GEOGRAFISKA ANNALER SERIES B HUMAN GEOGRAPHY

Geografiska Annaler: Series B, Human Geography

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rgab20

Out-mobility from Stockholm's immigrant-dense neighbourhoods – a study of two cohorts

Andreas Alm Fjellborg

To cite this article: Andreas Alm Fjellborg (2021) Out-mobility from Stockholm's immigrant-dense neighbourhoods – a study of two cohorts, Geografiska Annaler: Series B, Human Geography, 103:1, 1-20, DOI: 10.1080/04353684.2020.1868325

To link to this article: https://doi.org/10.1080/04353684.2020.1868325

© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

Published online: 19 Jan 2021.

Submit your article to this journal

Article views: 290

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=rgab20

GEOGRAFISKA ANNALER: SERIES B, HUMAN GEOGRAPHY
2021, VOL. 103, NO. 1, 1–20
https://doi.org/10.1080/04353684.2020.1868325

ORIGINAL ARTICLE

OPEN ACCESS Check for updates

Out-mobility from Stockholm's immigrant-dense neighbourhoods – a study of two cohorts

Andreas Alm Fjellborg[a,b]

[a]Department of Social and Economic Geography, Uppsala University, Uppsala, Sweden; [b]Institute for Housing and Urban Research, Uppsala University, Uppsala, Sweden

ABSTRACT

The central themes of this study are how housing tenure affects moving away from neighbourhoods with differing degrees of immigrant concentration in Stockholm and, comparing two cohorts, how the relationship between housing tenure, ethnic background and residential mobility develops over time. The findings reveal that the effect of housing tenure on moving varies marginally between neighbourhood types, and differences between housing tenures are reduced over time. Residential mobility is increasingly associated with higher income levels and members of the non-western, foreign-born group are less likely to move when the housing market is increasingly owner dominated. These ethnic hierarchies also apply to residential sorting. The sorting of out-movers from neighbourhoods with high concentrations of immigrants is increasingly affected by income. However, the non-western, foreign-born group is also increasingly dependent on housing assets in order to leave immigrant-dense neighbourhoods, which is not the case for other groups. The results show a shift in the necessary resources for residential mobility trajectories for those at the bottom end of the ethnic hierarchy and indicate that the place-stratification framework needs to differentiate between different types of assets and population groups to enable a better understanding of residential sorting in a changing housing market.

ARTICLE HISTORY
Received 6 March 2020
Revised 27 November 2020
Accepted 21 December 2020

KEYWORDS
Housing tenure; residential mobility; Stockholm; segregation; immigrant-dense neighbourhoods

Introduction

Housing tenure and housing stock composition are important factors for residential mobility and residential turnover across neighbourhood types. In neighbourhoods with higher shares of foreign-born residents, residential turnover is usually higher than in other neighbourhoods. Out-mobility patterns from neighbourhoods with high shares of foreign-born residents often reproduce the characteristics of these neighbourhoods (van Ham and Clark 2009). The reproduction of neighbourhoods with high shares of foreign-born residents also heavily depends on the strong rental character of these neighbourhoods together with an overrepresentation of ethnic minorities in rental housing (Andersen et al. 2015).

In this contribution, neighbourhoods that in the political discourse are regularly termed *distressed neighbourhoods* are studied. Policy interventions are often directed to these neighbourhoods with high shares of foreign-born and low-income households. The analysis relates to the literature on out-mobility and the reproduction of ethnic concentration in neighbourhoods (e.g. Andersson

CONTACT Andreas Alm Fjellborg andreas.alm.fjellborg@ibf.uu.se

© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (http://creativecommons.org/licenses/by-nc-nd/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

2013) and focuses on how residential turnover and out-mobility destinations among movers in three broad ethnic groups (Swedish background, foreign background and non-western, foreign-born) depend on income and housing tenure. It relates these patterns to the changing housing regime context by covering two cohorts.

The register data used, compiled by Statistics Sweden, allows for individual-level analysis over time. Comparing the two cohorts (1993–2000 and 2001–2008) facilitates the analysis of how the impact of housing tenure and income has changed in relation to the likelihood of moving and subsequently leaving neighbourhoods with differing degrees of immigrant concentration in Stockholm. Sweden has experienced a decrease in rental options, especially in Stockholm, as well as growing income inequality, and the development of levels of segregation (Andersson and Kährik 2015) raises questions about the role of income and housing assets for navigating the (new) Stockholm housing market in relation to the (new) reproduction of neighbourhoods with differing degrees of immigrant concentration.

The main aim is to analyse how the reproduction of ethnic segregation has changed between the cohorts in order to better understand how the process is affected by changes in the housing regime. The relation between owned housing (co-ops (apartments) and homeownership (single-family)) and the likelihood of moving is studied in the entire Greater Stockholm region (Stockholm) in order to understand how the development in neighbourhoods with differing degrees of immigrant concentration is related to the wider urban area. Thereafter, the sorting of movers living in immigrant-dense areas is analysed across the cohorts and ethnic categories. Because the data is split into two cohorts, the analysis can reveal changes within broad ethnic categories and across ethnic hierarchies. The research question is: How do housing tenure and income affect the risk of moving, and leaving, among people living in neighbourhoods with differing degrees of immigrant concentration, and how does this change over time?

Housing tenure and immigrant-dense neighbourhoods – a theoretical background

There are several possible explanations of changes in ethnic segregation levels. One could be changes in preferences regarding the ethnic composition of the neighbourhood; other explanations relate to the socioeconomic position of foreign-born and native residents. Scholars working with the spatial assimilation framework argue that residential mobility outcomes of minority groups will become more similar to those of the majority population when income levels, educational attainment, cultural assimilation and knowledge of the housing market are equal across population groups (Bolt, van Kempen, and van Ham 2008; Massey 1985). The social mobility of non-native groups leads to upward residential mobility (e.g. for the Netherlands, Van Gent, Das, and Musterd 2019). Within the place-stratification framework the questions about minorities' possibilities to convert income and other resources into housing consumption are central (Pais, South, and Crowder 2012). In a strong version, the place-stratification framework argues that discrimination makes minority residents unable to convert resources into more desirable housing, while a weak version instead suggests that resources are more important for these groups due to higher barriers to entering more desirable forms of housing and neighbourhoods. Discrimination by real estate agents, mortgage lenders and various other institutions reduces the ability of ethnic minority groups to convert high income into desirable housing. In a Swedish context, research has uncovered examples of discrimination within the rental sector as well as among real estate agents (Molina 2015). This to some extent confirms the applicability of place-stratification theory to analysing differences in housing trajectories between the ethnic majority and minority populations in Sweden. Kadarik (2020), using Swedish data, demonstrates a greater applicability of the weak version of the place-stratification framework than of spatial-assimilation theory.

The majority population does not suffer from discrimination in the way that many minority groups do (See Ahmed and Hammarstedt 2008, for results from the Swedish rental market). Hence, researchers have sought to find explanations of ethnic segregation in the mobility pattern

of the less restricted majority population. Several studies find white (or native) flight and avoidance to be important concepts for analysing natives' mobility behaviour in Sweden (Andersson 2013; Bråmå 2006) and elsewhere (for the Netherlands, Feijten and van Ham 2009; for the UK, Bailey and Livingston 2008; for Denmark, Andersen 2017). These concepts capture the process where, as the share of ethnic minorities in a neighbourhood rises, the native part of the population moves away from, or avoids moving into, these areas. Explanations of flight and avoidance by the majority population relate to a reluctance to live in areas where an ethnic minority population is clustered, and to the fact that the majority population has the resources to choose housing in other locations (Harris 2001). Feijten and van Ham (2009) argue that this is the case even if the tenure mix is achieved.

Out-mobility from Sweden's distressed neighbourhoods is high across population groups, and white flight has therefore been ruled out as a primary explanation for the upholding of ethnic residential segregation (Bråmå 2006). The concept of avoidance has instead been deemed more important. Similar findings from poor neighbourhoods in the USA are identified by Quillian (2003), who also finds that poor black households disproportionally move between poor neighbourhoods. In other national contexts as well, a large part of the moving population often re-enter deprived or poor neighbourhoods after leaving one (for the UK, Bailey and Livingston 2007; for Sweden, Bråmå and Andersson 2005), but a majority of the movers end up in other types of neighbourhoods. Income, education and labour market connection characterize the differences between stayers and movers (Bråmå and Andersson 2005), but also explain the destination choices of movers. Musterd and De Vos (2007) find that the out-mobility of the native Dutch majority population and of foreign-background households from other industrialized countries drives the spatial concentration of minority groups (Turks and Moroccans being studied) in the Amsterdam housing market. They go on to conclude that the minority groups studied often display similar aspirations as the native-born majority, but lack key socioeconomic and social resources needed to navigate the housing market. Also important are findings about the differences between first- and second-generation members of immigrant groups, the latter of which display greater integration in the labour market and higher levels of education, which influence their propensity to leave the immigrant-dense neighbourhoods. This is in line with the spatial assimilation model.

