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Abstract: Social science research has been concerned with various aspects of residential segregation and why aggregate patterns of segregation emerge and become established in urban areas. This thesis aims at gaining a deeper understanding of which mechanisms influence patterns of residential segregation by examining people's mobility behavior. People's residential mobility behavior is a crucial factor for understanding outcomes of segregation on the aggregate level. By both including individual and neighborhood characteristics in the analysis, more insight is gained in how ethnic and socioeconomic compositions of neighborhoods affect individuals' mobility decisions. Swedish register data from 1990-2006 is used to estimate neighborhood choice models for the greater Stockholm area. The results show that individuals are likely to choose neighborhoods in which the population is similar to themselves, regarding both migrant background and income. The analyses also find some limited support for mechanisms of native-flight and avoidance when looking at Swedes' mobility behavior. Nevertheless, economic resources seem to be of more relative importance for Swedes' and immigrants' neighborhood choice than the percentage of migrant groups living in a neighborhood.

Key words: residential mobility, segregation, homophily, life-course, conditional logit, Sweden

Introduction

Countries that consist of a multi-ethnic population often experience a certain degree of segregation within different areas of society; both in terms of social and geographical distance (Nordström-Skans & Åslund, 2009). A standard definition of segregation is “the non-random allocation of people who belong to different groups into social positions and the associated social and physical distances between groups” (Bruch & Mare, 2009, p.272). Segregation can occur through relatively small-scale social processes such as the concentration of mothers with their young children in a park on a sunny day but it can also reflect social hierarchies. For instance segregated residential neighborhoods often reflect hierarchies of income and wealth (Bruch & Mare, 2009).

Segregation can be seen as problematic for societies for many reasons. Residential location may influence opportunities because social networks are an important resource in finding a job or for receiving social and psychological support. Furthermore a lack of funding for public goods such as education and health care can limit resources to community residents living in poorer areas (Oreopoulos, 2003). In addition to this, segregation may foster xenophobic attitudes towards immigrant groups, especially in areas with very few immigrants or ethnic minorities. The more frequent and higher quality contacts the majority group has with members of minority groups the more this reduces negative attitudes and racist stereotyping (Pettigrew, 1998).¹

Sweden is an interesting case to study residential segregation because it is a country which has had an increasing immigrant population in recent years (SCB, 2013), has relatively low income inequality (Musterd, 2003), and low intergenerational inequality considering educational and occupational inheritance (Breen & Jonsson, 2005, Jonsson & Szulkin, 2007). Given this, we might expect that levels of economic and possibly ethnic segregation in Sweden should be lower than in many other countries. Despite this, several

¹ However, this may be influenced by a selection bias where intolerant people choose to live in areas with few minority group members (Hjerm & Nagayoshi, 2011).

studies show that ethnic and income segregation has become a permanent feature in Sweden's largest cities over the past decades: Stockholm, Gothenburg and Malmö (Dahlberg, 1995, Hårsman, 2006). Furthermore, some studies highlight that ethnic and income segregation also has increased during the past decades (Nordström-Skans & Åslund, 2009, Anderson et. al. 2014, Biterman & Franzén, 2007, Lilja & Pemer, 2012).

As in most countries, in Swedish cities one can find a degree of concentration of social groups in certain areas. This study aims at gaining a deeper understanding of which mechanisms influence patterns of residential segregation by examining people's mobility behavior. People's mobility behavior is a crucial factor for understanding segregation on the aggregate level (Bruch and Mare, 2006).

My main research questions are therefore 1) whether the ethnic and socio-economic compositions of neighborhoods influence if people move out or remain in a certain neighborhoods and 2) do ethnic and socio-economic compositions of neighborhoods affect where people move to? I consider both constraints and choices that influence Swedes' and immigrants decision to move, specifically economic resources and homophily, which are dimensions that have been shown to be dominant in previous studies of residential mobility.

This paper will make an important contribution to the residential segregation literature. Gaining more knowledge on why and how certain individuals/households end up moving to or staying in certain neighborhoods is crucial to understand changes in the socioeconomic and demographic structure of neighborhoods (Hedman et al. 2011). In addition to this, the comprehensive and high quality data used in this study will provide a unique opportunity to study residential mobility where information is available both for personal and residential characteristics. The most common approach in the migration literature is to either analyze flows of social groups moving between areas on an aggregate level, or focus on the types of individuals who move into certain neighborhoods (Davies & Greenwood 2001, Bruch & Mare, 2011). By simultaneously

including both neighborhood and individual characteristics in the analysis this study allows for a more realistic account of residential mobility. Moreover, the choice sets of potential residential destinations are seldom considered in migration research, which is an integral part of this study.

In the following sections I first give an overview of previous research, in which I present the most salient theories in residential mobility and ethnic segregation. Many of the theories that I highlight have emerged from the United States. I will consider whether they resonate in the Swedish context, which leads into the following section, where I describe patterns of residential segregation, migration flows, housing markets and policies. Then I turn to the hypotheses, data and methods, followed by results from descriptive and analytical models. I conclude with a discussion where I draw out the implications from my results and consider further areas for research.

Theory and Previous Research

A problem with much of the theoretical work on residential mobility is that although it seeks to highlight why aggregate patterns of segregation emerge and become established, it nonetheless focuses only on aggregate relationships or flows. For instance theories of “native flight” show that when certain groups move into a neighborhood this in turn triggers natives’ out-migration from the neighborhood. Theories of “native avoidance” similarly emphasize that natives avoid moving into certain neighborhoods because of its ethnic group composition. These studies tell us how processes operate, yet do not explain the underlying factors to why natives choose to move out of or avoiding moving in to certain neighborhoods. These can for instance be reflected in racist attitudes, fear of devaluation of property or wanting to live near others of a similar background.

Since aggregate flows are to a large extent the result of the mobility of individuals and families, a more detailed understanding of why these aggregate relationships are observed can be obtained by studying the residential mobility behavior of individuals and families, and how different mechanisms of preferences and constraints operate. For instance, how

important different dimensions of homophily are for where people prefer to live (i.e. social class or ethnicity), and changes in the life-course such as a birth of a child that initiates a move.

In this paper I focus more on explaining individual residential mobility behavior, but will also engage with theories of segregation processes. This distinction is nevertheless not always clear cut, and some of the theories presented therefore discuss both aggregate processes of residential segregation and choices/constraints in individual mobility behavior.

Why do people move?

Why people move from one residential location to another, or choose to stay in a certain neighborhood is a complex issue. Choices and constraints are two central dimensions for understanding residential mobility; constraints involve economic resources and housing costs; choices encompass preferences regarding neighborhood characteristics, such as available housing and services, but also preferences concerning which social groups are residing in these neighborhoods (Clark & Rivers, 2012). Factors such as income, education and employment, along with life-course factors such as age, marital status and number of children are important determinants of mobility (Verma, 2003). Nevertheless, the opportunities of individuals are closely linked to their residential environment; where institutions, resources and other social phenomena are stratified by neighborhoods. Therefore it is difficult to establish the causal mechanisms in residential mobility research because neighborhood choices are made within a certain segregated social environment where social hierarchies and discrimination prevail (Sharkey, 2008). Below I will summarize the central theories, some of which address these complexities.

Residential mobility across the life-course

Most residential moves are to a large extent due to change in demand for housing space, unlike regional migration which is mostly triggered by a change in job or employment status (Clark & Huang, 2003). In this sense residential mobility is a demographically driven process; where changes in one area of the life-course, along with changes in

income to a large extent drive changes in housing consumption and tenure (Clark & Huang, 2003, Clark & Dieleman, 1996).

Previous research shows that younger people move more frequently and more often into rental housing than older households. Households with higher income and education are more mobile than other households (Clark & Huang, 2003). Certain events in the life-course trigger residential mobility such as changes in marital status or birth of a child which often leads to a greater demand for larger housing and thus leads to a move. On the other hand, divorces and separations often lead to moving to smaller dwellings and thus a downward progression in one's "household career" (Clark & Huang, 2003).

Using data from the British Household Panel Survey, Clark et al. (2003) find that changes in the life-course such as changes in marital-status or birth of a child encourage mobility while home-ownership has a negative effect on mobility. They also find that neighborhood satisfaction influences mobility, where those who like their neighborhood are self-evidently more likely to remain.

Hedman et al. (2011), in their study on neighborhood choice and neighborhood reproduction in Uppsala, Sweden, find that households with at least one child are more likely to move to neighborhoods with a large percentage of households with children. This may be largely due to the fact that these neighborhoods have a larger supply of larger dwelling units; but there may also contextual factors in the neighborhood at work, such as certain attractive amenities in these areas, such as nearby parks or attractive schools.

Studies in the Germany, the United Kingdom and the United States have found that the average level of housing consumption has remained stable during the 1990s, but that most households gain dwelling space when moving, the exception being single and elderly households (Clark & Drever, 2001). Nevertheless, life-course patterns have been changing in many societies, especially in the Nordic countries. A larger share of the population delays family formation, childbirth and entrance into the labor market. This

will also have implications for residential choice, and there will be a larger share of low-income single households and most likely more mobility on the housing market (Lundholm, 2007).

While there have been changes in social context that affect life-course patterns and preferences regarding housing and neighborhoods, desires to move may not be actualized. Different forms of constraints such as income and wealth, the supply of housing dwellings, and the functioning of the housing and labor market are factors that affect whether a move will be realized (Enström-Öst & Wilhelmsson, 2015).

Homophily and Social Networks

Another central dimension that is related to preferences in residential mobility is homophily. Homophily can be defined as “the principle that a contact between similar people occurs at a higher rate than among dissimilar people” (McPherson, et al. 2001, p.415). This implies that material, cultural or behavioral information tends to be localized and limits people’s social environment in the information they receive; shaping attitudes and social interactions (McPherson, et al. 2001).

Localized geographical space, such as residential neighborhoods, is important in influencing the formation and maintenance of social ties. It is important in the sense that many close contacts are maintained through face-to-face encounters. Verbrugge (1983) for example finds residential proximity as the most important predictor of how often friends meet. However, geographic proximity may be of less importance in maintaining social ties due to developments in information technology and a “greater fluidity” in social contacts (Kaufer & Carley, 1993, McPherson, et al. 2001, Forrest & Kearnes, 2001).

Several studies have found that homophily of ethnicity/race plays a very important role in structuring networks in the United States, and is found in a wide range of relationships, such as in marriage, friendship and work relations (McPherson, et al. 2001, Marsden, 1987). For instance, Mouw and Entwistle (2006) show in their study based on a survey

of adolescents in schools in the U.S, that among white respondents about 85% of their self-nominated friends were white, and among blacks 71% reported that their friends were black.

