersion, accessibility, migration, natural population change, age composition

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PREFACE

A personal geographical biography can illustrate a research topic. I was born in the core of Gothenburg. After a year I moved to a suburban area at the urban edge of Gothenburg. Later I moved to a smaller town, Umeå, which is a centre in the sparsely populated Northern Sweden. I settled in the core of Umeå. A couple of years ago my family and me moved, not to a suburban area, but out to the countryside. All my moves seem in different ways to go between core and periphery. I do not think my personal geographical biography is unique in this respect, in fact I think it is quite common today. When looking back into my own my grandfather born in 1899, I realised that he did a similar geographic life path, also moving between the core and periphery and vice versa. I do not think my geographic life path is that unique even in a longer perspective.

When I started at the department of Social and Economic Geography in 1992 I had the opportunity to deepen my self into questions related to the spatial redistribution of the population. The sidetracks on this topic have been numerous, and not always leading towards this thesis. The four papers in this thesis are a selection of that work and that learning process.

There are many people who in different ways are part of the process when a thesis evolves. Into the research field of population redistribution Professor Lars-Erik Borgegård has accompanied me. Over the years you have been a vital source for inspiration, guidance and encouragement. Without you I would not have been where I am today. I am also grateful to Associate Professor Gunnar Malmberg, for his guidance and always inspiring and learning discussions about issues that concern the population. I would also like to thank Professor Ulf Wiberg, who has always given me concrete and interpretable alternatives for different formulations of texts. In one paper I have had a fruitful co-operation with PhD Dieter Müller. Beside this we have had other joint experiences over the years. One thing is sure, it has never been boring to work with you Dieter. I also would like to mention Professor Einar Holm whose spiritual performances at lectures, seminars and discussion have affected me in so many positive ways. I would also like to thank Associate Professor Ian G Layton for help with translating part of the text into English. Special thanks to PhD Inez Egerbladh for great help with the historical population data. I am also very grateful to all my other colleges at the department who have made these years learning and most of all enjoyable.

This thesis would not have been written unless the project 'Koncentration och Spridning av Befolkning och Bosättning i Sverige sedan 1750' had been granted financial support from the Council for Research in the Humanities and Social sciences (HSFR). I wish to thank them for their assistance.

To write a thesis has a tendency to consume all your time. If you do not have any free space from this I think it in the long run can drive you mad. I thank my beloved family for giving me opportunities to get away from daily life job activities to leisure time. I would also like to express my gratitude to my friend Gunnar Eriksson and his family for also giving me such opportunities.

Umeå January 2000

Johan Håkansson

LIST OF PAPERS

This thesis is based on a collection of papers, which will be referred to by their Roman numerals:

- I. Borgegård, L. E., Håkansson, J. & Malmberg, G. (1995): Population Redistribution in Sweden –Long Term Trends and Contemporary Tendencies, *Geografiska Annaler* 77B, pp. 31-45.
- II. Håkansson, J. (2000): Spatial Population Redistribution in Sweden 1810-1990, Department of Social and Economic Geography, Umeå University.
- III. Håkansson, J. (2000): Impact of Migration, Natural Population Change and Age Composition on the Redistribution of the Population in Sweden 1970 – 1996, submitted to *CYBERGEO*.
- IV. Borgegård, L-E., Håkansson, J. & Muller, D. (1998): Concentration and Dispersion of Immigrants in Sweden, 1973 – 1992, *The Canadian Geographer* 44:1, pp. 28-39.

INTRODUCTION

Background

The spatial redistribution of population has been a major research topic within human geography for decades. The proximity and accessibility to other people, as well as the composition of populations in the nearby and distant surroundings, are crucial preconditions for social life and economic activities and have thus become key research questions. The changing spatial distribution of people is strongly related to other crucial areas within human geography, including the location of industries, agricultural activities, services, housing areas etc. Changes in the population distribution are also a central issue within the field of urban and regional planning, and a topic for political debates and actions.