In relation to housing tenure, several studies on poor and marginalized neighbourhoods have found that owners are less likely to move than renters (for the Netherlands, Bolt and van Kempen 2003; for the UK, Kearns and Parkes 2003; for the USA, Crowder and South 2008), findings that are also applicable to a wider urban context (Hamnett 1991; Speare 1970). Explanations of the longer duration of stay relate to higher transaction costs of moving and the life-stage of the households that choose to buy rather than rent (Feijten and Mulder 2002; Nordvik and Magnusson Turner 2015). de Groot, Mulder, and Manting (2011) find that homeowners are more successful at realizing moving desires than renters are in the Dutch context (see also Boschman, Kleinhans, and van Ham 2017). In distressed neighbourhoods foreign-born housing owners are more mobile than their native counterparts (van Ham and Clark 2009), while entrance into owned housing is ethnically selective (from the Nordic countries, Kauppinen, Andersen, and Hedman 2016; Magnusson Turner and Hedman 2014). It seems not only that there may be an ethnic selectivity in owned housing, but also that those foreign-born residents who enter owned housing are part of a mobile group.

Studies on moving destinations have found that owners are more likely to end up in other types of neighbourhoods when they leave distressed neighbourhoods (Vogiazides 2018). Some ethnic differences in magnitude emerge from Vogiazides' study of Sweden, and ethnic minorities are more likely to move between distressed neighbourhoods even if they are owners. In a Dutch context, homeownership does not reduce the likelihood of moving in ethnic minority concentration areas, and homeownership has a positive influence on ethnic minorities' likelihood of moving and subsequently leaving ethnic minority concentration areas (Bolt and Van Kempen 2010). Bolt and Van Kempen's (2010) results show that entrance into owned housing influences the possibility to choose from a wider range of neighbourhood options when moving. This shows that it is

necessary to overcome hurdles to enter the owned part of the housing market in order to move away from immigrant-dense neighbourhoods. This may be indicative of the applicability of the weak version of the place-stratification framework. Owning one's home is more important for ethnic minorities' possibility to leave immigrant-dense neighbourhoods.

Swedish housing and the Stockholm context

Stockholm County has seen steady population growth; between 1990 and 2010 the population grew from 1.64 to 2.09 million. The data used in the present study shows that the proportion of the population with foreign background (born outside Sweden or in Sweden to two foreign-born parents) rose from 15.6 to 17.1% between 1991 and 2013. Additionally, the group non-western, foreign-born (in Africa, South America or Asia) residents rose from 6.5 to 16.8% of the total population between 20 and 65 years of age. Housing production has not kept pace with the population growth, and it is widely recognized that there is a housing shortage in the Stockholm region, at least in some segments of the market (Öst 2017). There are three primary tenure forms in the Swedish housing market: homeownership (50.1% of the population), tenant-owned cooperatives (*bostadsrätt;* co-ops) (15.7%) and rental housing (24.9%). The latter two are commonly found in multi-family buildings (Statistics Sweden 2017). The remainder of the population is found in various specialized housing forms, institutions, or are missing from the data. Housing has been important to the Swedish welfare model. Through housing subsidies and loan interest regulation (both abolished in the mid-1990s), as well as a regulated rental housing sector and tax deductions for mortgage costs, the Swedish state has been able to influence large parts of the housing sector. The rental sector (both public and private) is covered by a rental-negotiation scheme. The Swedish union of tenants and the rental housing companies negotiate the rent levels. As a result, there are rather small geographical variations in rent levels within a housing market, even if this has changed somewhat in recent years. Swedish housing has lost many of its earlier characteristics and has followed other parts of Europe in a market-oriented direction over the past two decades (Andersson and Magnusson Turner 2014).

After the 1991–1992 economic crisis in Sweden, the remainder of the 1990s was characterized by fiscal austerity, dismantling of subsidies to housing production and erosion of, and cuts to, the housing benefits system. Stockholm's growing economic segregation (Amcoff, Östh, and Niedomysl 2014) has been attributed to increases in income inequality (Scarpa 2016); the Gini coefficient for earned income mainly rose during 1991–2000 (+14.3%) and continued to rise during 2000–2014 (+2.3%) (Stockholm Stad 2015). The level of economic segregation has also been argued to be a product of compositional changes in the Stockholm housing stock (Andersson and Magnusson Turner 2014). Processes of gentrification of the city centre and residualization of rental-dominated housing areas in suburban Stockholm have been identified, resulting from large-scale conversions of rental housing to co-ops (Andersson and Magnusson Turner 2014; for a description of similar processes in the UK, see Murie 1997). The bulk (78%) of the 128,952 apartments converted in Stockholm were converted after 2001 (Boverket [National Board of Housing, Building and Planning] 2012). Andersson and Magnusson Turner (2014) argue that peripheral areas become poorer in relative terms when low-income earners are pushed out of gentrified central areas, but processes of low-income filtering and gentrification have been underway for a long period of time (Hedin et al. 2012, covering 1986–2001). The increased economic segregation has also affected patterns of ethnic segregation, with the segregation between non-western, foreign-born persons and Swedish-born persons within the same income bracket having declined over time (Andersson and Kährik 2015), but when measured for the total population, ethnic segregation has remained fairly stable (Nielsen and Hennerdal 2017).

The growing share of co-op owners in the Stockholm housing market is of course related to the supply of housing, which has shifted dramatically, mainly during the 2000s. Analysing the over- and underrepresentation of the foreign background population in different tenure forms, Andersen et al. (2015) find that foreign-born residents are overrepresented in rental housing in Stockholm,

while they are underrepresented in co-ops and especially in homeownership housing. When looking at income segmentation in different housing tenures, it seems, broadly speaking, that less affluent people live in rental apartments while their wealthier counterparts live in co-ops or homeownership dwellings. Some of the income differences between the tenures are related to the fact that renters are usually young people who are studying or just beginning their professional careers. However, there is a substantial and growing income gap between tenures. In 1989, rental apartments were home to roughly 35% of the people in the highest income decile in Sweden, while their share had dropped to 12% in 2007 (Holmqvist and Magnusson Turner 2013). Post-war housing production in Sweden often entailed large-scale production of rather monotonous housing areas, often with similar tenure forms. This large-scale planning, together with uneven access to the different tenures for the foreign-born and native parts of the population, is one explanation of ethnic segregation, another being the economic segmentation between the three main tenure forms (Andersen et al. 2015).

Data and research design

How do housing tenure and income affect the risk of moving in neighbourhoods with differing degrees of immigrant concentration, and do the effects vary between population groups and over time? Earlier research shows that demographic factors are a key driver behind higher rates of mobility in marginalized neighbourhoods. Still, political goals for reducing mobility focus on tenure diversification and creating more stable neighbourhoods in rental-dominated, marginalized neighbourhoods. Hence, to deepen our understanding of how tenure affects the propensity to move in different types of neighbourhoods, the first hypothesis of this paper is that (1) *the risk of moving in the three housing tenure forms does not differ between neighbourhoods with differing degrees of immigrant concentration.* While mobility frequencies are important, the sorting of movers is a key driver of segregation. The Stockholm housing market has also witnessed a marketization of the housing stock over time. In line with the weak version of place-stratification theory, the second hypothesis is that (2) *mobility destinations for movers in immigrant-dense neighbourhoods are increasingly dependent on income and housing assets, especially for non-native groups.*

The individual-level data used in the statistical models (see Table 1) is taken from the PLACE database at Uppsala University. This is a longitudinal register-based data set covering demographic, economic, educational and housing information for the Swedish population from 1990 to 2017.[1] For this research, a subset of the data covering the total population of Stockholm County from 1990 to 2009 is used.[2] To enable an analysis of how the institutional and societal context affects residential sorting of movers, two cohorts have been created from the data. The first cohort (1993–2000) covers a period characterized by rising income inequality and fiscal austerity after the economic crisis years 1991–1992, and the second cohort (2001–2008) a period of rising levels of tenure conversions and changes to the housing stock composition.

By using the coordinate information on where individuals live (on a 100 by 100 m square grid) a move that occurs between two successive years can be detected. This technique is used to define a move. Because of small errors in the coordinates between years, a move has to be longer than 200 metres to be counted as a move. The database contains information on country of birth, and this information is used to create the binary variables 'foreign background' and 'non-western, foreign-born'. The former refers to individuals born outside Sweden or born in Sweden to two foreign-born parents but does not include the individuals in the non-western, foreign-born category. The latter group are foreign-born residents from South America, Asia and Africa. This categorization captures a part of the population that is more likely to suffer from discrimination (Ahmed and Hammarstedt 2008; Carlsson 2010) and captures a group with a generally lower socioeconomic position in the Swedish society. The broad non-western, foreign-born category cannot take account of ethnic hierarchies within this group, nor can it reveal how these groups may move differently due to economic and social differences, and orientation towards co-ethnics. By analysing across the three broad

Table 1. Descriptive statistics population age 20–64, in Stockholm County (Total), High-concentration neighbourhoods (High n'hoods) and moderate-concentration neighbourhoods (Moderate n'hoods) 1991 and 1999.