Dribe and Lundh (2011) analyze intermarriage among natives and different immigrant groups in Sweden. They find, in line with previous studies (Kalmijn, 1998), that cultural distance is an important factor in determining marriage outcomes. The greater the cultural distance in terms of language, religion and values the greater the likelihood of endogamy and the less likely intermarriage with natives. Immigrants from Western Europe, North America and Oceania are more prone to marry natives, while on the other end immigrants from the Middle East and Africa display the lowest intermarriage rates (Dribe & Lundh, 2011).

Within residential mobility research dominant explanations of residential segregation have been associated with ethnic/racial homophily. The mobility of ethnic minority and immigrant groups has been largely driven by their group preferences; that individuals choose to move into areas where their neighbors belong to same ethnic or similar social group (Bartel, 1989, Scott, 2005). Research in the United States on neighborhood choice has shown that African-Americans often prefer integrated neighborhoods, while white, Hispanic and Asian populations more often prefer neighborhoods that are more or less segregated, with concentrations of their own ethnic groups (Farley et. Al. 1997, Clark & Rivers, 2012, Bruch & Mare, 2009). Yet despite their preferences, studies show that African-Americans often move to areas with a majority of African-Americans. This may instead reflect other processes and factors that influence residential mobility such as age, home ownership and duration of residence (Clark & Dieleman, 1996).

Furthermore, social networks play an important role in residential mobility by providing information. Previous research has shown that ethnic clustering can lead to both positive and negative outcomes for minority groups. Moving to areas where people live who are similar to oneself may provide more local opportunities and resources such as more

employment prospects, higher wages and more consumption opportunities (Musterd, 2005). However, relying on one's own social network (if one is a member of a minority group) may lead to certain negative outcomes, such as social exclusion (Nordström-Skans & Åslund, 2009). For example, living in areas where there are few people speaking Swedish may strengthen social exclusion, especially since a certain degree of Swedish is often essential to become established on the labor market (SOU 2003:75).

Neighborhood and identity

Certain researchers argue that theories emphasizing social capital/social networks as driving forces in residential mobility are somewhat problematic. They may to some extent explain why people initially move to an area dominated by their own social group, but they do not offer any insights to why many immigrants remain often in disadvantaged areas (Bråmås, 2007).

Theories of neighborhood advantage maintain that neighborhood resources and collective socialization during childhood influence adult outcomes later in life. Childhood residential experience influences adult residential choice through for instance role models, peer influence and community resources (Vartanian et al. 2007, Sampson & Wilson, 1995). From this perspective neighborhoods are important in shaping social identity.

The neighborhood is also important in terms of social identity and an expression of "who we are" (Forrest & Kearnes, 2001). Attachment to the neighborhood may for instance become even more pronounced as the labor market becomes more precarious and where traditional ties to one's workplace weaken (Lilja & Pemer, 2012). In a study in two mid-size Swedish cities Henning and Leiberger (1996) suggest that residential neighborhoods are of greater significance for the elderly, children and people with disabilities who spend more time at home than those with a stronger attachment to the labor market.

Furthermore it is essential to distinguish between the neighborhood and the actual interactions with neighbors. Amongst more affluent people it may be more important to

buy into neighborhoods that are physically attractive with more amenities, while the actual interactions with people in the same neighborhood may be of less importance. On the other hand, in disadvantaged neighborhoods the quality of ties with neighbors is an important dimension for peoples' ability to cope with some of the disadvantages in the physical environment (Forrest & Kearnes, 2001).

Henning and Lieberg (1996) additionally find that people generally tend to have strong ties outside the neighborhood but interact with neighbors frequently on a more superficial basis. These contacts are important in terms of practical and social support and a sense of security and feeling at home (Henning & Lieberg, 1996). They argue that the neighborhood is crucial for maintaining and developing weak ties. These weak ties are furthermore of importance for a general level of well-being and may create greater neighborhood attachment (Forrest & Kearnes, 2001).

Discrimination

Several studies in various contexts highlight the fact that immigrants experience discrimination in the housing and labor market. Although this does not directly relate to why people move it may have an indirect effect on mobility by constraining choices. Research in the United States has demonstrated that there exist barriers which prevent minority groups from moving into mostly white neighborhoods. The focus here lies on discrimination in the housing market where real estate agents and other loan institutions function as "gatekeepers" in residential moves by reproducing racial stereotypes and thus strengthening residential segregation (Clark & Rivers, 2012).

Previous studies in Sweden show that employers' and landlords' ethnic preferences are important when they choose individuals. For example studies using an experimental design in Sweden with different names in which people with CVs of similar qualifications when applying for jobs, and of similar economic resources when seeking housing advertisements show that Muslim or Arabic names lowers the probability of a reply from an employer or a landlord (Carlsson & Rooth, 2007, Hyresgästföreningen,

2011). This type of discrimination may even affect second- or third generation immigrants.

Residential segregation can also reflect discrimination on the labor market. The composition of residential neighborhoods to a large extent reflects a person's wealth and income since neighborhoods vary in housing prices. If ethnic minorities and immigrant groups have lower income or have higher levels of unemployment than the majority this may also be an underlying mechanism behind residential ethnic segregation.

Segregation Processes

White Flight and Tipping-Points

White flight is a perspective that encompasses different aspects of segregation processes and to a large extent is connected to homophily and social networks in which neighborhood preferences are central for understanding residential mobility and segregation. Thomas Schelling was one of the first to conceptualize the relationship between individual preferences and neighborhood change (Schelling, 1972). He illustrated how certain preferences concerning the proportion of one's own ethnic group in one's neighborhood could lead to unanticipated consequences for segregation (Bruch & Mare, 2006). A central mechanism in Schelling's model is tipping, which occurs "when some recognizable minority group in a neighborhood reaches a size that motivates the other residents to leave" (Schelling, 1972, p.157). This eventually leads to aggregate neighborhood change where segregation often emerges even if individuals may prefer integrated ethnic neighborhoods (Zhang, 2004, Bruch & Mare, 2006). Moreover, many researchers have been studying the threshold level for "white flight" for many decades; there is no general recognized tipping-point applicable to neighborhood change (BråmÅ, 2006).

Yet processes of "white flight" have been prominent within the residential segregation literature, especially in the United States. But in recent years the focus in the literature has shifted from "white flight" to also include processes of "white avoidance" (BråmÅ,

2006). “White avoidance” instead emphasizes the fact that natives avoid moving into certain neighborhoods, which plays an important part in residential segregation processes. The processes underlying white avoidance and flight partly can be explained by “group threat theory”, which is based on the assumption that the majority population becomes adverse towards minority groups when they feel threatened by those groups. It is not necessarily only the size of an immigrant group that is perceived as threatening, but also the composition of the immigrant group. For example wealthy immigrant groups that move into a neighborhood and create job opportunities, or immigrants that have culturally similar background to the majority are seen as less threatening (Hjerm & Nagayoshi, 2011).

White Americans in general hold more negative racial attitudes and white residential preferences are negatively shaped by the rising share of minorities living in their neighborhood (Harris, 2001, Dixon 2006). Previous studies in a European context also have shown that there exists xenophobia and ethnic stereotyping among the majority about immigrant-dense areas (Molina, 1997). A comparative European study by Hjerm & Nagayoshi (2011) for instance finds that the composition of the immigrant group regarding income and employment status is in general insignificant in fostering xenophobia among natives, but of more importance for the natives from the working class. They also show that the proportion of Muslims living in a country has an effect on xenophobic attitudes among natives, while how similar the immigrant group’s language to the host nation’s language was not of importance.

Although racist attitudes may influence mobility behavior there are other factors to consider. “White flight” and “white avoidance” phenomena may not necessarily only be based on xenophobia but rather that natives leave or avoid moving into neighborhoods with social problems and poverty (Harris, 2001).

Residential mobility and segregation in Sweden

Different social contexts most likely influence individuals' mobility opportunities in different ways. I will therefore consider whether the Swedish context challenges or affirms the theoretical assumptions that were presented above, many of which are from the United States. First, there are significant contextual differences between European and American cities. In general, American cities tend to show higher levels of ethnic segregation than European cities, and the differences regarding levels of segregation in European cities seem to a certain extent to be associated with the type of welfare model implemented (Musterd, 2003). This would suggest that ethnic segregation is related to economic inequality, and welfare states with redistribution policies dampen segregation through for instance housing subsidies and progressive income tax systems (Musterd, 2003).

Second, European cities experience somewhat different residential segregation patterns than in the United States. Many European cities do not consist of neighborhoods that are dominated by single ethnic groups, such as African-Americans or Hispanics. Rather residential segregation often occurs between the majority group and other non-European groups (Bråmås, 2006). This pattern also characterizes Swedish cities, where multi-ethnic populations often live in areas that are segregated from the majority.

There are most likely many other contextual circumstances involved in explaining differences between Sweden and the United States. Nevertheless, below I will present certain institutional factors and historical developments that are important in explaining residential mobility specifically within the Swedish context.

Migration flows and ethnic clustering

In terms of migration, Sweden has gone from being a sending country in the late 19th century, with large outflows of emigrants to becoming a receiving country with a fairly sizeable immigrant population. Before World War II there were very few immigrants in Sweden, but after the war a demand for labor market migrants increased and primarily immigrants from Nordic and other European countries moved to Sweden (SCB, 2008).

During the 1970s and 80s migration to Sweden began to change; consisting of a larger share of refugee- and kinship migrants. In 1940 only 1 per cent of the population was born abroad. This figure increased to 7 percent in 1970 and 14 percent in 2012 (Andersson, et.al, 2014). Although the Swedish immigrant population is very heterogeneous, there is a consensus among researchers that residential segregation has increased in many Swedish cities (Hårsman, 2006, Lilja & Pemer, 2012). Hårsman's (2006) study of the greater Stockholm area from 1991-2001 shows that residential segregation has increased and the most segregated areas are characterized by a concentration of non-European groups while those with Swedish origin are living in areas with low ethnic diversity.

Nordström- Skans and Åslund's study "Segregation i storstäderna" (2009) also find that residential segregation has increased in the major cities in Sweden from 1985 to 2006. The percentage of immigrant neighbors have increased for both Swedish-born and foreign-born since 1985, but much more so for the foreign born. For example for Swedish-born individuals, the average percentage of foreign-born people living in one's neighborhood increased from 14 to 18 percent from 1985 to 2006, while a foreign-born individual's exposure to other immigrants in their own neighborhood increased on average from 26 to 40 percent (Nordström-Skans & Åslund, 2009).