Geographic research in Europe and North America has changed focus over the years as new population trends have emerged. Apart from studies of population and settlement history, urbanisation was for a long time of major interest for researchers. In the 1970s, when the big cities experienced a net out-migration and smaller towns and rural areas suddenly became net winners, the urbanisation research was followed by a focus on the counterurbanisation process (e.g. Beale 1975, Berry 1976, Vining & Kontuly 1978, Fielding 1982, Champion 1989). The so-called *turn-around trend* resulted in an intensified debate about the character of long-term geographical population redistribution and focus changed from explanations of concentration to determinants of dispersion. Research on population redistribution in Sweden, have followed the international trends, including studies of settlement diffusion and of the concentration process in the period of urbanisation (e.g. Eneqvist 1937, Bylund 1956, SOU 1970:14, Andersson 1987). Since the 1970s, population dispersion and counterurbanisation has been an important topic (e.g. Ahnström 1980, Forsström & Olsson 1982, Forsberg & Calbrand 1994, Amcoff 1997).

Whether concentration or dispersion should be regarded as the dominating trend, depends on the time perspective. Also the determinants of population redistribution seem to change from one time to another. In a long-term perspective, the access and distribution of good agricultural land seems to be a major determinant of population distribution in Sweden and elsewhere. Although few people nowadays depend on agricultural employment, major population concentrations are still found in regions of fertile soil. In a shorter time-perspective, redistribution seems to be highly influenced by the changing patterns of industrial location and the spatial reorganisation of service activities. In a very short-term perspective other topics and determinants of population redistribution could be identified, including for instance, business cycles, variations in age-composition and the changing feature of immigration from abroad.

The observed features of population redistribution are also dependent on the geographical level of analysis. Patterns and trends found at one level of analysis are not necessarily found at a higher or at a lower level. It is possible that population concentration at one geographical level occurs simultaneously with dispersion at another. Population concentration might be observed at regional level, for instance when large regions attract people, while dispersion is simultaneously the dominating trend at the local level, for instance when people move out to the suburbs. In this study the changing distribution of the population is analysed at different geographical levels. To do this the analysis is based on information on the population within spatial units of different sizes. The study will include analyses at local level (based on information of the population in, for instance, parishes) at regional level (based on information of the population in, for instance, counties) at macro-regional level (larger divisions than counties). These and other information on the population make it possible to analyse how population concentration and dispersion occur at different geographical levels.

Studies of population redistribution have put an emphasis on the impact of migration (e.g. Fielding 1982). Due to the increasing immigration in the last decades, international migration has also become an important determinant of population redistribution in Sweden and in other European countries. It has also become an increasingly considered issue in contemporary research (e.g. Castles & Miller 1993, Andersson 1993, Champion 1994, Frey 1995, Hammar *et alia* 1997). International migration seems to have more short-term effects on the variations in population redistribution as compared to other demographic components. In studies of internal migration, some general feature have been recognised such as the migration of young people towards the major urban regions and the simultaneous counter-urban moves of families with children. This results in regional variations in age composition with further consequences on the geographical distribution of natural population change and out-migration. There is an important interaction between different demographic components, which is not always considered in contemporary population studies. This study will highlight the relative importance of international migration, internal migration, natural population change and geographical variations in age-composition for the changes in population distribution in Sweden.

One reason for the interest in geographical distribution is the impact it has on people's access to various physical and human assets. An important consequence of population concentration is the improved access to other people (interpersonal accessibility), which affects for instance the possibilities for innovation diffusion, economic specialisation and

economies of scale. However, population redistribution is only one of many processes that influence interpersonal accessibility. A general increase in population density due to growth will increase the number of people that each person has within her/his reach. Similarly, increasing mobility will result in improved access to other people. The relation between the spatial distribution of population and interpersonal accessibility will consequently change over time. With increasing everyday mobility, average accessibility to other people might be preserved or even improved, despite dispersion of the settlement pattern. The relative impacts of population redistribution, mobility and population growth on interpersonal accessibility are scrutinised in this study.

Aim and questions

The *aim* of this thesis is to describe and analyse the changes in the population distribution in Sweden at different geographical levels from the early 1800s to the end of the 1900s.