	1991			1999		
	Total	High n'hoods	Moderate n'hoods	Total	High n'hoods	Moderate n'hoods
Homeownership	32.7	6.2	12.9	31.7	6.9	11.6
Co-op	18.3	14.1	16.9	21.7	13.5	17.7
Rental housing	43.6	69.5	61.7	42.4	74.9	65.1
Missing/other tenure	5.4	10.1	8.4	4.2	4.7	5.6
Intra-urban movers	13.0	17.3	15.3	13.4	14.7	14.3
Movers to similar n'hoods		6.9	7.6		6.3	7.3
Movers to other n'hoods		10.4	7.8		8.4	7.0
Foreign background	22.1	54.3	37.7	24.6	63.7	45.2
Swedish background	77.9	45.7	62.3	75.4	36.3	54.8
Non-western, foreign-born	6.5	29.5	17.1	9.7	41.2	25.3
Female	50.1	49.4	50.3	50.0	49.2	49.8
Singles	39.8	37.3	37.2	38.7	37.5	40.0
Singles with children	14.0	13.3	12.2	9.9	13.8	13.3
Couples	9.6	11.0	12.5	13.8	11.0	11.7
Couples with children	33.9	38.4	34.6	37.5	37.7	34.9
Change family status (yes)	9.3	9.9	10.3	6.9	6.0	6.7
Children 0–3 years at home (yes)	13.8	16.7	15.7	8.6	7.1	7.5
Children 4–6 years at home (yes)	9.4	11.2	10.1	8.4	7.1	7.3
Has children of school age (yes)	37.2	36.2	36.0	33.0	29.3	30.3
High education	22.5	10.9	14.2	20.0	7.5	11.0
Low education	27.0	44.3	36.6	34.6	59.1	48.4
High income (Decile 8–10)	38.4	23.3	29.7	32.8	14.0	21.0
Low income (Decile 1–3)	28.7	38.9	33.1	23.4	29.2	26.9
Increasing income	26.9	26.6	27.2	20.1	15.2	17.6
Decreasing income	24.3	24.9	24.6	19.5	16.3	18.2
Unemployed	4.0	6.7	5.3	13.9	24.9	20.4
Social benefit	6.6	16.3	12.5	4.1	10.6	8.1
Population (in thousands)	1006	105	263	1115	121	299
% of total population	100	10.4	26.2	100	10.9	26.8

Source: PLACE database, author's calculations.

ethnic categories, Swedish, foreign background, and non-western, foreign-born, effects of ethnic hierarchies can be analysed. The broad changes and differences between these large groups based on country of birth thus serve the aim of this article. (For a more detailed analysis of ethnic hierarchies and mobility in Sweden, see Kadarik 2020.)

Other key explanatory variables used in the empirical part are income and housing tenure. Income levels have been derived yearly from the disposable income data on individuals, and the population has been grouped by deciles at the regional level: deciles 1–3 into low income, deciles 4–7 into mid income and deciles 8–10 into high income. Housing tenure is derived from the information on housing units for each individual in the data set, and housing tenure information is excerpted by combining information on housing type (single-family or multi-family housing units) and the legal form of ownership. Other individual-level variables are included to control for socioeconomic background, labour market connection and household characteristics. It is not possible to differentiate in the database between people who are single and unmarried childless couples. These couples are listed as singles, but when they marry or have children their partnership shows up in the database. Education level has been divided into low (up to 9 years of compulsory school), mid (secondary school and up to two years at university or equivalent) and high (at least 3 years at university or equivalent) education.

The neighbourhood unit used to define neighbourhoods with differing degrees of immigrant concentrations is, of course, central to the analysis. The finest spatial scale possible using Swedish data is 100-by-100 m coordinate squares. It is also possible to use predefined areal units such as SAMS,[3] DeSO (Demographic statistical areas), parishes or municipalities. The modifiable areal unit problem (MAUP) shows how predefined areal units potentially affect statistical aggregates, as these become dependent on how the borders of areas are drawn (Amcoff 2012; Bergsten 2010;

Openshaw 1984; Östh 2014). Therefore, individualized neighbourhood units are used.[4] Consequently, the operationalization of neighbourhood is done at the coordinate level. Here, the threshold level for *k*-nearest neighbours has been set to 1600. The inclusion of the 1600 closest neighbours depends on several interrelated aspects. Smaller numbers of nearest neighbours will inevitably vary more than larger aggregates. Using the closest 1600 neighbours keeps the neighbourhoods rather small, and therefore captures the stratification of the built environment and micro-shifts in tenure structure, as pointed out by Haynes et al. (2007). This is the main argument for the neighbourhood operationalization. Haynes et al. show that around 500 neighbours, on average, make up the area that is considered a neighbourhood by respondents. However, the choice of 1600 neighbours for this study roughly corresponds to the size of a neighbourhood that shares the same local convenience store, as argued by Amcoff, Östh, and Niedomysl (2014). A measure of residential context using the closest 3200 neighbours is adopted as a control variable in the regression models.

Neighbourhoods whose share of non-western, foreign-born residents is more than one standard deviation above the Greater Stockholm mean are termed high-concentration neighbourhoods, and cover about 10% of the total population. Moderate-concentration areas lie above the mean share of non-western, foreign-born residents, but below the one standard deviation threshold, and cover about 26% of the population. Naturally, the share of non-western, foreign-born residents will shift over time, and the geographical areas included in the analysis are not necessarily the same for both periods. Out of the 5141 coordinates that are defined as moderate-concentration neighbourhoods in 1990, 67% remained in this category until 2009, 1680 are no longer defined as moderate-concentration neighbourhoods in 2009, and there have been 3220 additions over the years. Simply put, the number of moderate-concentration neighbourhoods is growing over time. For the high-concentration neighbourhoods, the number of coordinates rose from 1203 to 1946, with an overlap of 65% over the whole period. Had the aim been to understand how the concentration of neighbourhoods changes, a static geographical delimitation would have been suitable, but this is not the aim of the paper. Instead, individuals' mobility behaviour is the crucial aspect, thus the closest neighbours is a relevant neighbourhood operationalization, as contextual changes might affect how individuals value their housing situation. Using these definitions to differentiate between non-western, foreign-born concentration areas and other types of areas make the immigrant-concentration neighbourhood a relative concept.

To assess if there are differing risks of moving in immigrant-dense neighbourhoods and the rest of the city, a survival model is used. Kauppinen, Andersen, and Hedman (2016) have used this modelling strategy with Swedish data on entry into homeownership for different ethnic groups. Magnusson Turner and Hedman (2014) use it to analyse housing careers and family events. Survival research designs are well suited to estimating the cumulative hazard (or risk) of moving (see Nordvik and Magnusson Turner 2015; Lee 2017). Thus, in such an analysis the risk of moving is estimated, and variables differentiating between various neighbourhood types indicate whether the risk differs between neighbourhoods. The event in the Cox models is moving; right censoring occurs for those individuals that age out of the sample or stay in the same dwelling for the whole period. When using a Cox proportional hazard model, three key aspects can be highlighted. First, unlike cross-sectional studies, where time is not incorporated into the model, Cox regressions estimate the increase or decrease in risk of moving from one year to the next during the period studied. Secondly, one assumption of the Cox model is that the hazard is proportional throughout the period. This means that the hazard level for any given covariate is assumed to be constant over all time points in the analysis. Some argue that violations of this cause problems (Hosmer, Lemeshow, and May 1999) while others argue that the effects of covariates that violate the assumption may be understood as average effects over the time points in the study (Allison 1995). One way to deal with violations of the proportional hazard assumption is to introduce time-varying covariates, and sometimes the average effect measures obtained are sufficient for the analysis being carried out (Borucka 2014). Here, the choice has been made only to discuss the 'average effect', because the main aim of the paper is to compare the broad dimensions of mobility in the two cohorts. Thirdly, left censoring could be problematic in many duration models. One key aspect when trying to

understand risk of moving is how rooted an individual potentially is in the neighbourhood. Controlling for number of years in the neighbourhood may be one way to deal with such a problem. However, the data used span the period 1990–2009, and thus there are problems with knowing how long a person has resided in the same location prior to 1990. In the Cox models, the analyses therefore span the years 1993–2000 and 2001–2009 respectively. Earlier research finds that there is a clear effect of duration of stay on the likelihood of moving, and recent moves induce residential mobility (e.g. Fischer and Malmberg 2001). Length of stay (number of years in neighbourhood) is used as a control variable in both models, although there are different max-values due to the data limitations. The short time span of length of stay prior to the analysis (1990–1993 for cohort one) may not capture the full extent of anticipated duration-of-stay effects but does sufficiently capture *recent moves*. The results are consistent in both models, indicating that the shorter length-of-stay control variable used for the first cohort does not introduce any major concerns.