They argue that one aspect of homophily, ethnic clustering, is an important mechanism in explaining residential segregation in Sweden. In their study they find differences in the proportion of foreign-born neighbors depending on which ethnic group one belongs to. For instance on average 25% of the neighbors of those of Finnish origin consist of immigrants, while groups from Iraq or northern Africa have 60% immigrant neighbors (Nordström-Skans & Åslund, 2009). They also find that many immigrant groups are five times more likely to have a neighbor of one's own nationality than expected if immigrants were randomly scattered throughout neighborhoods; while they are only twice as likely to have a neighbor of another foreign origin (Nordström-Skans & Åslund, 2009). In addition to this, studies of refugee migrants' mobility in Sweden show a very

distinct trend that these migrants move into areas of higher group representation, even when controlling for other characteristics of the area that might influence their preferences (Åslund, 2005).

Housing policy and resources

An important dimension in residential mobility and segregation in Sweden has been housing policy. The most well-known and large-scale public housing policy in Sweden has been the so-called million homes program, “miljonprogrammet”, which was initiated to meet the demand of a growing housing shortage during the 1960s. Many of the residential areas that were built within the million housing program are currently inhabited by people with a migrant background.

During the 1970s employment among immigrants began decreasing relative to Swedes and they often had fewer residential choices. Many therefore ended up in housing within the million homes program (Lilja & Pemer, 2012). In addition to this, some researchers have argued that the municipalities steered immigrants into areas with vacant housing rather than there were labor market opportunities, which often were not located in these areas (Ekberg, 2004). A combination of housing and immigration policy seems to have unintentionally strengthened residential segregation (Hårsman, 2006, Lilja & Pemer, 2012).

Studies have also shown that residential segregation is highly associated with housing resources such as ownership, and tenancy (Hårsman, 2006, Lilja & Pemer, 2012). In Stockholm there are significant differences in areas of rental and home-owner housing markets; rental housing is primarily located in certain suburbs where immigrants and groups with low socio-economic status are more likely to live. Since the mid-1990s home-ownership has dominated the supply of apartments in the greater Stockholm area relative to rental housing (USK, 2010). Furthermore, in relation to population growth housing production has lagged behind since the early 1990s which has contributed to high housing prices. This has led to a substantial housing shortage in the Stockholm housing market (Enström-Öst & Wilhelmsson, 2015).

The housing market and shortage of housing in Stockholm leads to clear disadvantage for many immigrants. First, some immigrants, particularly refugees, are more likely to have less capital than Swedish-born individuals when they arrive. They may have left a lot of their economic capital in their home country. In addition, their educational credentials may be less valued in Sweden which makes it more difficult for immigrants to get a job, or find a job with sufficient income to buy housing. Second, in Sweden there is a system of rent-controlled housing where rents are usually determined through negotiations between landlord and representatives of tenant organizations. Rental apartments are usually supplied through public and private housing organizations with internal housing queues for their members. Thus to receive a rental apartment it is essential how long one has stood in a rental housing queue. Swedish-born individuals here clearly have an advantage over immigrants (Nordström- Skans & Åslund, 2009).

Swedes' mobility

As mentioned above, the housing market in Stockholm clearly limits residential choice for immigrants and there are tendencies of ethnic clustering in Sweden. But it is also important to look more closely at how Swedes' mobility behavior is related to residential segregation and whether processes of native flight and avoidance are prevalent in Sweden.

Biterman and Franzén (2007) argue that “native flight” or out-migration of Swedish born individuals has affected residential segregation; but it is difficult to determine whether this was due to preferences of residing with one's own ethnic group or that the areas subsequently also became more economically disadvantaged. Other studies have found evidence that “native flight” may be an important reason behind segregation processes in Sweden. Hårsman (2006) emphasizes increased residential segregation in Swedish cities between 1991 and 2001. He writes that the reason for this may be native-flight; another reason may be that the foreign populations in immigrant areas grow at a faster rate relative to Swedish dominated areas. Swedes with low-income have decreased in areas with low ethnic diversity as well (Hårsman, 2006).

A study based on Swedish cities in the 1990s found that the production and reproduction of immigrant-dense areas is to a certain extent influenced by the mobility behavior of Swedes, through both avoiding in-migration to and out-migration from these areas. However, the main effect seems to stem from avoidance-like behavior (Bråmås, 2006). Yet, Bråmås finds that it is difficult to discern whether native flight and/or native avoidance are the causal mechanisms at work here. There may be other explanations that were mentioned earlier, such as institutional barriers in the housing market, differences in socioeconomic resources and voluntary ethnic clustering (Bråmås, 2006).

Andersson et al. (2014) analyze mobility behavior among natives in the 1990s and 2000s in Sweden. They find that during the 1990s both native flight and native avoidance contribute to a drop in the growth rate of the native population in immigrant-dense neighborhoods. When studying mobility in the period of 2000-2007 they instead find native flight to be the driving mechanism. Furthermore they argue that native mobility behavior also contributes to socioeconomic residential segregation since natives with high educational attainment and earnings are more likely to move out of immigrant-dense neighborhoods (Andersson, et. al. 2014).

Hypotheses

Following the theoretical overview and contextualized research in Sweden described above I present the following hypotheses. Several hypotheses focus more on testing the homophily or social network aspects of residential mobility; however certain hypotheses to some extent also reflect life-course factors and constraints regarding economic resources. I do not explicitly test for discriminatory dimensions of residential mobility or factors that reflect neighborhood and identity. Although these aspects would be interesting to analyze this would require different data. This is beyond the scope of this paper.

H1: Individuals with a Swedish background are more likely to move out of neighborhoods the larger the proportion of residents with a non-Swedish and specifically a “non-European background”² (“native flight”).

H2: Individuals with a Swedish background are more likely to avoid moving to neighborhoods the larger the proportion of residents with a non-Swedish and specifically a “non-European background” (“native avoidance”).³

In accordance with Dribe and Lundh (2011) I assume that there is a greater cultural distance between Swedes and groups with a “non-European” background. If greater cultural distance translates into xenophobic attitudes among Swedes (Hjerm & Nagayoshi, 2011) this may influence mobility behavior. It will be interesting to see whether Swedes distance themselves from these groups to a larger extent when making residential choices.

Previous studies that analyze mobility behavior in Sweden among natives point to different results regarding mechanisms of avoidance and flight. For instance BråmÅ (2006) finds that native avoidance is the driving mechanism behind ethnic residential segregation, while Andersson et al. (2014) find evidence for both native avoidance and native flight, operating differently depending on which time period they study.

H3: The higher one’s income the higher the probability to move to or stay in a high average income neighborhoods.

Economic resources are an important dimension in residential mobility, enabling or limiting mobility choices. Swedish cities have a highly segmented housing market with home-ownership and high-income earners closely related. Immigrants in general also

² With non-European background I refer to people with an origin in countries outside Europe and “Western” countries such as North America, Australia and New Zealand. These national identities are based on both parents and own country of birth. See the appendix for more information on these categories.

have fewer economic resources and display lower levels of employment than Swedes (SCB, 2013, SCB, 2014). Moreover high-income neighborhoods display a certain level of attractiveness that should increase the demand to move to these neighborhoods for those who can afford it.

H4: The higher the proportion of one's own ethnic group in a neighborhood the higher the likelihood of moving to or staying in that neighborhood.

Swedish cities do not experience one single dominating ethnic group in residential areas. Still, previous studies point to ethnic clustering. This has to be tested empirically and it will be interesting to observe if there are significant differences within a Swedish context in comparison to for instance the United States.

H5: Individuals with a foreign background are more likely than Swedes to move to or stay in neighborhoods with a family member residing in the neighborhood.

Family members can provide emotional and practical support, and moving closer to them may facilitate more frequent contacts. Having one or several family members residing in a neighborhood should therefore increase the likelihood of moving to that specific neighborhood. People with a foreign background⁴ are most likely more dependent on social networks. This is a social network aspect that is interesting to test empirically.

³ I will not analyze thresholds or tipping points for in- or out migration in these models, only if there is a linear effect. In order to capture these mechanisms more complex models are necessary that are beyond the scope of this thesis.

⁴ The reason for not differentiating between "European" and "non-European" background here is because I do not find any support for that this mechanism is associated with cultural distance.

Data and explanatory variables

Data

The data used in this study are Swedish register data, from the so-called STAR (Sweden in Time: Activities and Relations) database. It is constructed by Statistics Sweden that draws on several administrative and population registers, and most include data on the total population living in Sweden each year. Although this is a very rich dataset a certain limitation should be noted. There is no information on housing prices or existing housing stock, which means that I cannot take certain aspects of the supply side of the housing market into account in my analysis. However, to some extent the housing prices can be inferred by median income within neighborhoods.

I follow where individuals who are at least 18 years old, reside each year from 1990-2006.⁵ When defining neighborhoods, Statistics Sweden's SAMS's (Small Area Market Statistics) classification is used. SAMS neighborhoods provide a relatively accurate approximation of a neighborhood, comparable to the US census tracts. In Sweden, an average SAMS area consists of approximately 1000 people (Andersson, et.al, 2014); there are approximately 9000 SAMS areas in total, while the greater Stockholm area⁶ consists of approximately 800 SAMS areas.

This study will analyze the greater Stockholm area only, disregarding residential moves across the entire country. This means that those who move out of the greater Stockholm area are censored. The reason for doing this is that analyzing all moves within Sweden would be rather complex where one would have to estimate a multilevel model where people first choose among cities, and then among neighborhoods in cities. It would be also difficult to estimate the models, given a neighborhood choice set that is so large.

⁵ The database actually comprises of data for years prior to 1990 in certain registers and in most of the registers the observation window closes in 2007. The reason for choosing 1990 as a starting point is that many variables I use from the LISA registers begin in 1990. The geographical information on neighborhoods is missing for 2007.

⁶ This refers to "Stockholms län", which could be equivalent to county in the U.K. and the U.S.

Furthermore, there are many factors to take into consideration when analyzing mobility. Is the decision to move planned many years in advance or made within a short time frame? Is a decision to move based on one's economic situation in the present or one's expected income the following years? Expectations regarding the housing and labor market most likely affect people's decisions. To capture this complexity, would have involved more data on people's intentions for residential moves. In this study I have chosen to measure individual and neighborhood characteristics the year before the choice to move or stay eventually takes place. This also makes it easier to determine a causal path between individual characteristics and actual moves (Hedman, 2011).⁷ A mobility event is thus defined as a change in SAMS area in the greater Stockholm area between year t-1 and year t.⁸

A methodological issue to consider with my approach is that the population at risk, that is potential movers, include only those who have at some point in time moved to, or were born in Stockholm. This may in turn lead to selection bias, where certain groups are more likely to be excluded from the analysis. For example for immigrants that arrive in Sweden, Stockholm may not be their first destination. For these groups to be included in the analysis they have moved to Stockholm, and then have resided there for at least one year.