The study addresses the following questions concerning population distribution at different geographical levels:

- How has population been redistributed at different geographical levels from the early 1800s until the late 20th century?
- How congruent is the population redistribution at different geographical levels?

This study also takes up the following questions about interpersonal accessibility:

- In what ways has interpersonal accessibility been altered from 1810 until today?
- What is the relative importance of population redistribution, increased daily mobility and population growth for changes in interpersonal accessibility?

Furthermore, the following questions are posed concerning the impact of different demographic components on the population redistribution:

- To what extent is population redistribution determined by migration and to what extent by geographical variations in natural population change?
- To what extent is population redistribution determined by regional variations in age composition?

- To what extent has immigration affected the population distribution from the early 1970s until the 1990s?

The structure and content of the thesis

The three angles of approach that elucidate the problem of how the distribution of population has changed are displayed in Figure 1. Here, too, it can be seen in which of the four papers the different angles of approach are taken up. The disposition of this overview is that each of the papers is individually summarised in the order given by the Roman numerals. The theoretical starting points of the thesis are dealt with in the first study (paper I).

Population Redistribution

The redistribution of population at different geographical levels

- Population Redistribution in Sweden – Long Term Trends and Contemporary Tendencies (paper I)
- Spatial Population Redistribution in Sweden 1810-1990 (paper II)

Interpersonal accessibility

- Spatial Population Redistribution in Sweden 1810-1990 (paper II)

The importance of different demographic processes for the redistribution of population

- Population Redistribution in Sweden – Long Term Trends and Contemporary Tendencies (paper I)
- Impact of Migration, Natural Population Change and Age Composition on the Redistribution of the Population in Sweden 1970-1996 (paper III)
- Concentration and Dispersion of Immigrants in Sweden, 1973-1992 (paper IV)

Figure 1. The outline and structure of the thesis.

The different papers employ the terms *local*, *regional* and *macro-regional* level. By local level we mean parishes and municipalities. In addition, local level refers to the population within daily reach (from 5 to 35 km) from the location of the parish church. By regional level we mean different municipal classes and counties. Regional level refers also to the population within distances beyond daily reach, up to 150 km from the parish churches. By macro-regional level we mean even larger divisions of the country (above county level), as well as the population within distances that exceed 150 km from the parish church.

Figure 2 shows in more detail how the different papers shed light on the redistribution of population. A common feature is that all of the

papers illustrate the consequences of the population's redistribution by employing measures of concentration.

Problem area	Population	Geographical level of observation	Analysis	Paper no.
* The population's redistribution at different geographical levels in Sweden, 1800-1990. * Migration between municipalities 1972-1992.	The whole population; Population according to citizenship	Town/country; Municipality; Municipal classes; Counties; Macro-regions	Redistribution at different geographical levels; Hoover index; Population change; Net migrations	I
* The population's redistribution at different geographical levels in Sweden, 1810-1990. * The importance of population redistribution for interpersonal accessibility.	The total population	Parishes; Population within different distances from the parish church co-ordinates	Redistribution at different geographical levels; The average individual's population base; The average individual's population base within daily reach	II
* The importance of migration, natural population changes, and regional differences in age composition for the population's redistribution 1970-96.	Population according to age and sex	Municipalities; Municipal classes	Age-specific in- and out-migration rates; Age-specific fertility and mortality rates; Hoover index; Pop. changes in different types of municipality	III
* The importance of immigration for the pop. distribution 1973-1992.	Population according to citizenship	Municipalities; Counties	Hoover index; Net migration in municipalities	IV

Figure 2. Perspectives, analytical levels and methods in the thesis.

SUMMARY OF THE PAPERS

I. Population Redistribution in Sweden – Long Term Trends and Contemporary Tendencies

The first paper deals with how the population has been redistributed at local and regional levels since the beginning of the 1800's. In particular, it considers how the tendencies in the contemporary redistribution of population can be interpreted in an historical perspective.