To test the second hypothesis, *mobility destinations for movers in immigrant-dense neighbourhoods are increasingly dependent on income and housing assets, especially for non-native groups*, binary logit models of movers' destinations are specified. These regression models are useful for understanding where people move when they actually move away from immigrant-dense neighbourhoods. The choice to use a binary outcome should be explained. In the logit models, the outcome variable *moving to similar neighbourhoods or moving to neighbourhoods with a lower concentration of non-western, foreign-born residents* is used. A move is defined in the same way as for the Cox proportional hazard model, i.e. a change in coordinates between years. This study is primarily concerned with the effect of housing tenure on the probability of a mover leaving a concentration area. This analytical strategy thus depends on testing whether or not the place-stratification framework could be applicable when discussing the sorting of movers in immigrant-dense neighbourhoods. If there is an effect of housing tenure on the probability of leaving concentration areas, and if the effect seems to vary between ethnic groups (albeit defined broadly in this contribution), subsequent studies could dig more deeply into the workings of housing tenure in relation to discussions on the importance of housing assets for navigating an increasingly ownership-dominated housing market. As noted by Hedman and van Ham (2012), the binary model is good for analysing simple processes of sorting, but is less applicable when trying to discern what neighbourhood factors structure residential sorting. The aim of this paper is met by a set of binary logistic models used to analyse the impact of housing tenure on movers in immigrant-dense neighbourhoods.

All models are run for each cohort, which gives information on changes over time in the probability of staying in or leaving these neighbourhoods (following Lee 2017), the important aspect here being whether there are larger differences between the cohorts regarding, for example, low and high income, or rental housing and co-ops. No comparisons are made between the models regarding the obtained estimations. The models are run both pooled and stratified by ethnic background in order to explore variations across ethnic groups (following Magnusson Turner and Hedman 2014). The descriptive statistics presented make use of cohorts beginning in 1991 and 1999 and compare mobility frequencies.

Results

Since most political discussions focus on the high-concentration neighbourhoods, this section highlights these types of areas. Table 2 shows the share of stayers in Stockholm County and high-concentration areas for the cohorts starting in 1991 and 1999 by housing tenure, excluding homeownership housing. Table 2 shows that fewer people are stayers in the second period when analysing the county level, the difference amounting to 4 and 5 percentage points in the rental and co-op tenures respectively. In high-concentration neighbourhoods, more people stay for longer periods in the rental segment (+2 percentage points) while fewer (−5 percentage points) remain in the co-op sector in these neighbourhoods.

Table 2. Share (%) of the population staying in the same dwelling in Stockholm County and in high-concentration neighbourhoods (population, age 20–64), 1991 and 1999 cohorts.

Year after starting year	0	2	4	6	8	10
Total population – Rental 1991–2001	100	71	54	45	39	36
Total population – Rental 1999–2009	100	76	58	45	37	32
Total population – Co-op 1991–2001	100	78	63	54	47	43
Total population – Co-op 1999–2009	100	77	61	50	42	38
High-concentration n'hoods – Rental 1991–2001	100	65	47	38	33	30
High-concentration n'hoods – Rental 1999–2009	100	78	59	44	36	32
High-concentration n'hoods – Co-op 1991–2001	100	73	59	51	45	42
High-concentration n'hoods – Co-op 1999–2009	100	76	58	47	41	37

Source: PLACE database, author's calculations.

Unlike the 1991 cohort, the 1999 cohort displays small differences between the tenures – the part of the cohort starting in co-ops in 1999 is more mobile than that starting in co-ops in 1991. This is likely to be because of the increased share of co-ops and the decreasing share of rental units to choose from in Stockholm. Worth noting are the growing similarities between high-concentration neighbourhoods and the rest of the city in terms of their share of long-term stayers. In the city as a whole, 32% of the renters in the second cohort stay until the last year, and the share is the same in high-concentration neighbourhoods. This might be due to the effects of the tenure structure, revealing the loss of rental apartments undergoing conversion in attractive locations. The concentration of rental housing into fewer and more peripheral areas might make this housing tenure type less attractive for the population. Descriptive data have also been calculated to look into age-specific shares of stayers. The findings reinforce the conclusion that there is higher mobility in the latter cohort in co-ops, even when accounting for potential age-compositional differences. These findings show higher rates of mobility in the co-op sector regardless of location, and a slight decrease in mobility in the rental sector in immigrant-dense neighbourhoods.

In order to look into potential ethnic selectivity, Figures 1 and 2 display the shares of stayers in high-concentration neighbourhoods, divided by the ethnic categories.

For 1991–2001, there is a clear difference between the shares of stayers in co-ops and in rentals, except for the non-western, foreign-born group, which show low shares of stayers within the co-op sector. The tenure-based gap in mobility is closing in the latter period. A notable finding from the descriptive analysis is that, when analysing the urban area, fewer people are found to remain in their dwelling over longer periods. More people stay for a longer period in rental units in high-concentration neighbourhoods, while fewer stay in co-ops in these areas and demographic shifts do not seem to explain this trend. When analysing the different sub-population groups, it is found that the foreign-background group stays, while the Swedish-background and non-western, foreign-born groups are more mobile. The tenure-based division of mobility frequencies in high-concentration neighbourhoods is closing between the cohorts. These results support the conclusion that residential mobility in high-concentration neighbourhoods is high across population groups (Bråmå and Andersson 2005). The mobility trends in high-concentration neighbourhoods follow those in the wider geographical region, as demonstrated by Bailey and Livingston (2007) for the UK. There is increasing residential mobility in co-ops and somewhat reduced mobility in the rental segment. The latter is not found in the wider region, suggesting that it is difficult for those living in high-concentration neighbourhoods to find rental housing to relocate to.

Who moves? – estimating the characteristics of Stockholm's movers among two cohorts

The Cox proportional hazard models (Table 3) show the risk of making any type of move in Stockholm and in its high- and moderate-concentration neighbourhoods. The general insight that renters have the highest mobility risk, followed by co-op owners and homeowners, does not change

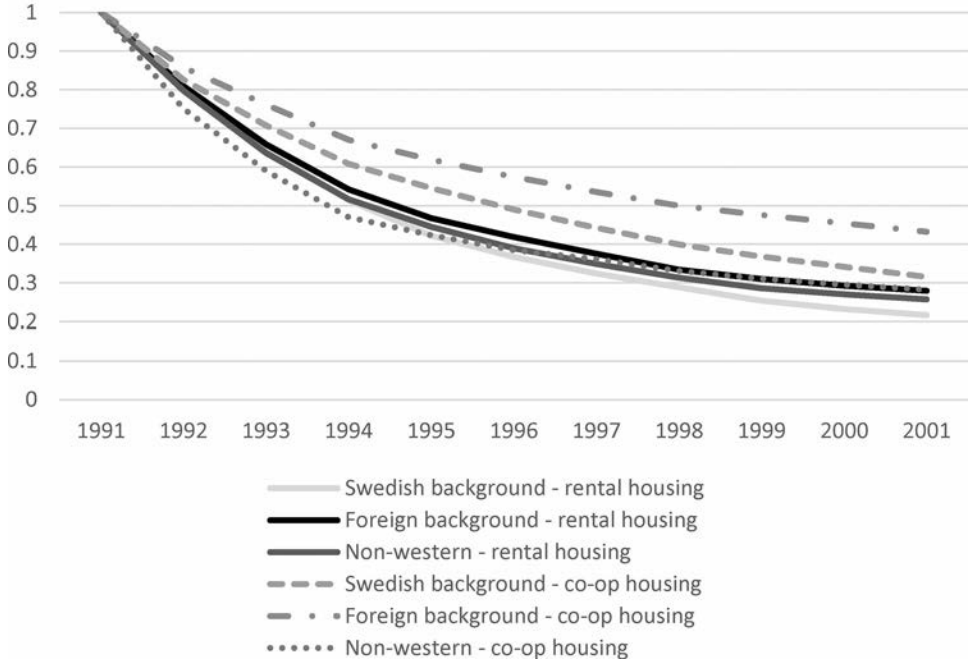

Figure 1. Share of stayers in the 1991 population cohort, aged 20–64, rental and co-op tenures, high-concentration neighbourhoods. Source: PLACE database, author's calculation.

across the cohorts. The gap in risk of moving between the two multi-family housing tenures is lower in the second cohort for all population groups. The interactions in the models focus on whether or not the risk of moving is higher in high- and moderate-concentration neighbourhoods across the different housing tenure forms, in relation to the rest of the city. In high-concentration

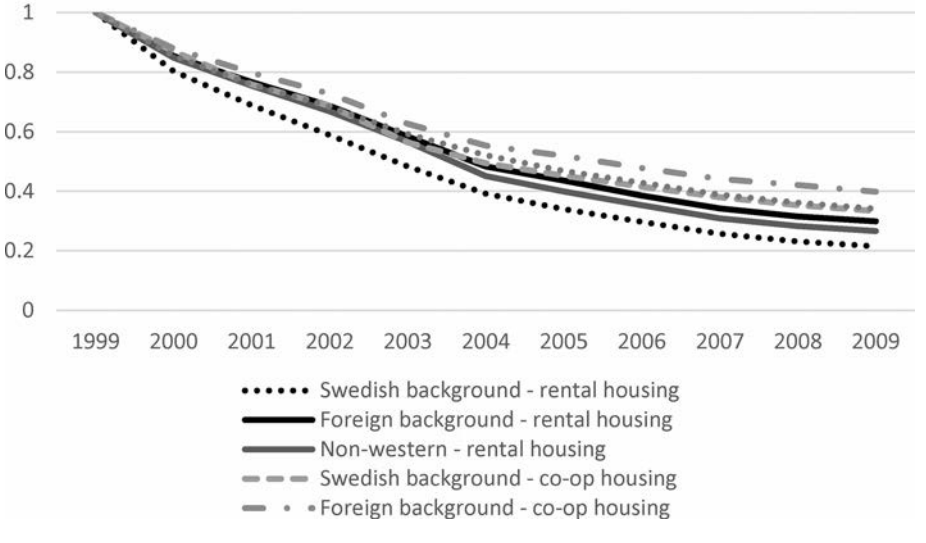

Figure 2. Share of stayers in the 1999 population cohort, aged 20–64, rental and co-op tenures, high-concentration neighbourhoods. Source: PLACE database, author's calculation.