Individual-level variables

The definition of an immigrant can be rather problematic and various definitions can be found in the literature. This is a complex issue where the discourse in defining who is considered "Swedish" changes over time. I have chosen to follow a more traditional definition in line with Statistics Sweden where migrant background is based on both own country of birth and/or where one's parents are born. So for instance, a person who is born in Sweden needs to have at least one parent born in Sweden to be categorized as

⁷ For example a change in income may be a result of a move to an area with better employment opportunities or contributing to a move. These mechanisms would be more difficult to differentiate if individual characteristics are measured within the same year as the move. Nevertheless, this problem is of less relevance when analyzing moves within a city, but to a certain extent still stands when estimating characteristics the year before a move.

having a “Swedish background.” To be categorized as having a “foreign background” a person needs to be born abroad, with at least one parent born abroad or be born in Sweden with both parents born abroad. The database contains information on individual’s country of birth for larger migrant groups and pooled groupings of countries for the smaller migrant groups.⁹

The natural logarithm of a household’s annual disposable income is used as a measure of economic resources. These resources can either constrain individuals so they remain immobile or only move to certain affordable neighborhoods. Dummy variables indicating whether there are children living in the household and their age are included in the models. Additional controls include three categories reflecting educational attainment, primary and upper-secondary levels and university degree. Also included is a dummy variable that indicates whether the individual lives in the same neighborhood as in the previous year since the propensity to remain in the same neighborhood should be higher relative to moving.

Neighborhood characteristic variables

In order to test whether the proportion of one’s own migrant group in a neighborhood influences residential mobility (hypothesis 4), the percentage of individuals from different migrant groups in the neighborhoods and interactions with the individuals’ own migrant background are incorporated in the models. Moreover, to investigate native flight and avoidance (hypothesis 1 and 2) the percentage of “European” and “non-European” groups in the neighborhoods are included.

The average log disposable income in the neighborhood is used in order to see whether people are more likely to move to areas where the average income is similar to their own income (hypothesis 3). The percentage of social assistance recipients in a neighborhood is also studied, which can be seen as a proxy for poverty.

⁸ This means that I actually follow individuals’ mobility behavior from 1991, with independent variables from 1990.

⁹ For more information on coding of migrant background see the Appendix.

A variable indicating the neighborhoods in which family members are living is used in order to see whether people are more likely to move to areas where family members live (hypothesis 5). Only immediate relatives are considered and they are defined as family members, so that siblings and parents, both biological and adoptive, are linked to the individual. In addition to this, within neighborhoods I control for the percentages of families with children in different age groups.

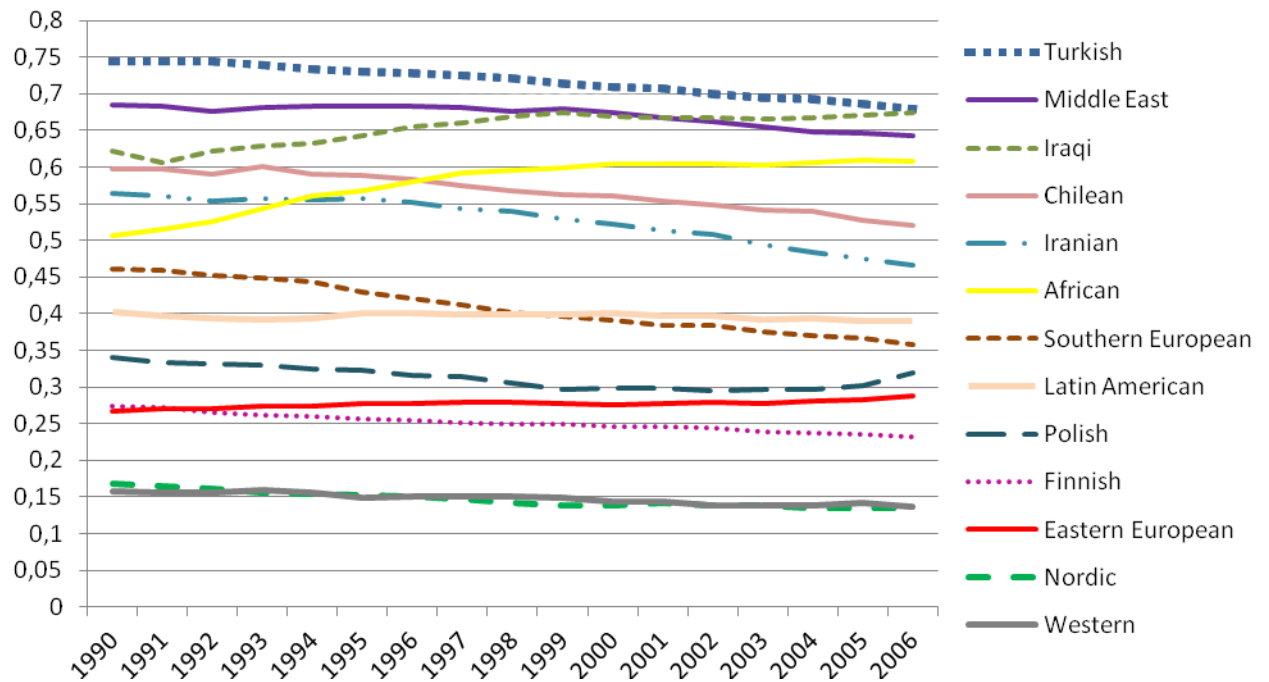
The number of residents in a neighborhood is another important control because the probability of moving to different neighborhoods should vary with the size of the neighborhood (Bruch & Mare, 2011). Thus, people are more likely to move to larger neighborhoods where there are more available housing units, all else equal. Since the data does not contain information on housing stock the number of residents in each neighborhood is used as a proxy for this.

Methods

Descriptive Measures

The index of dissimilarity is the most well-known descriptive measure of segregation (Iceland, 2004). It measures how groups are distributed across neighborhoods regardless of the size of each group and indicates the proportion of a group that would have to move to achieve an even distribution of ethnic groups relative to the distribution of the total population in the greater Stockholm area (US Census Bureau, 2010, Bruch & Mare, 2001). The index of dissimilarity can vary between 0 (total integration) to 1 (complete segregation) (US Census Bureau, 2010). For instance when dissimilarity for a certain group is equal to 1, this means that 100% would have to move in order to achieve a distribution identical to the larger metropolitan area (Population studies Center, 2013).

Figure 1.1 Dissimilarity indices of groups' country/region of origin relative to "Swedish origin"

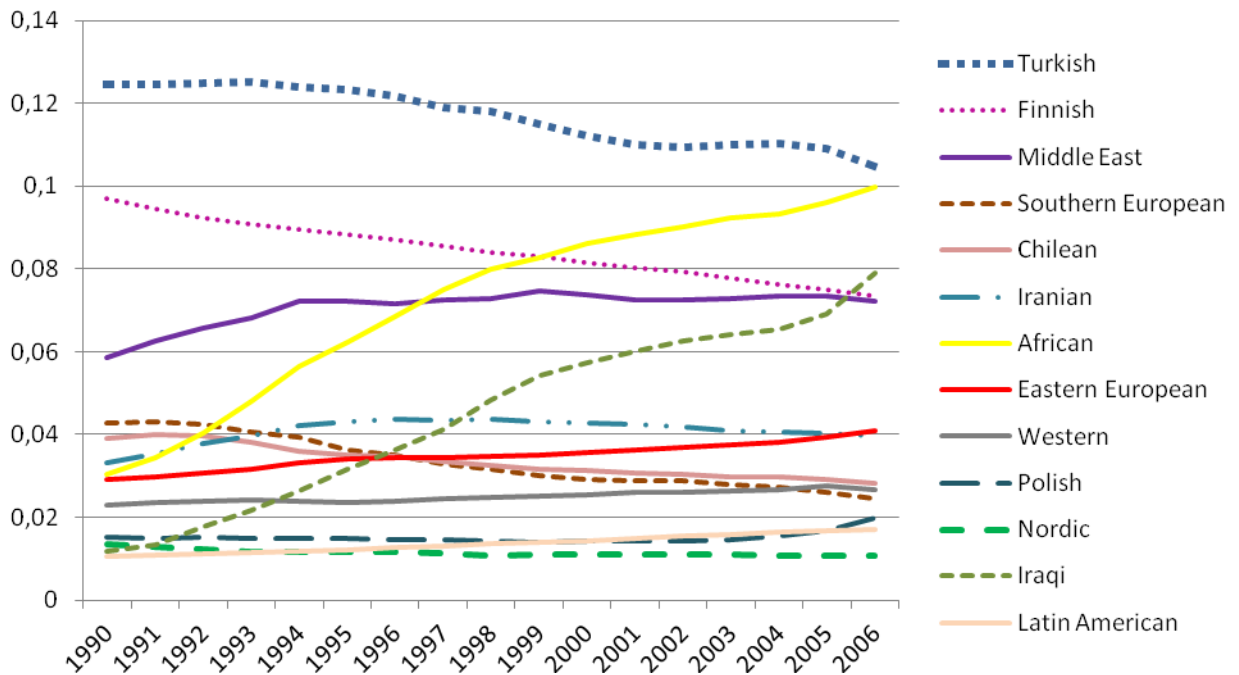


Source: Swedish register data, author's own calculations.

Figure 1.1 illustrates a pairwise comparison between different migrant group backgrounds with those with a Swedish background. Turkish, Middle Eastern, African and Iraqi groups seem to experience rather high levels of segregation and this is in line with previous studies (Nordström Skans & Åslund, 2009). Overall segregation seems to remain more or less stable for many groups in Stockholm. It seems to decrease slightly for those with Turkish, Chilean, Iranian, Polish, Southern European and Finnish origin, while it increases for those with African and Iraqi origin. A partial explanation for this may be that the majority of those from Finland and Southern Europe migrated to Sweden during the 1950s and 60s, and many from Turkey, Chile, Iran and Poland migrated during the 1970s and 80s (SCB, 2004). These immigrant groups thus have been residing in Sweden for a longer time than groups from Africa or Iraq who primarily migrated during the 1990s and 2000s and it is those latter groups that show increasing levels of segregation.

Another measure that is widely used is the index of isolation. The index of isolation measures "the extent to which minority members are exposed only to one another and it is computed as the minority-weighted average of the minority proportion of the population in each area" (Massey and Denton, 1988, p. 288). If one is only analyzing two groups at a time, as in this case, the isolation index sums to 1.0 and values closer to 1 indicate high levels of segregation (US Census Bureau, 2012).

Figure 1.2 Isolation indices of groups' exposure to members of their own group



Source: Swedish register data, author's own calculations.