The major *aims* are (1) to describe the long term trends of population redistribution, (2) to relate the present trends as well as the historical

development to a number of central determinants, and (3) to highlight the contemporary trends and to sketch possible alternative scenarios of population redistribution.

The paper employs the rate of urbanisation as a measure of the population redistribution at local level. At regional level the population redistribution is measured using the Hoover index (Hoover 1941) for the counties.

Theoretical background. For a long time, views on how the population is being redistributed have been characterised by urbanisation. This has been regarded as a more or less linear process by which the population becomes increasingly concentrated. However, this picture has been called in question with the counterurbanisation and the dispersion of people simultaneously at different geographical levels. A discussion has therefore arisen about the long-term population redistribution. Two alternative perspectives have been proposed (Champion 1989, Fielding 1993). In one perspective, counterurbanisation is seen merely as a temporary anomaly in a development that still leads to an increased population concentration in the long term. In the other perspective, counterurbanisation is regarded as a break from the urbanisation process that will, in the long run, lead to population dispersion. Both these viewpoints can be said to make up the extremes in an interpretation of long-term population redistribution. Seen from the mobility transition model (Zelinsky 1971), counterurbanisation could be interpreted as the end of urbanisation as a population concentration process, and the beginning of a period of more stable population distribution with migration mainly between towns. A similar perspective is offered by the so-called cyclical urbanisation model (Hall & Hay 1980). In this case, counterurbanisation is regarded as one phase in a redistribution that continuously fluctuates between concentration and dispersion.

Among the various theoretical perspectives on population redistribution one also finds studies in which specific factors affecting the geographical distribution are identified. Apart from regional variation in fertility and mortality, net migration is the main determinant of population distribution. Although these demographic components are each essential for the redistribution, much of the literature is focused on searching for other underlying secondary determinants, especially those related to migration. In the classic economic perspective, migration is regarded as mainly being caused by spatial differences in incomes and living standards. The structural perspective focuses on the long-term socio-economic preconditions, for instance, the importance of the disruption of the traditional peasant society and the emergence of capitalism and the welfare

state. The behavioural school has been more interested in the decision to migrate. The attitudes to different places as well as the individual's constraints and opportunities have thereby been elucidated. From these different perspectives we have identified a number of major determinants affecting population redistribution: *the demographic components; economic geographic conditions; socio-economic structure; attitudes; and population policy.*

The importance of these various factors depends partly on the time perspective adopted. In studies of long-term population redistribution the importance of structural changes is obvious, for example. Andersson (1987) has demonstrated the crucial role that increasing wage labour, the market economy, and industrial production, all had for urbanisation. Attitudes to urban and rural life, as well as regional variations in economic conditions, are however of great importance for redistribution in the short term (e.g. Forsström & Olsson 1982, Nyström 1990).

Empirical results and conclusions. There are no distinct general trends either towards population concentration or dispersion in Sweden during the past 190 years. The resulting patterns of change depend both on the time-perspective and on the geographical level of the analyses.

In the paper it is clear that the population distribution was fairly stable and that there were no long-term trends of either concentration or dispersion before 1850. This tendency then changed, and at the local level the population began slowly to concentrate at the same time as it was dispersed at the regional level. With the industrial break-through towards the end of the 19th century, population redistribution gathered momentum. Contrary to what is often assumed, industrialisation involved a regional dispersion, as well as a local concentration of population. From the 1930s, though, the regional dispersion changes over to concentration. However, after the 1970s the local and the regional concentration of population both subside.

An analysis of migrations between the municipalities reveals that the migration pattern was counter-urban, i.e. dispersing, during the 1970s, whereas the 1980s show both concentrating and dispersing migration patterns. These patterns did not, however, result in population dispersion since the migration within the country was counteracted by other processes that also affected the population distribution.

In this paper it is particularly emphasised that, alongside national migration, the international migration has had considerable importance for the population redistribution. It also appears that immigration during the end of the 1980s functioned as a concentrating force. Another reason why the counter-urban migrations within the country, especially during the

1970s, did not result in any dispersion of the population was the regional fertility and mortality rates, which also served as forces of concentration.