Table 3. Cox proportional hazard model estimating risk of moving. Total population in Stockholm, age 20-64.

	Pooled model				Swedish background				Foreign background				Non-western immigrants			
	1993–2000		2001–2009		1993–2000		2001–2009		1993–2000		2001–2009		1993–2000		2001–2009	
Mid income (decile 4–7) (Low income, decile 1–3, = ref.)	0.923***	0.923***	0.983***	0.983***	0.930***	0.930***	1.003	1.003	0.932***	0.932***	0.957***	0.956***	0.898***	0.898***	0.933***	0.933***
High income (decile 8–10) (Low income, decile 1–3, = ref.)	0.978***	0.977***	1.038***	1.037***	0.995	0.994	1.078***	1.077***	1.000	0.997	1.006	1.001	0.978	0.975*	0.979*	0.976**
High concentration n'hood (yes =1)	0.982***	0.974***	1.063***	1.067***	0.942***	0.939***	1.021***	1.046***	0.967***	0.952***	1.049***	1.029***	0.958***	0.941***	1.032***	1.015
Moderate concentration n'hood (yes=1)	0.989***	0.982***	0.955***	0.907***	0.977***	0.972***	0.948***	0.894***	1.033***	1.011	0.979***	0.934***	1.081***	1.049***	0.990	0.951***
Rental housing (ref.)																
Homeownership	0.629***	0.677***	0.624***	0.531***	0.638***	0.733***	0.644***	0.658***	0.578***	0.520***	0.546***	0.419***	0.584***	0.439***	0.476***	0.363***
Co-op	0.845***	0.754***	0.864***	0.778***	0.859***	0.776***	0.876***	0.801***	0.783***	0.678***	0.828***	0.731***	0.777***	0.689***	0.821***	0.756***
Rental housing (ref.) × high concentration n'hood																
Homeownership × high concentration n'hood		0.962*		0.984		0.89***		0.819***		1.179***		1.079**		1.286***		1.077
Co-op x high concentration n'hood		1.084***		1.076***		1.076***		1.026*		1.122***		1.194***		1.161***		1.179***
Rental housing (ref.) × moderate cocnetration n'hood																
Homeownership × moderate cocnetration n'hood		0.962***		1.255***		0.972**		1.236***		0.958		1.345***		1.128**		1.425***
Co-op × moderate cocnetration n'hood		1.052***		1.066***		1.041***		1.095***		1.092***		1.003		1.051		0.964
Time in neighbourhood	0.906***	0.906***	0.968***	0.968***	0.909***	0.909***	0.972***	0.972***	0.893***	0.893***	0.958***	0.958***	0.902***	0.902***	0.957***	0.956***
	1.103***	1.102***	1.078***	1.077***												

(*Continued*)

Table 3. Continued.

	Pooled model				Swedish background				Foreign background				Non-western immigrants			
	1993–2000		2001–2009		1993–2000		2001–2009		1993–2000		2001–2009		1993–2000		2001–2009	
Foreign background (yes = 1)																
Non-western foreign-born (yes = 1)	1.176***	1.178***	0.971***	0.976***					1.122***	1.124***	0.993	0.995				
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Neighbourhood context controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Socioeconomic background controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Event	859,556	12.4%	1,029,852	15%	674,210	12.3%	758,125	14.5%	185,346	12.6%	271,727	15.3%	71,068	15.1%	131,364	17.0%
Censored	6,090,796	87.6%	5,971,127	85%	4,808,462	87.7%	4,465,128	85.5%	1,282,334	87.4%	1,505,999	84.7%	400,279	84.9%	641,564	83.0%
Total	6,950,352	100.0%	7,000,979	100%	5,482,672	100.0%	5,223,253	100.0%	1,467,680	100.0%	1,777,726	100.0%	471,347	100.0%	772,928	100.0%
−2 log likelihood	25,381,304	25,381,046	30,590,361	30,589,280	19,557,431	19,557,258	22,047,878	22,047,290	4,919,690	4,919,514	7,347,258	7,346,557	1,736,959	1,736,848	3,341,563	3,341,223
Chi-square	451,992.1	452,302.1	386,113.2	387,797.7	380,577.9	380,812.8	312,290.2	313,535.7	81,638.4	81,812.0	81,473.0	82,192.2	25,737.6	25,799.5	36,915.3	37,101.7

Notes: Intra urban mobility only, Sig: ***<.001, **<.01; *<.05. Control variables excluded from table: Family type, Change family status (yes=1), Children 0–3 years (yes = 1), Children (4–6) (yes = 1), Children school age (yes = 1), Age, Age (sqr), Gender, High education (min. 2 years at university) (yes = 1), Low education (< 12 years of school) (yes = 1), Unemployed (yes = 1), Social benefits (yes = 1), Increasing income (yes = 1), Decreasing income (yes = 1), Ratio co-op (k-6400), Ratio Public housing (k-6400).

Source: PLACE database author's calculations.

neighbourhoods, the risk of moving is elevated in the co-op sector in relation to the rest of the city, but somewhat lower in the second cohort for the Swedish-background group. For the foreign-background and non-western, foreign-born groups, the risk is instead higher in the second cohort relative to the reference category: renters in the whole city region. This potentially means that those with foreign and non-western, foreign-born background benefit from owning co-ops in high-concentration neighbourhoods, in terms of the opportunity to relocate, relative to renters in the same ethnic group, or that those who are co-op owners in these two groups are part of a mobile group, especially in the second cohort.

In moderate-concentration neighbourhoods, there is also an elevated risk of moving for those residing in co-ops, relative to the rest of the city. The stratification along ethnic categories shows that, in the second cohort, those with Swedish background have a higher risk of moving relative to the rest of the city. For the foreign background and non-western, foreign-born groups, the risk of moving, relative to co-op owners in the rest of the city, is lower in the second cohort.

High-income levels are associated with an elevated risk of moving in the second cohort for the Swedish-background group. High income is not associated with as large a difference in mobility risk, relative to low-income residents, for the foreign-background or non-western, foreign-born groups. In the pooled model, it is also shown that the risk of moving for the foreign-background and non-western foreign-born groups is lower in the second cohort, relative to the Swedish-background population. The non-western, foreign-born group is in fact less likely to move than the Swedish-background group in the second cohort, perhaps indicating that there are fewer possibilities for this group to relocate in the Stockholm housing market over time. This suggests that ethnic hierarchies affect mobility opportunity, and increasingly so over time.

Results from the demographic and socioeconomic control variables have the expected results. With changed family status, such as marrying, divorcing or having children, the risk of moving increase. Risks furthermore increase with changing income levels and for those who receive social benefits. The risk decreases with higher age, for those with children living at home and for the unemployed. The results are consistent between the stratified models, though of course, the magnitude varies somewhat across the two cohorts and across ethnic categories. Educational attainment is a less strong predictor of moving for the Swedish and foreign-background groups in the second cohort, but high education is associated with a higher risk of moving for the non-western, foreign-born group in the second cohort. This final aspect is similar to Kadarik's (2020) finding that educational attainment is an important factor in non-western, foreign-born residents' ability to navigate the housing market. The educational attainment variable is possibly correlated with labour market connections and other aspects that increase possibilities to navigate the housing market.

Neighbourhood ethnic composition has been discussed as an aspect that increases residential mobility, especially in relation to the white flight hypothesis. The pooled model shows that the risk of moving in the high-concentration neighbourhoods is below that in the rest of the city in the first cohort, but rises above that level in the second cohort. This is found in all the ethnically stratified models as well. There are few signs of any ethnically selective flight. In contrast, the moderate-concentration neighbourhoods display lower risk of moving for the second cohort across all ethnic groups, relative to the city as a whole.

There is no support for any large, ethnically selective risk of moving when analysing high-concentration neighbourhoods. Instead, mobility risks are increasingly similar across ethnic groups. Worth noting is that non-western, foreign-born residents in the first cohort had a clearly higher risk of moving than the Swedish-background group. This is not the case in the second cohort, as the non-western, foreign-born group is less mobile on the housing market.