When looking more closely at Figure 1.2, at the one end one finds Turkish and African groups who are the most isolated, and at the other end one finds the Nordic and Eastern European individuals who are the least isolated. The African, Iraqi and Middle Eastern groups have become more isolated over time, while the Finnish and Turkish groups have become less so. When the majority of these groups immigrated to Sweden most likely influences this measure. Groups that have been residing in Sweden over a longer period of time, such as the Turkish and Finnish groups are probably less isolated for this reason since it takes time to become integrated into a new society. Those with a Swedish

background (who are not shown in the figure) experience much higher levels of isolation than other ethnic groups.¹⁰ This is because they are in absolute terms much larger than other groups.

Despite the fact that these measures are to a certain degree inter-correlated; they still capture different aspects of aggregate patterns of segregation. The dissimilarity index shows whether certain groups are under- or overrepresented in neighborhoods, while the isolation index indicates potential contact between groups (Massey & Denton, 1988). In Stockholm both indices show similar patterns; and Turkish, African, Middle Eastern and Iraqi groups stand out on both indices. This may suggest that cultural distance is related to residential segregation processes in Stockholm since these groups are conventionally associated with greater cultural distance to Swedes in terms of language, religion and values.

However, these indices do not allow us to ascertain which mechanisms are involved. In order to get a more nuanced picture of residential mobility I will estimate and interpret several discrete-time event history models of individual behavior.

Statistical models

In this study I will employ on discrete-time event history models in my analysis, using two different methodological strategies to test the hypotheses that were presented above. First I will test whether native flight is an important mechanism driving residential mobility in Stockholm (hypothesis 1). Here I estimate a random-effects logit model.¹¹ In this model, the outcome of interest is whether an individual moves out of their current neighborhood and I do not consider to which neighborhood an individual moves. The logistic random effects model is specified as:

$$Y_{it+1} = \alpha_i + x'_{it} \beta + \varepsilon_{it}$$

¹⁰ See the appendix for an illustration of Swedes' isolation index.

¹¹ I will not be testing thresholds in these models and I assume that the effects of the regressors are linear.

where x'_{it} represent the explanatory variables for individual i at time t , α_i are random individual-specific effects and ε_{it} the error term (Cameron & Trivedi, 2009). One assumption in the random effects model is that all the omitted variables in the model are uncorrelated with the explanatory variables, thus the α_i are here assumed to be purely random (Allison, 2009b). This is however often not the case and the omitted variables are likely to produce some bias in the estimates of β . For example when testing factors involved in mechanisms of white-flight, omitted variables regarding the supply-side of the housing market are probably to some extent correlated with average household income in the neighborhood.

Omitted variable bias can to a certain degree be dealt with by using a fixed-effects model when the effects and values of the omitted variables are assumed to be time-invariant. Concerning the supply-side of the housing market the problem with omitted variable bias still remains since housing prices most likely vary over time, and they can therefore not be estimated out of the model. Thus the reason for choosing the random-effects model is that time-invariant variables are possible to estimate, and that there are usually lower standard errors than in the fixed effects model. I have also compared the random-effects model to a fixed effects model with a Hausman test. A p-value of <0.05 suggests that the random effects estimator is similar to the fixed effects estimator and this suggests that a random-effects model is preferable.

Another strategy adopted in this analysis is to estimate the probabilities of moving to or staying in a certain neighborhood using McFadden's conditional logit model. The conditional logit model is often described as being related to the multinomial logit model, since both analyze the choice of an individual among a set of J alternatives. In this study the outcome of interest is instead a specific residential location that is chosen given a certain set of available choices. This model will thus be used to test hypothesis 2-5.

In the conditional logit model if there is an explanatory variable that does not change over time, such as country of birth, it is not included since the conditional logit model is a sort of fixed effect model. In order to include time-invariant characteristics one has to

construct interactions with alternative specific characteristics (such as individual income* average income in neighborhood).

Since both individual characteristics and characteristics of potential neighborhoods are most likely important predictors of residential mobility, I estimate a conditional logit model with interactions. The type of model that I will estimate can be expressed as:

$$P_{it+1}(j) = \frac{\exp(U_{ijt} + \ln(S_{jt}))}{\sum_{k=1}^K \exp(U_{ikt} + \ln(S_{kt}))}$$

$P_{it+1}(j)$ is the probability of individual i residing in neighborhood j at time $t+1$, and K is the number of neighborhoods i can choose from. S_{jt} is the size of the neighborhood j at time t . U_{ijt} is the latent utility or attractiveness of neighborhood j to individual i at time t . U_{ijt} depends on characteristics of the neighborhood, the individual's own characteristics, the size of the neighborhood and an error term with unobserved attributes of neighborhoods and individuals (Bruch & Mare, 2012).¹²

When applying discrete choice models, one complication arises, being the independence from irrelevant alternatives assumption (IIA). Essentially IIA assumes that probability of “preferring an alternative in a pairwise comparison is unaffected by the other available alternatives” (Bruch & Mare, 2012, p.19). Within the migration literature, in general the IIA condition cannot be met. Neighborhoods often share similar characteristics and if one neighborhood is omitted individuals would most likely disproportionately choose a similar neighborhood rather than distributing themselves evenly across neighborhoods (Bruch & Mare, 2012).

Certain studies have estimated several models, comparing their results to the conditional logit. They find that they are qualitatively very similar and the magnitudes of the coefficients are on the whole very close (Christiadi & Cushing, 2007, Dahlberg & Eklöf,

¹² See the appendix for more on the formalized model of U_{ijt} .

2003). Therefore I have chosen to carry the IIA assumption with the conditional logit model partly due to the scope of this study.

When using the conditional logit model one does engage with unmeasured heterogeneity to a certain extent. The unobservable effect of individual characteristics that does not vary over time (usually referred to as α_i in linear models) is assumed to be correlated with the explanatory variables and is in this case conditioned out of the estimation process (Allison, 2009a). Nevertheless, unmeasured heterogeneity is not taken into account when considering unobservable characteristics that may vary across individuals. For instance neighborhoods that are identical in measured attributes may vary in terms of their desirability among individuals (Bruch & Mare, 2012). Neighborhood characteristics vary in the availability of restaurants, parks or other amenities that are more or less desirable to different people. This is difficult to capture with these types of models, other more complex models are needed to take these aspects into account.

Sampling in the conditional logit model

In residential mobility studies when analyzing smaller residential areas such as neighborhoods or census tracts, the large number of potential destinations can become somewhat problematic. Especially, if the dataset encompasses many individuals or neighborhoods such as the case with the Swedish register data. To overcome this issue, I have first of all excluded smaller SAMS-areas with less than 100 residents. Secondly, for each individual I have drawn a sample of potential alternative destinations. This sample consists of the neighborhood the individual resided in at time t-1, the neighborhood the individual resided in at t (if different from the one at t-1), and five randomly selected additional neighborhoods. Previous studies have shown that using such a random sample leads to consistent estimates (McFadden, 1978, Ben-Akiva & Lerman, 1985). Using a subsample of alternatives requires a slightly modified version of the model shown earlier with a $\ln(q_{ij})$ term is included:

$$P_{it+1}(j) = \frac{\exp(U_{ijt} + \ln(S_{jt}) - \ln(q_{ijt}))}{\sum_{k=1}^J \exp(U_{ikt} + \ln(S_{kt}) - \ln(q_{ikt}))}$$

Here q_{ijt} denotes the probability of sampling the j th destination for the i th individual and the sampling is based on the following (Bruch & Mare, 2012):

- If the destination is chosen, $q_{ij} = 1.0$
- If the destination is not chosen, $q_{ij} < 1.0$

In reality there are no absolute guidelines for choosing a value of q_{ij} . This depends entirely on the size of the dataset, but “it is more fruitful to analyze a sample of many observations with a small number of sampled alternatives rather than fewer observations with a large number of alternatives” (Bruch & Mare, 2012, p.31). In this study I have not sampled individuals but have randomly sampled five alternative neighborhoods other than where the individual is residing for each person-year.¹³ This leads to a q_{ij} value of approximately 0.0063.

Results

In this section I will present the results from the various discrete-time models. The results from the models testing “native flight” behavior (hypothesis 1) are presented in table 3. Results from models testing “avoidance-like” behavior are shown in table 4 (hypothesis 2). In table 3 and 4 only individuals with a Swedish background are included in the analyses, while the entire population is included in table 5. The models in table 5 test processes of ethnic and socio-demographic sorting and mechanisms of homophily (hypotheses 3, 4 and 5).

Native flight

Table 3 examines whether processes of “native-flight” are prevalent and important in Stockholm. Results from two random-effects logistic regression models are presented and they all examine the mobility behavior of individuals with a Swedish background.¹⁴

¹³ When a person has changed neighborhood between t and $t+1$ then the previous neighborhood at t is included in the alternative destinations.

¹⁴ Non-linear effects for the percentage with a migrant background in a neighborhood and age² are not presented in these models.

Table 3 Random effects logistic regression models of moving among “Swedes”, coefficients displayed in logits and odds ratios.

Variables	Model 1 <i>Native flight</i>		Model 2 <i>Native flight</i> <i>Full model</i>	
	OR	Logit	OR	Logit
Percentage of “non-European” migrant background	1.022**	0.022**	1.014**	0.0135**
Percentage of “European or Western” migrant background	1.007**	0.007**	0.994**	-0.006**
Household income			2.885**	1.059**
Average household income in neighborhood			1.883**	0.633**
Household income*average household income in neighborhood			0.858**	-0.153**
Individual upper secondary education			1.231**	0.208**
Individual university education			1.412**	0.345**
Age			0.946**	-0.051**
Percentage of residents on social welfare in neighborhood			0.998**	-0.002**

**Significant at $p < 0.001$, *Significant at $p < 0.05$

Source: Swedish register data, author’s own calculations.

Model 1 includes only covariates measuring the average percentage of people with European and non-European migrant background living in the individual’s neighborhood.¹⁵ Model 1 shows that an increase in both European and non-European migrants in a neighborhood increases the likelihood of Swedes moving out of the neighborhood. A one percentage unit increase in non-European migrants increases the

¹⁵ See the appendix for more information on the coding of these categories.

odds of moving out with 2.2%, and a corresponding increase in European migrants leads to a 0.7% increase in the odds.

In model 2, the “full model” includes both migrant background variables, socioeconomic and demographic factors. A one unit increase in log household income, which actually means a doubling of one’s income, increases the odds of moving by almost 290%. The average income in one’s own neighborhood has also a positive effect on out-migration. A doubling of the average neighborhood income increases the odds by 188%. These results are somewhat expected, given that individuals with higher income are more mobile and they mostly live in high-income neighborhoods. Yet at the same time an increase in the average income in a neighborhood also signals a rise in status and attractiveness of the neighborhood, which should compel people from leaving. This somewhat counterintuitive result may instead be reflecting other factors regarding the supply-side of the housing market such as available rental housing.