Neither the historical nor the recent decades' trends in population redistribution provide any clear-cut support for forecasting future patterns. On the basis of both the historical and the contemporary development, several possible scenarios of future population redistribution can be sketched: (1) local and regional concentration; (2) regional dispersion and local concentration; (3) regional concentration and local dispersion; (4) regional and local dispersion; and (5) balanced development at local and regional levels. Important specific determinants for the future redistribution consist of, for example, changes in the welfare state, improved transport and communications, immigration and immigration policy, together with changes in fertility rates. What decides the future redistribution is the importance these various determinants come to have in comparison with one another.

II. Spatial Population Redistribution in Sweden 1810-1990

This paper deals with the population redistribution at a large number of geographical levels. Here, the importance that the redistribution has had for changing daily interpersonal accessibility is analysed in relation to the general population growth and the increased daily mobility.

The following questions will be scrutinised:

- How has the population distribution been changed at different geographical levels, in terms of concentration and dispersion?
- How congruent is the population redistribution at different geographical levels?
- How much of the population has been redistributed between 1810 and 1990 at different geographical levels?
- How has the daily interpersonal accessibility been changed between 1810 and 1990?
- What impact has the redistribution of population had for people's daily interpersonal accessibility in relation to the general population increase and the increased mobility?

The study builds on population data at parish level. The parish division has been adjusted to obtain an unchanged geographical division over time. The different parishes have then been given parish church co-ordinates. Thereafter the population is summed within selected radii for a parish. This procedure is carried out for all of the parishes and with a series of selected distances. Finally, the average individual's population base within

the different distances is calculated. Within a given distance, an increased population means concentration whereas a decrease means dispersion.

Empirical results and conclusions. As in the first paper, this analysis shows that the population was both concentrated and dispersed during the period, at all of the geographical levels investigated. The pattern of redistribution that emerges is broadly similar to that in paper I. The more detailed population data in this paper makes it possible to identify more differentiated patterns and trends. One important difference, for instance, is that in this paper a pattern appears in which the population began to disperse locally during the 1960s. The paper provides a basis for dividing the population redistribution into different phases. A first phase is represented by the period 1810-1840, when the population was on the whole dispersed at local, regional and macro-regional levels. A second phase extends from 1840 to 1880, during which time the population began to be concentrated at the local level. A third phase extends from 1880 to 1930. After 1880 the rate of local concentration rose at the same time as the macro-regional dispersion increased. The redistribution at the regional level was polarised during this period, when the population began to concentrate within a distance of 70 km but continued to disperse within a distance of 120 km. A fourth phase extends between 1930 and 1960, when the population was concentrated at local, regional and macro-regional levels. The fifth phase stretches between 1960 and 1990, when the population began to disperse locally.

The picture of redistribution that emerges in the paper can be clarified still further. From the results it is evident that, more often than not, concentration and dispersion occurred simultaneously – albeit at different geographical levels. Only during three decades (the 1830s, 1940s and 1950s) has the population been concentrated and dispersed simultaneously at all of the analysed geographical levels. Furthermore, it can be mentioned that the local concentration that began in the 1840s in time came to embrace higher and higher geographical levels, so that during the mid-1900s the population was being concentrated at all scales. It also became evident that redistribution at virtually all geographical levels was at its most extensive and, simultaneously, most disparate during those phases in which great changes in the development of society were taking place. This is apparent, for example, during the 1880s, when the population experienced its most rapid local concentration at the same time as its fastest regional dispersion took place. In addition, the population was never so rapidly dispersed locally as during the 1960s and 70s, at the same time as it was never concentrated regionally so fast as during the 1960s.

The effect of the population's redistribution throughout 180 years is that the present population is more concentrated locally and regionally. At a macro-regional level, however, the population is more dispersed now than in 1810. This redistribution has led to today's great differences in population density between neighbouring parishes. At regional and macro-regional levels, shifts in population have occurred to the benefit of Norrland at the expense of southern Sweden, as well as within southern Sweden from western Svealand and south-eastern Sweden to the metropolitan areas.