The differences between housing tenures in various locations are marginal but significantly different, thus the first hypothesis, (i) *the risk of moving in the three housing tenure forms does not differ between neighbourhoods with differing degrees of immigrant concentration,* is rejected. Co-op owners have a lower risk of moving compared to renters, but the gap is decreasing between the cohorts. Overall, the risk of moving is increasing in high-concentration neighbourhoods. The

foreign-background and non-western, foreign-born groups display decreasing risks of moving between the cohorts when they are co-op owners in moderate-concentration neighbourhoods, relative to the rest of the city. In moderate-concentration neighbourhoods, the tenure gap for the Swedish-background residents shifts, and co-op owners have a higher risk of moving than renters, in the second cohort. This reflects the reduced possibility for mobile renters to find new housing alternatives and also the potential benefits of owning for future mobility.

The following section investigates how sorting of movers has changed. First, from high-concentration neighbourhoods, where the risk of moving is higher in the latter cohort compared to the rest of the city, and from moderate-concentration neighbourhoods, where the risk of moving is lower in the second cohort compared to the whole city.

Who leaves high- and moderate-concentration neighbourhoods?

The dynamics of movers' destinations have been analysed through a set of logistic regression models with the binary outcome of moving out from neighbourhoods with high (Table 4) or moderate (Table 5) concentrations of non-western, foreign-born residents, or moving within or between the neighbourhood types (reference outcome). The models are run both pooled and stratified by ethnic background categories. Such an analysis makes it possible to determine the impact of income and housing tenure, and to compare the cohorts with regard to mobility destinations. The second hypothesis is: *mobility destinations for movers in immigrant-dense neighbourhoods is increasingly dependent on income and housing assets, especially for non-native groups*.

Income is important for where movers end up. Table 4 shows that when analysing the effect of income on moving destinations, high income is associated with moving destinations outside high-concentration neighbourhoods for the Swedish-background and non-western parts of the population, and more so in the second cohort. For the foreign-background category, the differences between income groups decline between the cohorts, even if economic selectivity is very strong. The comparatively small differences between income levels within the non-western, foreign-born group show that this group does not convert higher income into mobility destinations outside high-concentration neighbourhoods as the Swedish or foreign-background population do. In moderate-concentration neighbourhoods (Table 5), the trend over time is increasingly strong economic sorting of movers, effectively showing the strong connection between higher income and the likelihood of leaving moderate-concentration neighbourhoods for neighbourhoods with even fewer non-western, foreign-born residents.

When analysing housing tenure in high-concentration neighbourhoods (Table 4) the models show that, for the Swedish-background group, the gap between renters and co-op owners is smaller in the second cohort, and homeowners are increasingly likely to leave for areas with fewer non-western, foreign-born residents. Homeowners are the least mobile group, but when they move, they leave high-concentration neighbourhoods. The development is rather similar for the foreign-background group. In the non-western, foreign-born category, there is an increased gap between renters and co-op owners when explaining out-mobility destinations. This finding shows that for the non-western, foreign-born population, owning a co-op is increasingly important for being able to leave for areas with fewer foreign-born residents.

In moderate-concentration neighbourhoods, the difference between renters and co-op owners increases in all ethnic groups, while it decreases for the homeowners. This shows that, for all groups, being an insider in the ownership market is increasingly important for being able to navigate Stockholm's changing housing market. This insider advantage is not as decisive for the Swedish and foreign-background groups in high-concentration neighbourhoods as it is for the non-western, foreign-born residents.

The control variables (in both Tables 4 and 5) yield the anticipated results; notably, there is less selectivity in the second cohort between those with Swedish background and the other two ethnic background categories regarding moving destinations, when controlling for socioeconomic and

Table 4. Logisitc regression models displaying the odds of a mover staying in high concentration neighbourhoods (0) after a move or leaving high concentration neighbourhoods (1). Intra-Stockholm movers only, selected results.

		Pooled model		Swedish background		Non-western immigrant		Foreign background	
		1993–2001	2001–2009	1993–2001	2001–2009	1993–2001	2001–2009	1993–2001	2001–2009
Income variables	Mid income (decile 4–7) (Low income, decile 1–3, = ref.)	0.065***	0.098***	0.077**	0.099***	−0.020	0.073***	0.129***	0.148***
	High income (decile 8–10) (Low income, decile 1–3, = ref.)	0.355***	0.349***	0.418***	0.450***	0.190***	0.249***	0.405***	0.387***
Housing variables	Rental housing (ref.)								
	Co-op	0.170***	0.173***	0.178***	0.086**	0.145***	0.329***	0.158***	0.141***
	Homeownership	0.580***	0.549***	0.703***	0.762***	0.236**	0.402***	0.599***	0.450***
Background variables	Foreign background (yes = 1)	−0.719***	−0.611***						
	Non-western foreign-born (yes = 1)	−0.610***	−0.453***						
	Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Neighbourhood controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Constant	1.579***	1.708***	1.810***	2.266***	0.018	0.779***	0.685***	0.674***
	N	122,854	159,080	54,980	58,286	40,082	65,471	27,691	35,119
	Wald Chi^2	14,361.11	15,754.84	1,815.12	2,921.54	1,134.80	2,369.89	1,101.44	1,343.49
	Prob > Chi^2	0	0	0	0	0	0	0	0
	Log pseudolikelihood	−74,446.15	−100,853.69	−29,373.42	−34,060.23	−26,430.87	−42,748.06	−18,320.50	−23,552.99

Notes: Sig: ***<.001, **<.01 *<.05. Control variables excluded from table: Family type, Change family status (yes=1), Children 0-3 years (yes = 1), Children (4-6) (yes = 1), Children school age (yes = 1), Age, Age (sqr), Gender, High education (min. 2 years at university) (yes = 1), Low education (< 12 years of school) (yes = 1), Unemployed (yes = 1), Social benefits (yes = 1), Increasing income (yes = 1), Decreasing income (yes = 1), Ratio co-op (k-6400), Ratio Public housing (k-6400), Time in neighbourhood.
Source: PLACE database author's calculations.

Table 5. Logisitc regression models displaying the odds of a mover staying in moderate concentration neighbourhoods or higher concentration neighbourhoods (0) after a move or leaving for a neighbourhood with fewer non-western foreign-born (1). Intra-Stockholm movers only, selected results.

		Pooled model		Swedish background		Non-western immigrant		Foreign background	
		1993–2001	2001–2009	1993–2001	2001–2009	1993–2001	2001–2009	1993–2001	2001–2009
Income variables	Mid income (decile 4–7) (Low income, decile 1–3, = ref.)	−0.004	0.099***	−0.040***	0.061***	0.116**	0.187***	0.064**	0.167***
	High income (decile 8–10) (Low income, decile 1–3, = ref.)	0.326***	0.468***	0.275***	0.413***	0.435***	0.583***	0.423***	0.571***
Housing variables	Rental housing (ref.)								
	Co-op	0.107***	0.232***	0.101***	0.202***	0.222***	0.440***	0.067**	0.213***
	Homeownership	−0.041***	−0.124***	−0.054***	−0.139***	0.114*	0.018	−0.037	−0.108**
Background variables	Foreign background (yes = 1)	−0.446***	−0.436***						
	Non-western foreign-born (yes=1)	−0.659***	−0.615***						
	Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Neighbourhood controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Constant	1.264***	1.047***	1.076***	1.018***	1.506***	0.680***	0.964***	0.360*
	N	683,075	699,585	581,237	584,807	25,153	36,007	76,224	78,257
	Wald CHi2	26,086.91	27,215.32	13,360.54	13,782.57	1,454.29	215,807.00	2,416.17	2,880.17
	Prob > Chi2	0	0	0	0	0	0	0	0
	Log pseudolikelihood	−284,688.56	−237,357.94	−229,960.49	−184,649.62	−15,746.85	−19,998.99	−38,421.07	−32,145.01

Notes: Sig: ***<.001, **<.01 *<.05. Control variables excluded from table: Family type, Change family status (yes=1), Children 0-3 years (yes = 1), Children (4-6) (yes = 1), Children school age (yes = 1), Age, Age (sqr), Gender, High education (min. 2 years at university) (yes = 1), Low education (< 12 years of school) (yes = 1), Unemployed (yes = 1), Social benefits (yes = 1), Increasing income (yes = 1), Decreasing income (yes = 1), Ratio co-op (k-6400), Ratio Public housing (k-6400), Time in neighbourhood.

Source: PLACE database author's calculations.

demographic factors. Selectivity by educational attainment is also lower in the second cohort, except for the highly educated, non-western, foreign-born population, who are increasingly likely, in relation their low-educated counterparts, to enter other types of neighbourhoods when moving away from high- or moderate-concentration neighbourhoods.

The main findings show that ethnic sorting is strong, but declines between the first and second cohorts. Economic sorting, however, grows stronger between the first and second cohorts when analysing mobility destinations. High income also increases the risk of moving in the city as a whole, indicating that income influences not only where movers end up, but also who moves in the first place.