The interaction between household income and average household income in one’s neighborhood further indicates that if an individual lives in a low income area, the individual's own income matters more for the individual's propensity to leave the area than if he/she lives in a high-income area. A possible explanation for this is that those with higher income have more opportunities to move out of areas that are less attractive, and therefore own income makes more of a difference if the individual lives in a less attractive area.

Educational attainment also seems to be important for out-migration. Individuals with an upper-secondary or university degree are more likely to move compared to those with a primary education. The odds of moving increases with 23% for those with an upper-secondary degree relative to those with a primary education, and increases by 41% for those with a university degree. An increase in age with one year decreases the odds of moving by about 5%. These results seem to be in line with previous literature that

suggests that younger people and households with higher education and income are more mobile (Clark & Huang, 2003).

Furthermore the coefficients for both European and non-European migrants in a neighborhood decrease in the full-model, and effect of European-migrants even becomes slightly negative. Nevertheless, the effects are very small which suggests that the percentage of people with a migrant background in a neighborhood has very little importance for Swedes' out-migration. The percentage of residents with social welfare benefits in a neighborhood also seems to have little effect on moving, and the coefficient also becomes slightly negative in the full model.

It can be difficult to get a sense for how large the effects are in the models discussed above when they are measured in different metrics. For example, comparing a unit increase in log odds of income with a percentage unit increase of non-European migrants in a neighborhood is a bit like comparing apples and oranges. One approach that makes interpretation easier is to standardize the explanatory variables. This is done by multiplying the coefficients with their respective standard deviations in order to examine the impact of standard deviation changes in each variable. Although this is a rough indicator, I have used this strategy because it gives us an indication of each variable's relative importance.¹⁶

There seems to be evidence for some “flight-like” behavior among Swedes, but the coefficients are rather small. A one standard deviation increase in the percentage of non-European migrants on average leads to a 7.6% increase in the odds of moving among Swedes, and a one standard deviation increase in the percentage of European migrants leads to a 2% decrease in the odds of moving. Age seems to be further important in

¹⁶ This is a rough indicator since in logistic regression models the x-variables are not a linear specification of y, and thus a one standard deviation increase can differ depending on where one is on the logistic curve. Furthermore, unlike OLS regression the variance of Y is not fixed and it will change as more variables are added to the model (Williams, 2015).

explaining Swedes out-migration; a one standard deviation increase in age decreases the odds of moving by 52%.

In order to get a sense of the relative importance of economic resources for residential mobility one needs consider the overall effects of individual household income, average household income in the neighborhood and the interaction between household income and average neighborhood income. To do this I first calculate the overall effect of an increase in the individual household income of one standard deviation if the individual lives within an average income neighborhood. Secondly, I calculate the overall effect of a standard deviation increase in neighborhood income for an individual with an average household income. Then I compare the two coefficients with each other.¹⁷

The increase in one standard deviation in individual household income increases the odds of moving by 88.7%, and the corresponding change in neighborhood income is 16.3%. This suggests that individual household income is of greater importance for Swedes moving out of a neighborhood than the average neighborhood income. The counterintuitive result that was mentioned earlier, an increase in the average neighborhood income increases the likelihood of out-migration, should further be interpreted in light of this.

A partial explanation for the small effects from the percentage of those with a migrant background for Swedes' out-migration is that there are fewer of both European and non-European migrants living in high-income neighborhoods. For example in neighborhoods within the highest income decile on average there are 1.7% non-European migrants and 6.7% European migrants living in these areas. This should be compared with the average for all neighborhoods, 4.1% for non-European migrants and 9.4% European migrants.

¹⁷ The overall effect of a change in individual income is calculated by: $A = (\text{the predicted logit for an individual living in an average income neighborhood if their income would increase with one SD, all else equal}) - (\text{the predicted logit for an individual living in an average income neighborhood, all else equal})$.

The overall effect of a change in neighborhood income is calculated by: $B = (\text{the predicted logit for an individual living in an average income neighborhood if their neighborhood income would increase with one SD, all else equal}) - (\text{the predicted logit for an individual living in an average income neighborhood, all else equal})$. Then one compares the size of the effects of A and B. For the complete calculation see the Appendix.

Swedes that have more economic resources most likely live in high-income neighborhoods and move more often. If there then are few with a migrant background living in these neighborhoods, the effect of migrants on Swedes mobility should evidently be small. In addition to this, Swedes who live in neighborhoods with a concentration of immigrants may have less economic resources which may also influence this.

Overall, the results indicate that life course factors and economic constraints, especially income and age seem to be the driving mechanisms regarding out-migration of Swedes.

Native avoidance

In the following models I analyze which factors influence Swedes in-migration into neighborhoods, and will examine whether “avoidance-like behavior” is influencing Swedes mobility. These models differ from the previous models testing for “native-flight” in which the outcome was whether people decide to move or not move. In table 4 the outcome also includes where people are moving and how the properties of the neighborhoods influence the choice.

Table 4 Conditional logit models of neighborhood choice among “Swedes”, coefficients displayed in logits and odds ratios.

Variables	Model 1 <i>Native avoidance</i>		Model 2 <i>Native avoidance</i> <i>Full model</i>	
	OR	Logit	OR	Logit
Percentage of “non-European” migrant background	1.003**	0.004**	0.996**	-0.003**
Percentage of “European or Western” migrant background	0.995**	-0.003**	0.985**	-0.016**
Average household income in neighborhood			0.112**	-2.191**
Household income*average household income in neighborhood			1.251**	0.223**
Percentage of residents on social welfare in neighborhood			1.012**	0.023**
Dummy variable measuring inertia	6.246**	1.832**	6.534**	1.877**
Goodness of fit – Pseudo R ²	0.6049		0.6170	

**Significant at $p < 0.001$, *Significant at $p < 0.05$

Source: Swedish register data, author’s own calculations.

Model 1 includes only the average percentage of people with a European and non-European migrant background living in a neighborhood. This simple model shows that a one percentage-unit increase of non-European migrants in a neighborhood increases the odds of moving into that neighborhood for Swedes by 0.3%. However, an increase in the percentage of European migrants seems to lead to a slight decrease in the odds of choosing that neighborhood among Swedes.

Additionally, a dummy variable that captures “inertia” in mobility behavior is included in all of the conditional logit models. As mentioned earlier, this variable is included because a range of unmeasured factors makes individuals more likely to remain in the same neighborhood than to move. The odds ratio for this variable is 6.246, with a high z-value of 559. This suggests that there is a considerable amount of inertia, which makes sense.

Model 2, the full model, shows that the higher the average income in a neighborhood the less likely one is to move to that neighborhood. But neighborhood income may reflect other factors related to the supply-side of the housing market, such as housing prices and presence of rental housing dwellings. An interaction between average income of the neighborhood and individual household income not surprisingly indicates that individuals who have a high income are more likely to move to high-income areas. The effect of household income on moving increases by 25.1% when the average income of the neighborhood doubles. The percentage of residents with social welfare benefits in a neighborhood seems to have a small positive effect on neighborhood choice. It seems unlikely that the percentage of residents with social welfare benefits would be an attractor per se, but the variable probably also is a proxy may for factors related to inexpensive rental housing that are not included in the models.

Although Model 2 demonstrates that there is some avoidance-like behavior among Swedes; the coefficients are small and there is no support for the assumption that the avoidance of moving to neighborhoods with non-European migrants is stronger than to neighborhoods with many European migrants (hypothesis 2). In the full model the effect is even slightly lower for the percentage with a European migrant background than for the non-European background.

When comparing the standardized effects of the percentage of European and non-European with the socioeconomic variables, I find similar patterns to those in the models testing for “native flight” in table 3 where the effects were rather small. One standard deviation increase in the percentage of non-European migrants decreases the odds of moving into a neighborhood by 2.8% and a one standard deviation increase the percentage of European migrants decreases the odds by 7.4%. Yet, a standard deviation increase in the interaction between household income and average household income in the neighborhood increases the odds of choosing a neighborhood by 388%. One standard deviation increase in average household income in the neighborhood leads to an increase in the odds of choosing a neighborhood by 49.3%, and a 7.4% increase in the odds for a

one standard deviation increase in percentage of residents on social welfare in the neighborhood. These results further indicate the importance of socioeconomic factors driving Swedes' residential mobility.

Neighborhood choice

In this section I analyze social network aspects of moving and the role mechanisms of homophily regarding ethnicity and socio-demographic characteristics (hypotheses 3, 4, 5 and 6). These hypotheses also relate to effects of socioeconomic resources and life-course changes. More detailed categories of migrant background are included in table 5 than in the previous analysis presented in table 3 and 4.

The percentage of specific migrant groups in neighborhoods and interactions with individuals' migrant background are included in the full model 3 in order to examine whether certain groups are more prone to move to neighborhoods with a concentration of their own group.¹⁸ However, the coefficients for every migrant group are not included in table 5 but the extended output can be found in the Appendix. The coefficients displayed in log odds for each specific migrant group are also illustrated in figure 2 on page 37.

¹⁸ Swedes are the reference category in model 3.

Table 5 Conditional logit models of neighborhood choice, coefficients displayed in logits and odds ratios.

Variables	Model 1 <i>Socioeconomic factors</i>		Model 2 <i>Demographic factors</i>		Model 3 <i>Full model</i>	
	OR	Logit	OR	Logit	OR	Logit
Average household income in neighborhood	0.130**	-2.036*			0.282*	-1.266**
Household income*average household income in neighborhood	1.240**	0.215*			1.203*	0.185**
Percentage of residents on social welfare in neighborhood	1.025**	0.025*			1.028*	0.028**
Percentage of residents with children 0-6 years in neighborhood			0.991*	-0.008*	0.989*	-0.011**
Percentage of residents with children 0-6 years in neighborhood*if individual has children 0-6 years			1.009*	0.009*	1.007*	0.007**
Family member in neighborhood			1.141*	0.132*	1.129*	0.121**
Family member in neighborhood*individual foreign background			0.860*	-0.150*	0.926*	-0.077**

**Significant at $p < 0.001$, *Significant at $p < 0.05$

Source: Swedish register data, author's own calculations.

As expected, model 1 which includes the same variables as model 2 in the previous table 4, convey similar results. The difference between the results are due to the latter model only being estimated for individuals with a Swedish background, while the entire adult population in Stockholm is included in table 5.

Model 2 estimates the effects of certain family-related variables on neighborhood choice. The percentage of families with small children in a neighborhood appears not to be of importance for neighborhood choice. A percentage unit increase in families with small

children increases the odds of moving there with only 0.08%¹⁹ for those with small children relative to those who do not have children. I thus do not find support for hypothesis 4. The percentage of families with small children in a neighborhood also has a small deterring effect on people without children. These results are to a certain extent contrary to what Hedman et al. (2011) found in their study in Uppsala, where they show that households with at least one child are more likely to move to neighborhoods with a large percentage of households with children.