From a calculation of the size of the difference in the population distribution at different geographical levels between 1810 and 1990 it is evident that the local settlement pattern changed by 50%, while the regional pattern only changed by 14%. That half of the 1990 distribution at parish level was the same as in 1810 can be interpreted as meaning that 50% of the causes of today's local settlement pattern must be sought in the period before 1810. As the differences in the regional distribution are smaller, an even larger proportion of the causes of the present geographical distribution at regional level should be found before 1810.

Furthermore, it has been calculated how much the interpersonal accessibility increased locally as a result of the country's population growth, the population redistribution and increased daily mobility. Given the assumptions about the daily reach, it is evident that the local interpersonal accessibility has increased by up to 100 times between the years 1810 and 1990. Seen over the whole study period, the population redistribution is the most important factor behind the increased accessibility. The factor that has least significance in this time perspective is the increased mobility. However, the importance of the three factors varied over this long period. The general population growth was most important during the first half of the 19th century. During the following 100 years the population redistribution predominated, while the increased mobility played the leading role over the last 40 years. Overall, however, interpersonal accessibility has not increased as rapidly during these 40 years. This is a result partly of the fact that the country's population is no longer growing as fast and partly of the fact that the population is not being concentrated as rapidly as before.

III. Impact of Migration, Natural Population Change and Age Composition on the Redistribution of the Population in Sweden 1970-1996

This paper analyses the importance that migration, fertility, mortality and age composition have had for the redistribution of population at municipality level after 1970.

The following questions are addressed:

1. (a) To what extent does the redistribution of the population depend on natural population change?
(b) To what extent are regional fertility and mortality rates a result of age composition?
2. (a) To what extent does the redistribution of the population depend on migration?
(b) To what extent is in- and out-migration a result of age composition?

The empirical analysis was carried out by comparing the actual population development in the municipalities with counterfactual scenarios. All these scenarios are based on an annual static projection of the population and therefore no cumulative dynamic effects could be calculated. The regional effects are analysed using the Hoover index together with information of population trends in different municipality categories.

Empirical results and conclusions. Between 1970 and 1996 both the net migration and the net effects of the natural population change diminished in the municipalities. These two processes thus came to redistribute a smaller and smaller part of the population. Net migration decreased far more than the net effects of the natural population change. This meant that the natural population change became an increasingly important factor in the population's redistribution.

During the years 1970-1996 the population was concentrated at municipal level. Both the natural population change and migration contributed to this concentration. However, it was the natural change that concentrated the population most and it remained stable throughout the period. The migrations mainly influenced the short-term variations in the rate of concentration.

It became evident that differences in the fertility and mortality rates were for the most part the result of geographical variations in age composition, while differences in the in- and out-migration rates were mainly a result of geographical variations in age-specific conditions. The concentration that arose through in-migration was largely counteracted by the dispersion caused by out-migration. However, both fertility and mortality rates lead to population concentration. This means that the regional differences in the age composition have been the most important factor behind the concentration of the population during the study period.

The annual effect of regional variations in age composition on regional fertility and mortality rates was greatest in the beginning of the 1970s. This effect decreased only marginally between 1970 and 1996. The increased concentration of the population during the period is therefore to a large extent influenced by conditions in the period prior to 1970. Since neither migration nor the natural population change between 1970 and 1996 changed the regional age composition to any great extent, it is most likely that the population will continue to concentrate at municipal level for a relatively long period to come.

IV. Concentration and Dispersion of Immigrants in Sweden 1973-1992

This paper is concerned with the consequences of immigration on the population distribution at local and regional level during recent decades. The *purpose* is to analyse the distribution of different immigrant groups in the country, in terms of concentration and dispersion.

A *hypothesis* is that the immigrant settlement pattern are highly related to the reason for immigration, to the conditions that prevailed when the main migration took place, to the number of immigrants, and to how long they have lived in the country.