An interesting finding is that when analysing mobility destinations, the differences between income levels are rather small for the non-western, foreign-born group in high-concentration neighbourhoods. Instead, co-op ownership is a strong determinant of residential mobility outcomes, especially for the second cohort. This implies that having a high income is not necessarily enough to be able to leave for other types of neighbourhoods, but being an insider in the co-op ownership market is important. In moderate-concentration neighbourhoods, ownership and income levels are strong factors for all groups in leaving for areas with fewer non-western, foreign-born residents, especially in the second cohort. These findings lend support to the second hypothesis: *mobility destinations for movers in immigrant-dense neighbourhoods are increasingly dependent on income and housing assets, especially for non-native groups*.

Discussion and conclusions

The point of departure of this paper is the idea that co-op and homeownership housing in immigrant-dense neighbourhoods contribute to reducing residential mobility frequencies, and perhaps affect the process of ethnic residential sorting. The development found in this paper is a key explanation of the process underlying earlier findings on the development of ethnic segregation in Stockholm (Andersson and Kährik 2015; Amcoff, Östh, and Niedomysl 2014; Nielsen and Hennerdal 2017). This study contributes a detailed analysis of residential mobility in neighbourhoods with high and moderate concentrations of non-western, foreign-born residents and of the effects of housing tenure on residential mobility.

This study confirms that the risk of moving is not dramatically different between high- or moderate-concentration neighbourhoods and the rest of the city (Bailey and Livingston 2007). It is clear that renters are the most mobile group, followed by co-op owners and people living in homeownership housing. This does not change between the cohorts studied. The findings indicate that owned housing in high-concentration neighbourhoods does not reduce residential mobility frequencies. Instead, the likelihood of moving increases for those living in co-ops in immigrant-dense neighbourhoods, compared to the rest of the city.

The increasing importance of owned housing for the non-western, foreign-born groups' likelihood of leaving immigrant-dense neighbourhoods illustrates the applicability of the place-stratification framework, indicating that this resource is of importance for navigating the increasingly owner-dominated housing market. Housing assets, in the form of owning a co-op, give increased access to loans to finance housing purchases outside high-concentration neighbourhoods, where rental options are scarce. This seems more important for the second cohort, probably because the housing stock is increasingly accessed through the households' ability to buy. Even if rent levels probably are manageable outside immigrant-dense neighbourhoods, the insider advantage of living in rental housing declines and the advantages of owning a co-op increases. The declining impact of co-op housing assets, compared to rental housing, for the Swedish and foreign-background groups indicates that these groups can use other forms of resources to navigate away from the largest concentrations of non-western, foreign-born residents. This prompts us to conclude that ethnic hierarchies affect residential mobility, and that the non-western, foreign-born residents need housing assets to be able to navigate the housing market. The renter–co-op gap, in terms of moving

destinations, is even stronger in moderate-concentration than in high-concentration neighbourhoods. This indicates that it is difficult for renters to move out of moderate-concentration neighbourhoods.

Vogiazides (2018) has shown that owners tend to leave distressed neighbourhoods, but that this inclination is weaker among those with foreign background than those with Swedish background. The findings presented above show that this tendency applies to co-op owners and in the ethnic minority groups. Homeowners tend to leave high-concentration neighbourhoods but move between or within moderate-concentration neighbourhoods, which probably reflects the comparatively low capital accumulation in homeownership housing and the low availability of such housing units across Stockholm, at least compared to co-op housing.

The results presented here can be interpreted as indicating that high-concentration neighbourhoods risk becoming increasingly marginalized because of ethnic and socioeconomic flight combined with the increasing difficulties for renters to move out of these neighbourhoods. The findings suggest that the place-stratification framework is important when discussing processes in the Stockholm housing market and the reproduction of ethnic segregation. Ethnic hierarchies have been shown to exist (Quillian 2003; Bråmå and Andersson 2005; Kadarik 2020), with the non-western, foreign-born residents being less able to convert higher income levels into housing in other types of neighbourhoods than those with higher immigrant-concentration levels. The Swedish-background group faces less restrictions, which agrees with results from other national contexts (e.g. Feijten and van Ham 2009; Harris 2001). However, owning a co-op seems to enable the non-western, foreign-born group to navigate the increasingly owner-dominated housing market.

This shows that the ethnic hierarchies are important to take into account when analysing how changes in the housing market affect different population groups. Since housing outcomes are increasingly dependent on income, it is not surprising that higher income is increasingly associated with leaving immigrant-dense neighbourhoods. However, it is notable that this applies to the Swedish and foreign-background groups, while in addition to income, members of the non-western group need to become insiders in the owned part of the housing market. This does not put the weak version of place-stratification theory in dispute but rather means that for socially marginalized groups in an increasingly owner-dominated housing market, the insider advantages of having entered an owned segment of the housing market are necessary. Who enters owned housing in immigrant-dense neighbourhoods becomes an important question for the underlying reproduction of ethnic segregation. This has implications for policies to address segregation and social mix, as it shows that increased levels of owned housing in immigrant-dense neighbourhoods may have the positive effect of making larger parts of the non-western population insiders in the owner segments, given that it enables them to enter the mortgage market. It is not likely that policy will affect levels of segregation and social mix if these units primarily attract local residents who are socially mobile and aspire to be spatially mobile. The owned forms of housing do not seem to increase length-of-stay, but rather, those who wish to leave increasingly need to own a co-op before they move, especially if they belong to an ethnic minority group.

Notes

1. When this research was carried out, annual data for the full population was only available until 2014
2. When this research was carried out, the database contained reliable data on housing type only until 2008.
3. Geographical unit: *Small Area Market Statistics* constructed by Statistics Sweden in collaboration with municipalities. Its usefulness has been questioned, especially for comparative research, as the size of these *neighbourhoods* varies within and especially between municipalities (Amcoff 2012).
4. Equipop software was used to calculate individualized neighbourhoods (Östh 2014).

Acknowledgements

I am grateful to the anonymous reviewers for their constructive comments on earlier version of the article.

Disclosure statement

No potential conflict of interest was reported by the author(s).

References

Ahmed, A. M., and M. Hammarstedt. 2008. "Discrimination in the Rental Housing Market: A Field Experiment on the Internet." *Journal of Urban Economics* 64 (2): 362–372.

Allison, P. D. 1995. *Survival Analysis Using SAS: A Practical Guide*. Cary, NC: SAS Institute.

Amcoff, J. 2012. "Hur bra Fungerar SAMS-Områdena i Studier av Grannskapseffekter? En Studie av SAMS-Områdenas Homogenitet." *Socialvetenskaplig Tidskrift* 19 (2): 93–115.

Amcoff, J., J. Östh, and T. Niedomysl. 2014. "Segregation i Stockholmsregionen Kartläggning med EquiPop Demografisk Rapport 2014:09." *Landstingsstyrelsens Förvaltning, Tillväxt, Miljö och Regionplanering*.

Andersen, H. S. 2017. ". 'Selective Moving Behaviour in Ethnic Neighbourhoods: White Flight, White Avoidance, Ethnic Attraction or Ethnic Retention?" *Housing Studies* 32 (3): 296–318.

Andersen, H. S., R. Andersson, T. Wessel, and K. Vilkama. 2015. "The Impact of Housing and Housing Markets on Ethnic Spatial Segregation: Comparing the Capital Cities of Four Nordic Welfare States." *International Journal of Housing Policy*. doi:10.1080/14616718.2015.1110375.

Andersson, R. 2013. "Reproducing and Reshaping Ethnic Residential Segregation in Stockholm: The Role of Selective Migration Moves." *Geografiska Annaler: Series B* 95 (2): 163–187.

Andersson, R., and A. Kährik. 2015. "Widening Gaps: Segregation Dynamics During Two Decades of Economic and Institutional Change in Stockholm." In *Socioeconomic Segregation in European Capital Cities*, edited by T. Tammaru, S. Marcińczak, M. van Ham, and S. Musterd, 110–113. London: Routledge.

Andersson, R., and L. Magnusson Turner. 2014. "Segregation, Gentrification, and Residualisation: From Public Housing to Market-Driven Housing Allocation in Inner City Stockholm." *International Journal of Housing Policy* 14 (1): 3–29.

Bailey, N., and M. Livingston. 2007. *Population Turnover and Area Deprivation*. (A report for the Joseph Rowntree Foundation). Bristol: Policy Press.

Bailey, N., and M. Livingston. 2008. "Selective Migration and Area Deprivation: Evidence from 2001 Census Migration Data for England and Scotland." *Urban Studies* 45 (4): 943–961.

Bergsten, Z. 2010. Bättre framtidsutsikter? Blandade bostadsområden och grannskapseffekter: En analys av visioner och effekter av blandat boende [Better Prospects through Social Mix? Mixed Neighbourhoods and Neighbourhood Effects: An Analysis of the Purpose and Effects of Social Mix Policy]. Geografiska regionstudier 85, Uppsala: Department of Social and Economic Geography, Uppsala University.