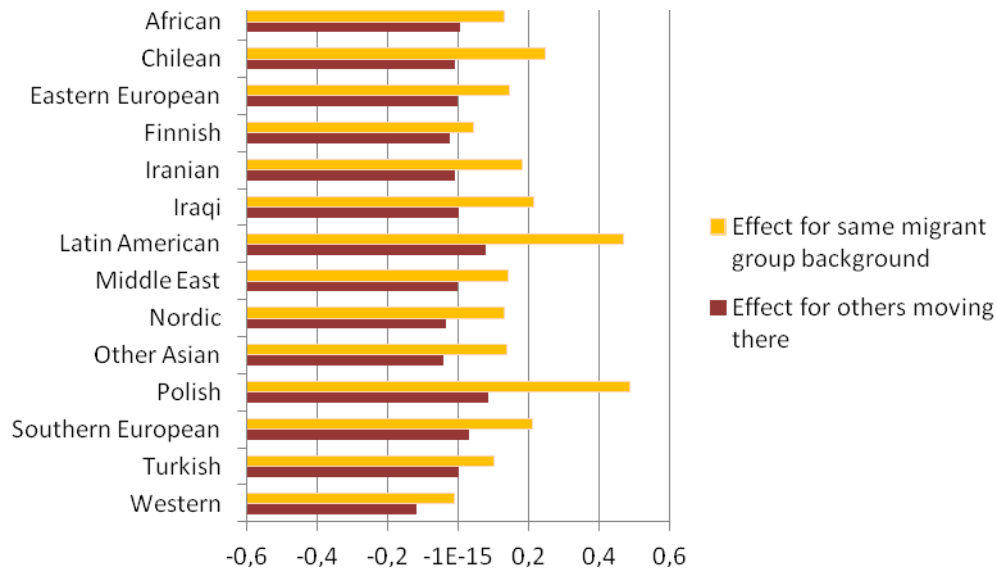
If an individual has at least one family member living in a neighborhood the odds of moving to that neighborhood increases by 14%. This shows that family ties are of importance in choosing where to move. The full model, model 3, reveals that the effect of having a family member residing in the neighborhood is positive also for those with a foreign background, although the effect is rather small. The negative effect of foreign background found in model 2 most likely is captured by other factors such as ethnic clustering.

As mentioned earlier model 3, in table 5 further examines whether the homophily effects differ for individuals from different migrant backgrounds. A recurrent theme in the residential segregation literature has been the importance of ethnic/racial homophily. It is therefore expected that individuals choose to move into neighborhoods with a high percentage with the same migrant-background as themselves. For instance consider people with a Finnish background; it is likely that the effect of the percentage of people in a neighborhood with a Finnish background is different for a person with a Finnish background than for someone with a Swedish background.

I will not discuss these effects for every migrant-group, but overall there seems to be systematic homophily effects, even when controlling for socioeconomic and demographic variables. This is illustrated in figure 2 below.

¹⁹ The odds ratios for the interaction terms that includes a dummy variable*continuous variable, which is displayed in table 5, actually tell us how much the regressor for families with small children differ from the reference category – families with no children. It does not actually show the effect of having small children. The effect is calculated by the logit for the percentage with small children in the neighborhood $\exp: (-0.00823 + 0.00905) \approx 1.0008$.

Figure 2 Coefficients of migrant group background and interaction effects from model 3 expressed as log odds



Source: Swedish register data, author's own calculations.

In figure 2 the effects of other migrant group background categories moving into a neighborhood (red bars) are contextual factors or neighborhood characteristic variables. These coefficients display slightly negative effects or coefficients near zero (i.e. red bars where log odds < 0).²⁰ This suggests that an increase in the percentage of such a migrant group in a neighborhood reduces the likelihood of, or has no effect on, others moving to a neighborhood.

Nevertheless, these general contextual effects need to be interpreted in relation to the corresponding interaction effect that includes both neighborhood and individual characteristics. This is illustrated by the yellow bars in figure 2 that show propensities to move into neighborhoods with a high share of their own migrant group. Once again using the Finnish example we can see that the percentage of people with a Finnish background in a neighborhood has a negative effect on the propensities of others moving into the neighborhood (red bar < 0). But the effect of same migrant group background (yellow bar)

²⁰ See the appendix, table 3, model 3 for a detailed table of the coefficients.

is positive which suggests that for individuals with a Finnish background, the proportion of Finnish in a neighborhood is an attractor.²¹

Interestingly, figure 2 also displays that the homophily effects are largest for those with a Polish, Latin American, Southern European, Chilean and Iraqi background (yellow bars). This is in contrast to the descriptive measures in the previous section which showed that Turkish, Middle Eastern and African groups are among the most segregated in Stockholm. Why this is the case is difficult to determine. If Polish, Latin American, Southern European and Chilean have stronger preferences for living in areas with a high concentration of their own migrant group, there must be other processes leading to that these groups are less segregated, or other factors that are not taken into account in the model above. The majority group, in this case Swedes, mobility behavior may influence why certain groups appear to be more segregated on an aggregate level. How mobile different groups are may also affect processes of moving away from areas of high concentration of their own migrant group. For instance, those of African and Turkish background moved less than other groups during this time period. When these individuals migrated to Sweden may also matter, and many may have moved more frequently when they first arrived in Sweden.

Moreover, income still seems to be a key dimension in neighborhood choice. The income-related coefficients are slightly smaller in the full model but still show that people are less likely to move into rich neighborhoods, all else equal. The interaction between individual's own income and the average income of the neighborhood also still indicates that individuals who have a high income are more likely to move to high-income areas. Furthermore, income seems to be of considerable relative importance in these models. The standardized effects show that a one standard deviation increase in the interaction effect increases the odds of moving into a neighborhood by 308%, and a standard deviation increase in average income in the neighborhood decreases the odds by 32.5%. The standardized value for the percentage of people with a Finnish background

²¹ This is calculated by seeing whether the sum of the coefficients (log odds) for the interaction term and

leads for instance to 20.9% increase in the odds, and for percentage of residents on social welfare is 9.4%.

Overall these results suggest that individuals are likely to move to neighborhoods with a neighborhood composition similar to their own characteristics. Both income and migrant background/ethnicity are important factors in influencing this process.

Concluding discussion

Residential mobility is a crucial dimension for understanding neighborhood change and residential segregation. As mentioned earlier, residential segregation has important implications for many aspects of migrant integration such as opportunities on the labor market and in shaping social identity and xenophobic attitudes. Questions regarding residential segregation and school segregation are currently being widely discussed in the mass media and the research community in Sweden. In light of this, it is important to gain more knowledge on the drivers of residential mobility, and it is in that area this paper has made a contribution.

The aim of this study was to provide a more in-depth understanding of the constraints and choices involved in residential mobility in Stockholm. In part by using models that take neighborhood characteristics into account, and by using very rich data that is rather unique in an international perspective. A key finding is that neighborhood sorting based on both socioeconomic and migrant background is prevalent in Stockholm (supporting hypothesis 3 and 7). This suggests that social networks/mechanisms of homophily are of importance in influencing residential segregation, and that these theories resonate in a Swedish context. These results are also in line with findings from the few previous studies that have been conducted in Sweden (Hedman et. al, 2011). An unexpected finding was that neighborhood sorting was relatively high among people with a Polish and Latin American background. This is should be analyzed further.

migrant group background is larger than zero: $(0.066 + (-0.021))$.

Another key finding was that socioeconomic characteristics such as income and educational attainment appear to be significant drivers of residential mobility among Swedes and immigrants. When looking more closely at the different explanatory variables, the relative importance of socioeconomic factors seem to weigh more heavily than the percentage of people with a migrant background in neighborhoods. This offers support for theories that emphasize the importance of life-course determinants for residential mobility, but also economic opportunities and constraints that are central to many of the theories presented.

An interesting finding is that the results in this thesis offer limited support for mechanisms of native-flight and avoidance (hypothesis 1 and 2). Preferences or constraints based on income seem to be of greater importance than flight- or avoidance-like behavior (hypothesis 3). Since economic resources seems to be significant for mobility, and those with a foreign background tend to have lower income and be less mobile this suggests that ethnic segregation is tightly coupled with socioeconomic segregation in Stockholm.

It is difficult to establish the central causal mechanisms in residential mobility and it needs to be investigated further. An important extension of the present analysis would be to also include information on the housing stock in different neighborhoods and their prices. Other model specifications which take account of turn-over rates in neighborhoods and threshold effects would also seem to be promising for further research. In addition, it would be of course interesting to estimate models like these that include all moves within Sweden. This would give a more detailed picture of residential mobility where people first choose among cities and then among neighborhoods in cities.

There are a wide range of questions that are left unanswered regarding residential mobility and neighborhood composition. It would be interesting to relate residential mobility to specific institutional changes that are occurring in Sweden, for instance how housing prices and tenure influence residential mobility. In Stockholm rental apartments

are becoming scarcer, and one could expect that this may influence ethnic clustering and creates a flow of groups with fewer resources out of Stockholm.

Another development to consider is that immigration to Sweden has increased significantly since 2006, and the newly arrived immigrants consist of many more refugees, primarily from Syria and Iraq, than what has been the case in the past. It would be intriguing to see whether these changes have had a substantial impact on residential segregation, and analyze mobility after 2006. Will the inflow of new groups to Sweden strengthen or weaken existing racial and ethnic identities? Will these processes strengthen or weaken residential segregation? These are important issues to address for both the research community and policy-makers, especially in light of populist trends and racial prejudices that are looming across Europe.

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Appendix

Table 1 Individuals and person-years used in the analysis

	N
Individuals	1,448,518
Person-years	18,067,807
Person-years neighborhoods	113 394 392

Coding scheme for migrant background

Within the STAR-database each individual and their parents' country of birth are not listed, but many are categorized by groups of countries or countries in a region. I have basically used the existing categories in the database but have also merged certain countries into some of the regional categories. The reason for doing this that the populations within these country categories were rather small.

The following countries/regions are used in the analysis:

Sweden

Finland

Nordic countries excluding Finland: Denmark, Iceland and Norway.

Western countries: Australia, Austria, Belgium, Canada, France, Germany, Ireland, Lichtenstein, New Zealand, Switzerland, the Netherlands, UK, United States.

Eastern Europe: Albania, Bulgaria, Czech Republic, Estonia, former Soviet Union, former Yugoslavia excluding Bosnia-Hercegovina, Hungary, Latvia, Lithuania, Slovakia, Romania.

Poland

Southern Europe: Gibraltar, Greece, Italy, Malta, Portugal, San Marino, Spain, the Vatican.

Latin America: Central America, South America excluding Chile.