The redistribution of a number of groups of different foreign nationals is analysed at municipal and county level by using the Hoover index. The various nationalities under analysis have immigrated during different periods. Some came in the 1950s and '60s, some in the 1970s and '80s. Hence the conditions that existed at the time of immigration, as well as the length of stay in Sweden, both vary. These immigrant groups are also of different sizes. Over time, the number of individuals of some nationalities has increased, whereas for others it has been stable or has decreased.

Empirical results and conclusions. It became evident that immigration also had great importance for the geographical redistribution of population. On the whole, the immigration of recent decades has led to population concentration in Sweden. The immigrants have mainly settled in the metropolitan areas and, in 1988, between 40 and 80 % of the people in the various immigrant groups that were analysed were concentrated in the three metropolitan counties. There were, however, regional differences. The Danes are concentrated to southern Sweden, the Norwegians to western Sweden and the Finns to eastern Sweden. Other nationalities have similar patterns. These patterns largely reflect the labour market and political conditions in Sweden at the time when the immigration of a given group began. Those groups that came during the labour force immigrations are concentrated in the industrial municipalities, whereas refugee immigrants are highly concentrated to the metropolises. The

exceptions consist of those nationalities that mainly immigrated during the period when the 'Whole of Sweden Strategy' was operative.¹ Hence the groups that mostly immigrated during the 1980s are more evenly distributed between the municipalities than other groups. The Iranians provide one such example. Together with the Norwegians, this immigrant group was least concentrated to the metropolises in 1988.

With regard to the redistribution of the immigrants within Sweden, it was apparent that the larger an immigrant group became, numerically, the more it was dispersed, both at municipality and county levels. The Finns were the only group that decreased numerically, and they also became more concentrated. Immigrant groups that retained a constant population during the period, e.g. the Yugoslavs, were dispersed. That this dispersion took place can be interpreted as meaning that the integration of individuals, which is going on all the time, leads to a more dispersed pattern of settlement. That the policy has been successful is evident from the relatively rapid dispersion that took place among Iranians and Chileans after the introduction of the 'Whole of Sweden Strategy' in 1984. This dispersion process has, however, been followed by an internal migration to the metropolises and regional centres in Sweden. One can therefore observe that the different immigrant groups, despite the fact that they disperse when they become larger and stay longer in Sweden, do not become as dispersed as the Swedish population.

FURTHER RESEARCH

The studies presented in these papers provide ideas for further research:

1. The analysis of the average interpersonal accessibility shows that it has increased substantially since the start of the 19th century. However, this analysis is strictly limited. It lacks, for example, an analysis of the size of the variations between different locations. Moreover, it builds upon a rough estimation of how the mobility is changed. There are therefore grounds for deepening and improving this analysis in both these respects. An analysis of the regional interpersonal accessibility is yet another angle of approach for continued research. With the population figures employed here and in combination with, for example, a GIS tool there are all the requirements necessary for a further deepening of this analysis.

2. The analysis shows that the natural population change is the most important factor behind the increased concentration since 1970. Nevertheless, the analysis is based on a static method and the dynamics in

¹ The 'Whole of Sweden Strategy' was introduced in 1984 as a political policy that aimed to distribute immigrants evenly between the municipalities. It was abandoned in 1994.

the population redistribution have not been dealt with. By reason of that, the eventual effects that, for example, an age-selective migration has on the regional fertility rates have not been calculated. For this to be possible, a dynamic analysis must be carried out based on longitudinal data for individuals or groups of individuals.

3. The lowest geographical level in this study has consisted of the parish level. In many parts of Sweden even this geographical level is relatively high (e.g. in Norrland's interior). For the recent decades, however, it is possible to analyse the population and events (e.g. migrations, births and deaths) at an even lower geographical level based on co-ordinates in a grid net. By this, one is not dependent upon the administrative division. This means that for the last decade there are possibilities for accurately defining the geographical redistribution of the population. Furthermore, with this source material about the population it is feasible to carry out longitudinal studies, which enables detailed studies of the population's redistribution and of the changes that are found in the population stock. Thereby, it becomes possible to make both broad and detailed analyses of events within a given population over time at different geographical levels simultaneously.

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