Bolt, G., and R. van Kempen. 2003. "Escaping Poverty Neighbourhoods in the Netherlands." *Housing, Theory and Society* 20 (4): 209–222.

Bolt, G., and R. Van Kempen. 2010. "Ethnic Segregation and Residential Mobility: Relocations of Minority Ethnic Groups in the Netherlands." *Journal of Ethnic and Migration Studies* 36 (2): 333–354.

Bolt, G, R Van Kempen, and Van Ham. 2008. "Minority ethnic groups in the Dutch housing market: Spatial segregation, relocation dynamics and housing policy." *Urban studies* 45 (7): 1359–1384

Borucka, J. 2014. "Extensions of Cox Model for Non-Proportional Hazard Purpose." *Ekonometria Econometrics* 3 (45): 85-101 .

Boschman, S., R. Kleinhans, and M. van Ham. 2017. "Ethnic Differences in Realising Desires to Leave Urban Neighbourhoods." *Journal of Housing and the Built Environment* 32 (3): 495–512.

Boverket. 2012. *Bostadsbristen ur ett marknadsperspektiv* [Housing Shortage in a Market Perspective]. Rapport 2012:18. Boverket [National Board of Housing, Building and Planning], Sweden.

Bråmå, Å. 2006. " "White Flight"? The Production and Reproduction of Immigrant Concentration Areas in Swedish Cities, 1990–2000." *Urban Studies* 43: 1127–1114.

Bråmå, Å, and R. Andersson. 2005. "Who Leaves Sweden's Large Housing Estates?" In *Restructuring Large Housing Estates in Europe*, edited by R. van Kempen, K. Dekker, S. Hall, and I. Tosics, 169–192. Bristol: Policy Press.

Carlsson, M. 2010. "Experimental Evidence of Discrimination in the Hiring of First- and Second-Generation Immigrants." *Labour (committee. on Canadian Labour History)* 24 (3): 263–278.

Crowder, K., and S. J. South. 2008. "Spatial Dynamics of White Flight: The Effects of Local and Extralocal Racial Conditions on Neighborhood Out-Migration." *American Sociological Review* 73 (5): 792–812.

de Groot, C., C. H. Mulder, and D. Manting. 2011. "Intentions to Move and Actual Moving Behaviour in the Netherlands." *Housing Studies* 26 (03): 307–328.

Feijten, P., and C. Mulder. 2002. "The Timing of Household Events and Housing Events in the Netherlands: A Longitudinal Perspective." *Housing Studies* 17 (5): 733–792.

Feijten, P., and M. van Ham. 2009. "Neighbourhood Change … Reason to Leave?" *Urban Studies* 46 (10): 2103–2122.

Fischer, P. A., and G. Malmberg. 2001. "Settled People Don't Move: On Life Course and (im-) Mobility in Sweden." *International Journal of Population Geography* 7 (5): 357–371.
Hamnett, C. 1991. "The Relationship Between Residential Migration and Housing Tenure in London, 1971–81: A Longitudinal Analysis." *Environment and Planning A* 23: 1147–1162.
Harris, D. R. 2001. "Why Are Whites and Blacks Averse to Black Neighbors?" *Social Science Research* 30 (1): 100–116.
Haynes, R., K. Daras, R. Reading, and A. Jones. 2007. "'Modifiable Neighbourhood Units, Zone Design and Residents' Perceptions'." *Health & Place* 13 (4): 812–825.
Hedin, K., E. Clark, E. Lundholm, and G. Malmberg. 2012. "Neoliberalization of Housing in Sweden: Gentrification, Filtering, and Social Polarization." *Annals of the Association of American Geographers* 102 (2): 443–463.
Hedman, L., and M. van Ham. 2012. "Understanding Neighbourhood Effects: Selection Bias and Residential Mobility." In *Neighbourhood Effects Research: New Perspectives*, Eds. van Ham, M., Manley, D., Bailey, N., Simpson, L., and Maclennan, 79–99. Dordrecht: Springer.
Holmqvist, E., and L. Magnusson Turner. 2013. "Swedish Welfare State and Housing Markets: Under Economic and Political Pressure." *Journal of Housing and the Built Environment* 29 (2): 237–254.
Hosmer, D., S. Lemeshow, and S. May. 1999. *Applied Survival Analysis. Regression Modelling Time to Event Data*. New York: Wiley.
Kadarik, K. 2020. "Immigrants' Mobility Towards Native-Dominated Neighbourhoods: the Role of Individual Resources, Country of Origin, and Settlement Context." *Geografiska Annaler: Series B, Human Geography* 102 (2): 191–213.
Kauppinen, T. M., H. S. Andersen, and L. Hedman. 2016. "Determinants of Immigrants' Entry to Homeownership in Three Nordic Capital City Regions." *Geografiska Annaler: Series B, Human Geography* 97 (4): 343–362.
Kearns, A., and A. Parkes. 2003. "Living in and Leaving Poor Neighbourhood Conditions in England." *Housing Studies* 18 (6): 827–851.
Lee, K. O. 2017. "Temporal Dynamics of Racial Segregation in the United States: An Analysis of Household Residential Mobility." *Journal of Urban Affairs* 39 (1): 40–67.
Magnusson Turner, L., and L. Hedman. 2014. "Linking Integration and Housing Career: A Longitudinal Analysis of Immigrant Groups in Sweden." *Housing Studies* 29 (2): 270–290. doi:10.1080/02673037.2014.851177.
Massey, D. S. 1985. "Ethnic Residential Segregation: A Theoretical Synthesis and Empirical Review." *Sociology and Social Research* 69 (3): 315–350.
Molina, I. 2015. "*Kvalitativ Praktikprövning och Rasdiskriminering på Bostadsmarknaden: Metodologiska Reflektioner*." In *Mångfaldens Dilemman: Boendesegregation och Områdespolitik*, edited by R. Andersson, B. Bengtsson, and G. Myrberg, 159–181. Malmö: Gleerups Utbildning AB.
Murie, A. 1997. "The Social Rented Sector, Housing and the Welfare State in the UK." *Housing Studies* 12 (4): 437–461.
Musterd, S., and S. De Vos. 2007. "Residential Dynamics in Ethnic Concentrations." *Housing Studies* 22 (3): 333–353.
Nielsen, M. M., and P. Hennerdal. 2017. "Changes in the Residential Segregation of Immigrants in Sweden from 1990 to 2012: Using a Multi-Scalar Segregation Measure That Accounts for the Modifiable Areal Unit Problem." *Applied Geography* 87: 73–84.
Nordvik, V., and L. Magnusson Turner. 2015. "Survival and Exits in Neighbourhoods: A Long-Term Analysis." *Housing Studies* 30 (2): 228–251.
Openshaw, S. 1984. "The Modifiable Areal Unit Problem". CATMOG 38. In *Geo Abstracts*, Norwich.
Öst, C. E. 2017. Inkomsteffekter av bruksvärdessystemet [Income effects of the use-value system]. *En granskningsrapport från riksrevisionen* RIR 2017:24, Stockholm, Sweden.
Östh, J. 2014. *Introducing Equipop*. Uppsala University. http://equipop.kultgeog.uu.se/.
Pais, J., S. J. South, and K. Crowder. 2012. "Metropolitan Heterogeneity and Minority Neighborhood Attainment: Spatial Assimilation or Place Stratification?" *Social Problems* 59 (2): 258–281. doi:10.1525/sp.2012.59.2.258.
Quillian, L. 2003. "How Long Are Exposures to Poor Neighborhoods? The Long-Term Dynamics of Entry and Exit from Poor Neighborhoods." *Population Research and Policy Review* 22 (3): 221–249.
Scarpa, S. 2016. "Looking Beyond the Neighbourhood: Income Inequality and Residential Segregation in Swedish Metropolitan Areas, 1991–2010." *Urban Geography* 37 (7): 963–984.
Speare, A. 1970. "Home Ownership, Life Cycle Stage, and Residential Mobility." *Demography* 7 (4): 449–458.
Statistics Sweden. 2017. *Antal lägenheter efter region, hustyp och upplåtelseform (inklusive specialbostäder) År 2013–2016*. https://www.scb.se/BO0104. Accessed 27 October 2017.
Stockholm Stad. 2015. "Statistik om Stockholm – Inkomster i Stockholm 2014". *Årsrapport*. Stockholm Stad.
Van Gent, W., M. Das, and S. Musterd. 2019. "Socio-cultural, Economic and Ethnic Homogeneity in Residential Mobility and Spatial Sorting among Couples." *Environment and Planning A: Economy and Space* 51 (4): 891–912.
van Ham, M., and W. A. V. Clark. 2009. "Neighbourhood Mobility in Context: Household Moves and Changing Neighbourhoods in the Netherlands." *Environment and Planning. A* 41 (6): 1442–1459.
Vogiazides, L. 2018. "Exiting Distressed Neighbourhoods: The Timing of Spatial Assimilation among International Migrants in Sweden". *Population, Space and Place*, 24(8),e2169.