Chile

Middle East: Bahrain, Jordan, Kuwait, Lebanon, Palestine, Qatar, Saudi Arabia,

Syria, United Arab Emirates, Yemen.

Turkey

Iran

Iraq

Africa: Algeria, Djibouti, Egypt, Eritrea, Ethiopia, Libya, Marocco, Somalia, Sudan, Tunisia and "Other African countries".

Other Asian countries: China, East Timor, Hong Kong, Indonesia, Israel, Japan, Korea, Laos, Malaysia, Myanmar, the Philippines, Taiwan, Thailand, Singapore, Vietnam "South East Asia", "Other Asian countries" and "Other Oceanic countries".

If an individual is born in Sweden with at least one parent born in Sweden, then that person is coded as Swedish. If a person is born abroad with two parents born in Sweden then she is coded as Swedish.

If an individual is born in Sweden with two parents born abroad in the same country/region then she is coded as the same country/region as the parents.

If an individual is born abroad and at least one parent born in the same country/region then she is coded as the same country/region as parent and country of birth. If an individual is born abroad and both parents are born in another country/region then she is coded as the same country/region as both parents.

If an individual is born abroad with parents born in different countries abroad, then she is coded as either the country/region as where she was born if at least one of the parents are from the same country/region, or as the mother's country/region of birth if the parents' background differ from each other and their child.

If an individual is adopted she is coded as Swedish if both parents are Swedish. If parents are born abroad I have followed the same logic as presented above.

The categories, European and non-European migrant background that are first displayed in the statistical models for native flight and avoidance are coded as the following:

"European migrant background": Those with a migrant background from Finland, Eastern and Southern Europe, Nordic, Polish and Western countries.

"Non-European migrant background": Those with a migrant background from Latin America, Chile, the Middle East, Turkey, Iran, Iraq, Africa and Other Asian countries.

Table 2 Proportion of individuals in the greater Stockholm area by country/region of origin

Country/Region of origin	Frequency	Percent
Sweden	1,196,284	82.59
Finland	83,645	5.77
Nordic countries excl. Finland	10,531	0.73
West	19,815	1.37
Eastern Europe	25,739	1.78
Poland	11,593	0.80
Southern Europe	10,317	0.71
Latin America	5,568	0.38
Chile	12,391	0.86
Middle East	10,961	0.76
Turkey	19,692	1.36
Iran	14,075	0.97
Iraq	3,983	0.27
Other Asian countries	10,337	0.71
Africa	13,587	0.94
Total	1,448,518	100

Formulas used in descriptive measures of segregation

The index of dissimilarity can be expressed as:

$$D = \frac{\sum_{i=1}^n [t_i(p_i - P)]}{2TP(1 - P)}$$

Where t_i refers to the total population of area i and T is the total population of the whole metropolitan region. P_i refers to the proportion of area i 's population that is the minority,

and P refers to the proportion of the larger metropolitan area i 's population that is the minority.

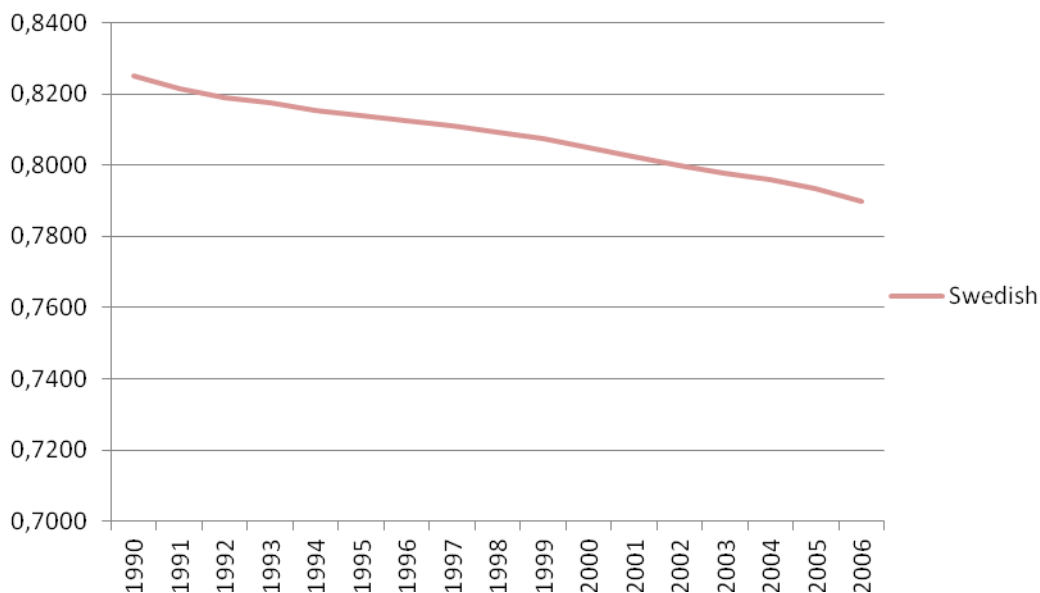
The isolation index can be expressed as:

$$xP * x = \sum_{i=1}^n \left[\left(\frac{x_i}{X} \right) \left(\frac{x_i}{t_i} \right) \right]$$

Where x_i refers to the minority population in area i , X is the sum of all x_i (the total minority population) and n refers to the total number of areas in the greater metropolitan region. Additionally, t_i refers to the total population in area i .

The following figure illustrates Swedes' index of isolation that was mentioned on page 22.

Figure 1.2 Isolation index of Swedes' exposure to members of their own group



Formulas and calculations used in the statistical models

The U_{ijt} function that was referred to on page 24 as the latent utility or attractiveness in a neighborhood can be expressed as:

$$U_{ij(t+1)} = \beta Z_{jt} + \alpha Z_{jt} X_{it} + \ln(S_{jt}) + \varepsilon_{ijt}$$

Here, Z_{it} represent neighbourhood characteristics and X_{it} as individual characteristics. S_{it} is the size of the neighborhood j (number of inhabitants) at time t , while ε_{iit} represents the error term and thus the unobserved attributes of neighborhoods and individuals to utility (Bruch & Mare, 2012). β and α represent parameters that are estimated.

Table 3 Conditional logit models of neighborhood choice, coefficients displayed in logits and odds ratios.

Variables	Model 1 <i>Socioeconomic factors</i>		Model 2 <i>Demographic factors</i>		Model 3 <i>Full model</i>	
	OR	Logit	OR	Logit	OR	Logit
Average household income in neighborhood	0.130* *	- 2.036* *			0.282**	-1.266**
Household income*average household income in neighborhood	1.240* *	0.215* *			1.203**	0.185**
Percentage of inhabitants on social welfare in neighborhood	1.025* *	0.025* *			1.028**	0.028**
Percentage of inhabitants with children 0-6 years in neighborhood			0.991* *	- 0.008* *	0.989**	-0.011**
Percentage of inhabitants with children 0-6 years in neighborhood* if individual has children 0-6 years			1.009* *	0.009* *	1.007**	0.007**
Family member in neighborhood			1.141* *	0.132* *	1.129**	0.121**
Family member in neighborhood*			0.860* *	- 0.150* *	0.926**	-0.077**

individual foreign background						
Percentage African background in neighborhood					1.007**	0.007**
Percentage African background in neighborhood* individual African background					1.133**	0.125**
Percentage Chilean background in neighborhood					0.991**	-0.009**
Percentage Chilean background in neighborhood* individual Chilean background					1.291**	0.256**
Percentage Eastern European background in neighborhood					1.000	0.000
Percentage Eastern European background in neighborhood* individual Eastern European background					1.158**	0.146**
Percentage Finnish background in neighborhood					0.979**	-0.021**
Percentage Finnish					1.068**	0.066**

background in neighborhood* individual Finnish background						
Percentage Iranian background in neighborhood					0.991**	-0.009**
Percentage Iranian background in neighborhood* individual Iranian background					1.213**	0.193**
Percentage Iraqi background in neighborhood					1.001	0.002
Percentage Iraqi background in neighborhood* individual Iraqi background					1.240**	0.215**
Percentage Latin American background in neighborhood					1.084*	0.081**
Percentage Latin American background in neighborhood* individual Latin American background					1.475**	0.388**
Percentage Middle Eastern background in neighborhood					1.001*	0.001**

Percentage Middle Eastern background in neighborhood* individual Middle Eastern background					1.153**	0.142**
Percentage Nordic background in neighborhood					0.967**	-0.033**
Percentage Nordic background in neighborhood* individual Nordic background					1.180**	0.166**
Percentage other Asian background in neighborhood					0.958**	-0.042**
Percentage other Asian background in neighborhood* individual other Asian background					1.198**	0.181**
Percentage Polish background in neighborhood					1.092**	0.088**
Percentage Polish background in neighborhood* individual Polish background					1.495**	0.402**
Percentage Southern European background in neighborhood					1.032**	0.031**

Percentage Southern European background in neighborhood* individual Southern European background					1.200**	0.182**
Percentage Turkish background in neighborhood					1.004**	0.004**
Percentage Turkish background in neighborhood* individual Turkish background					1.103**	0.098**
Percentage Western background in neighborhood					0.988**	-0.116**
Percentage Western background in neighborhood* individual Western background					1.103**	0.098**
Dummy variable reflecting immobility					6.646**	1.894**
Goodness of fit – Pseudo R ²					0.6362	

Complete calculation regarding the relative importance of income variables

In order to compare the overall effects of a standard deviation increase in individual income with a standard deviation increase in neighborhood income (see page 29) the following has been calculated:

Effect of a change in household income:

A. Predicted logit for an individual living in an average income neighborhood:

$(1.059*7.589) + (.633*7.625) - (.153*57.962) + X$ (where X refers to all other variables in the model).

B. Predicted logit for an individual living in an average income neighborhood if the individual's income should increase with one SD, all else equal:

$(1.059*7.589) + (1.059*.701) + (.633*7.625) + (-.153*57.962) + (-.153*.701) + X$

The overall effect of a SD change = B-A

$(1.059*.701) - (.153*.701) = 0.635106$

Effect of a change in neighborhood income:

C. Predicted logit for an individual living in an average income neighborhood:

$(1.059*7.589) + (.633*7.625) - (.153*57.962) + X$ (where X refers to all other variables in the model).

D. Predicted logit for an individual living in an average income neighborhood if the neighborhood income should increase with one SD, all else equal:

$(1.059*7.589) + (.633*7.625) + (.633*.314) + (-.153*57.962) + (-.153*.314) + X$

The overall effect of a SD change = D-C

$(.633*.314) - (.153*.314) = 0.15072$

$\text{Exp}(0.635106) = 1.877$

$\text{Exp}(0.15072) = 1.163$

The effect of a SD change in household income is thus significantly larger than the effect of an SD change in neighborhood income.